

Southern California Coastal Water Research Project Authority

Quarterly Director's Report To the SCCWRP Commission

February 2014

(Detailing activities November 12, 2013 – February 6, 2014)



Stephen B. Weisberg
Executive Director

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HIGHLIGHTS

News:

Expert panel provides organizational review

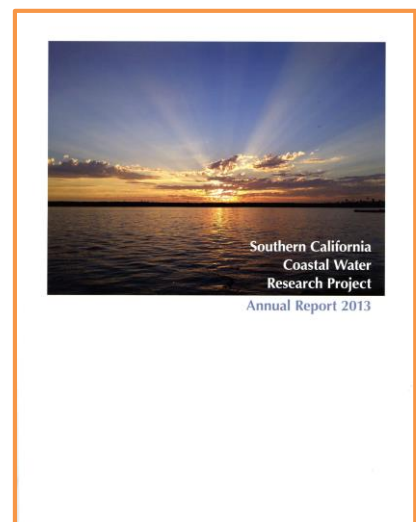
An expert panel comprised of research directors from nationally prominent laboratories across the country met at SCCWRP February 5-7. Their mission was to evaluate SCCWRP in preparation for the upcoming SCCWRP Commission Strategic Planning meeting to be held May 1. The review included technical, organizational, administrative, and other aspects of the agency. As such, they received a full day of testimony from the Executive Director, and then interview selected Commissioners, CTAG member, SCCWRP staff, and project collaborators. The panel's recommendations, which include the aspects of SCCWRP to retain and those to consider changing, will be compiled in a report for the Commission.



Panel members (from left to right): Dr. Fred Holland, Dr. Michael Barbour, Dr. Herb Windom, Dr. Jerry Schubel, Dr. Worth Nowlin, and Jim Stahl

SCCWRP releases 2013 Annual Report

SCCWRP released its 2013 Annual Report in January. With 39 journal-quality articles, the Report is the largest in SCCWRP's 45-year history. Impressively, the articles share bylines with more than 150 project collaborators from nearly 100 institutions; only a single article is authored solely by SCCWRP staff. Hard copies will be mailed out in late February, and electronic articles will be posted shortly on the [SCCWRP website](#). To be added to the SCCWRP Annual Report mailing list, please send your name and mailing address to [Christina Steidley](#).

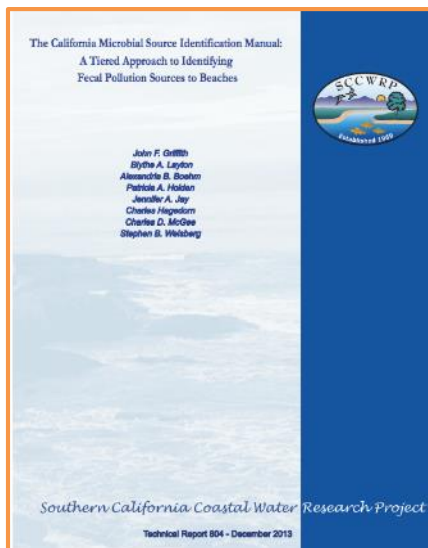


Pilot wet weather epidemiology study kicks off at San Diego beaches

On January 15, SCCWRP and UC Berkeley, in collaboration with the Surfrider Foundation, kicked off the nation's first epidemiology study to examine health effects in surfers following storm events. A trained team of recruiters enrolled surfers on the beach, who will later report any health symptoms using an android (Galaxy) or IOS (iphone) app currently available through GooglePlay and iTunes. The app, study brochure, FAQs, and hotline are also on the [study website](#). Daily sampling of discharge and ambient water quality at the two study beaches,



Ocean Beach and Tourmaline Surfing Park in San Diego, will take place during both wet and dry weather this winter. In collaboration with scientists from the Monterey Bay Aquarium Research Institute, SCCWRP mounted an automated in situ environmental sample processor on the Ocean Beach Pier to gather continuous water quality data directly adjacent to surfers in the "line up." For more information on the study, please contact [Ken Schiff](#).



Guidance manual adopted by state helps identify beach contamination sources

Over the last several years, SCCWRP has worked with a [statewide team](#) including researchers from UC Santa Barbara, Stanford University, and UCLA to evaluate and recommend mechanisms for identifying sources of contamination to beaches with poor water quality. In culmination, SCCWRP released a [guidance manual](#) in January for microbial source tracking, emphasizing a cost-effective tiered approach that includes innovative molecular technologies. The State Water Resources Control Board recently adopted the manual as a standard template for coastal managers and health departments who want to conduct source tracking, including those preparing Clean Beach Initiative proposals. California is the first

state in the nation to establish a standardized protocol for developing and implementing source identification studies. For more information on the manual, please contact [Dr. John Griffith](#).

SCCWRP Director participates in international meeting on ocean acidification science

On December 2–4, SCCWRP Executive Director Steve Weisberg attended the [first meeting](#) of the Ocean Acidification international Reference User Group ([OA-iRUG](#)) at the Oceanographic Museum in Monaco. The OA-iRUG is sponsored by the Ocean Acidification International Coordination Centre and was created to help convey scientific findings about ocean acidification to non-scientific end users and decision makers such as industry, government, and non-governmental organizations. The meeting was hosted by the Prince of Monaco and Weisberg was one of 33 international invitees. For more information on SCCWRP's research and science coordination efforts related to ocean acidification, please contact [Dr. Steve Weisberg](#).



Dr. Eric Stein guest speaker for Biodiversity and Environment Network

The [Biodiversity and Environment Network](#) at the University of Southern California will host a social hour at 4:00 PM on Tuesday, February 25 featuring [Dr. Eric Stein](#) of SCCWRP's Biology Department. Stein will discuss "Using aquatic community composition as a tool for evaluating stream condition and influencing management actions." He will join Regina Wetzler from the Natural History Museum of Los Angeles County's [Marine Biodiversity Center](#) as she speaks about museums as the hub for specimen-based research. The event is open to the public. For more information, please view the [event flyer](#) or contact [Dr. Stein](#).

SCCWRP Scenes:



Photo credit: Karen Setty

Members of the Southern California Association of Ichthyological Taxonomists and Ecologists (SCAITE) voucher fish specimens collected from nearly 200 sites during the Bight '13 regional monitoring survey.

PEOPLE

Honors and Awards:

- [Dr. Keith Maruya](#), the head of SCCWRP's Chemistry Department, was honored as one of 15 exceptional reviewers in 2013 by [Environmental Toxicology & Chemistry](#) (ET&C). Selected from among more than 1,000 ET&C reviewers, the annual list spotlights those who consistently provide the journal with high quality, timely reviews recognizing the often-unseen activities that contribute to the scientific community and publication of scholarly research.



Maruya



Steele

Personnel:

- Dr. Joshua Steele began as a scientist in SCCWRP's Microbiology Department on January 13.
- Lisa Fong left SCCWRP on January 10 to begin her John A. Knauss Marine Policy Fellowship with the National Oceanic and Atmospheric Administration in Washington, DC.
- Monica Netherly was hired as a Senior Research technician to support the San Diego wet weather epidemiology study replacing Melissa Studer.

Commission:

- Hope Smythe was appointed as the Alternate Commissioner for the Santa Ana Regional Water Quality Control Board.
- Grace Chan, Commissioner for the Los Angeles County Sanitation District, was married and changed her name to Grace Robinson Hyde.



Smythe



Chan

Commission's Technical Advisory Group:

- Greg Gearheart was appointed to CTAG representing the State Water Resources Control Board, replacing Mariela De La Paz Carpio-Obeso.

- Stan Asato was appointed to CTAG representing the City of Los Angeles, replacing Curtis Cash.



Gearheart



Asato

Spotlight on Staff:

Dr. Joshua Steele — Microbiologist

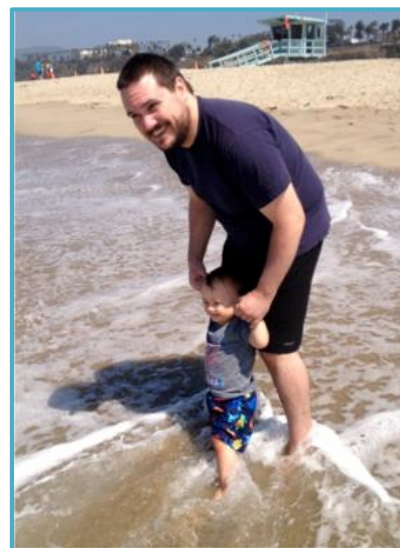


Joshua Steele is a scientist in SCCWRP's Microbiology Department who began in January 2014. He is currently working on molecular techniques to detect and track pathogenic bacteria and viruses and their linkage to beachgoer risk using statistical models as part of the quantitative microbial risk analysis (QMRA) study. His research also involves measuring the degradation of pathogenic microbes in the environment.

Josh was born and raised in Long Beach where he enjoyed spending countless hours at area beaches. He would sometimes postpone his birthday for six months so he could have a summer beach party. Fascinated by the ocean, he volunteered at the Cabrillo Marine Aquarium, SCCWRP (in the toxicology lab), and the Long Beach Aquarium. Josh then earned his bachelor's degree in molecular biology from UC San Diego (UCSD) while volunteering on projects at the Scripps Institution of Oceanography. He earned his PhD in marine environmental biology from the University of Southern California (USC), with his dissertation focused on changes in planktonic bacterial communities over different temporal and spatial scales and interactions between bacteria, protists, and their environment. He was able to travel a great deal on oceanographic expeditions including a research cruise across the International Date Line and one along the Amazon River plume. A yearlong stay in Washington, DC for a National Oceanic and Atmospheric Administration Knauss Marine Policy Fellowship placed him in the office of Representative Sam Farr from California. Toward the end of his graduate school career and postdoc, he also had the opportunity to study sediment and subsurface microbial communities and take part in a deep-ocean Alvin submersible dive off the coast of Oregon.

Drawn to both marine ecology and the interactions of humans with their environment, Josh realizes how important marine microbes are to both local and global processes. At SCCWRP, he appreciates the good research being done across multiple disciplines, as well as the great collaborations with outside scientists. He is excited to join a research-focused group that has direct impacts on policy. In addition to Josh's past collaborations with SCCWRP, his wife, Jaime Sayre, worked with Dr. Keith Maruya of SCCWRP's Chemistry Department on some of her PhD work. Feeling like part of SCCWRP's extended family for some time now, Josh was glad to make it official.

Josh spends most of his time these days hanging out with his very energetic one-year-old son, Dylan. The family of nature buffs loves outdoor activities, including occasional camping and backpacking. Josh is also a big fan of live music and previously performed in the La Jolla Symphony at UCSD and in the student orchestra at USC. He plays the viola, guitar, piano, and is (slowly) learning the banjo.



Spotlight on Partners:

Dr. Daren Carlisle — US Geological Survey



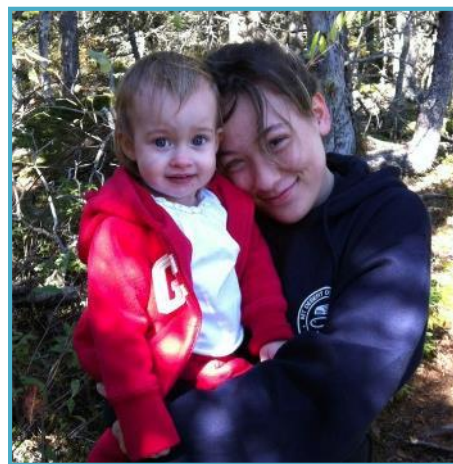
Daren Carlisle is an ecological studies coordinator with the US Geological Survey's (USGS's) [National Water-Quality Assessment Program](#) in Reston, Virginia. The program analyzes, interprets, and synthesizes findings from large water-quality datasets across the country.

Daren grew up in central Utah, and spent his early days fishing the streams and climbing the peaks of the Wasatch Mountains. An influential ninth grade science teacher started him on a quest to satisfy his never-ending curiosity about the natural world. After earning a BS in fishery science, Carlisle began graduate work studying the food webs of alpine lakes. This research led him to nearly 50 wilderness lakes throughout the Uinta Mountains — each a unique and special place.

He completed an MS in aquatic ecology in 1994 and took a temporary job with the Idaho Department of Environmental Quality helping to develop a management plan to restore water quality in the Snake River, which was suffering from excessive and nuisance algal growths. A new interest in water quality issues led him back to graduate school at Colorado State University, where he studied how pollution affects the food webs of streams. Soon after earning his PhD, Carlisle worked at the National Park Service in Omaha, Nebraska. As a regional aquatic scientist, he provided technical assistance to park units throughout the Midwest and Great Lakes region. When his family needed to relocate to a larger city, he took a job with the USGS in Reston, Virginia, and has been there ever since.

Carlisle's position at USGS has been an exciting challenge. The USGS is known for objective and high quality science, but also for its involvement with cooperators at national, regional, and local scales. Carlisle is always impressed with the quality and dedication of other scientists he has worked with. Working with SCCWRP, for example, has been a great opportunity to apply USGS's national science to a regional scale to meet the pressing needs of water resource managers. This partnership also helps USGS improve its science and transfer it to other parts of the country where similar needs arise. Carlisle sees SCCWRP as a truly unique organization doing high quality applied science that addresses contemporary needs. He says, "If only we could replicate this type of organization in other parts of the country!"

Daren currently spends most of his spare time with his daughters (ages 3 and 13) and leading a local Boy Scout Troop. When he is lucky enough to have some free time, he enjoys fly-fishing and backpacking.



Spotlight on Commissioners:

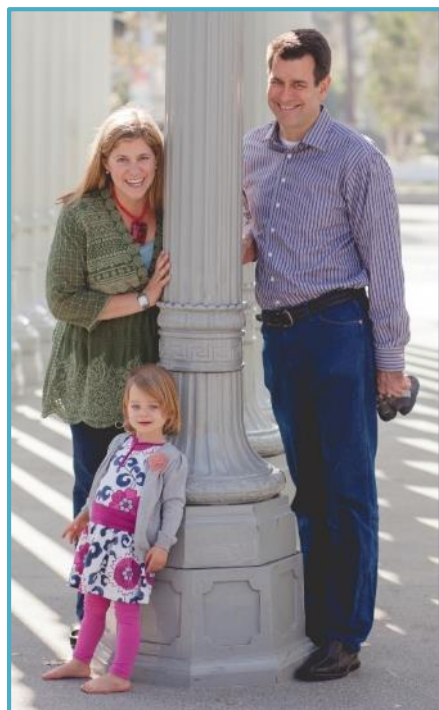
John Kemmerer – US Environmental Protection Agency Region 9

John Kemmerer is the Associate Director of the US Environmental Protection Agency (EPA) Region 9 Water Division where he currently leads the California water issues and climate change adaptation groups. He recently joined the SCCWRP Commission at the end of 2013.



John grew up in Easton, Pennsylvania, where he played pick-up basketball with future heavyweight boxing champion Larry Holmes. His summer job experiences at nearby manufacturing plants sparked an early interest in environmental protection. One summer he worked in the maintenance department of a textile mill removing the liner of a dye waste sludge pond and scraping out accumulated dust from the plant's ventilation system (wearing what he now recognizes as inadequate personal protection equipment). After studying chemical engineering at Bucknell University, Kemmerer served as a Peace Corps volunteer in Honduras, working on rural drinking water projects.

He moved to San Francisco to work for the EPA, first as an air pollution inspector, and then in several positions within the Superfund cleanup program. John was the environmental reviewer for the 1993 Defense Base Closure Commission, where he analyzed the impact of military base realignments on natural resources such as vernal pools. In 2002, Kemmerer transferred to the EPA's Water Division, where he initially took responsibility for the States of Hawaii and Nevada. Coastal issues were a priority throughout his work in Hawaii, which included the review and ultimate denial of 301(h) waivers for Honolulu's two largest wastewater treatment plants, as well as implementation of the federal ban on large capacity cesspools.



In 2007, John moved to EPA's Southern California Field Office in Los Angeles, and began working on California water issues. Since moving to LA, he has provided EPA input on the renewal of Municipal Separate Stormwater Sewer System (MS4) permits across the state, supported Los Angeles River revitalization planning, and is seeking opportunities for the EPA to support sustainability in Southern California's water supply. John appreciates the valuable role SCCWRP plays in providing a sound scientific foundation for the region's coastal water protection.

John's wife Jennifer is a native of Los Angeles, where they live with their two-and-a-half-year-old daughter, Rowan. Most of his free time is spent with Rowan, who especially enjoys the nearby La Brea Tar Pits. John also likes to cook and 2014 marks his 25th year as a home brewer.

Spotlight on CTAG:

Joe Gully – Sanitation Districts of Los Angeles County



Joe Gully supervises the Ocean Monitoring and Research Group (OMRG) at the Sanitation Districts of Los Angeles County (LACSD). The OMRG is primarily responsible for evaluating the biological and oceanographic conditions near the LACSD ocean discharge off Palos Verdes and reporting the findings to meet permit requirements. Gully has been a CTAG member since 2007 and is currently one of the two Vice-Chairs.

Born in New York, Joe moved to Southern California at age one. During his elementary school years, Joe spent many weekends camping, fishing, and riding motorcycles across the mountains, deserts, and beaches of California. His appreciation for nature focused in on the ocean when Joe took up surfing in junior high school, and at age 12 he decided to become a marine biologist. Joe attended California State University, Long Beach (CSULB), primarily because Dr. Donald Reish, a pioneer in assessing anthropogenic impacts on local marine life, taught at the school. After receiving his bachelor's degree, Joe was working on a master's degree under Dr. Andrew (Zed) Mason when he saw an advertisement for an entry-level lab technician position at LACSD. He applied, was hired, and has now worked there for 25 years. Prior to joining the OMRG, Joe spent 16 years at LACSD's San Jose Creek Water Quality Laboratory where his work focused on whole effluent and receiving water toxicity tests. He returned to school in 2003 and earned a master's degree in leadership and management from the University of La Verne.

The OMRG has been collaborating with SCCWRP since LACSD and other dischargers founded SCCWRP in 1969. Joe's relationship with SCCWRP began in 2003, when he assisted with the design and implementation of a Bight Regional Monitoring Program special study to assess endocrine disruption in coastal flatfish. Since then, he has worked with SCCWRP scientists on a variety of research topics regarding emerging contaminants, endocrine disruption, toxicity, and regional monitoring. Currently, Joe and his staff members are keenly interested in SCCWRP's research to determine how nutrients from coastal wastewater discharges might play a role in local harmful algal blooms, hypoxia, and ocean acidification. Joe finds working with SCCWRP challenging, rewarding, and productive. A primary challenge is staying informed about the large number of research projects on a wide variety of topics. However, SCCWRP gives LACSD an avenue to address environmental issues beyond the scope of their individual monitoring program.



Joe married his high school sweetheart, Penny, 26 years ago and they have lived in Lake Elsinore for the past 20 years. They have two children, Colin (22) and Wren (9, adopted from China at 10 months). Joe and his family continue to enjoy the activities that initially drew him to environmental science. They frequently camp, fish, hike, travel, and even surf on occasion.

COMMUNICATIONS

Journal Articles — Published:

- [Evaluation of molecular community analysis methods for discerning fecal sources and human waste](#). 2013. Y [Cao](#), LC Van De Werfhorst, EA Dubinsky, BD Badgley, MJ Sadowsky, GL Andersen, JF Griffith, PA Holden. *Water Research* 47: 6862-6872.
- [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* 47:6829-38.
- [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 Wanga, SB Weisberg. *Water Research* 47:6812-28.
- [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. 0788. Hindawi Publishing Corporation. *Journal of Environmental and Public Health* 2013:848048.
- [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, CMcGee, 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* 47:6839-6848.
- [Multi-laboratory evaluations of the performance of *Catelliboccus 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* 47:6883-6896.
- [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* 47:6929-6943.
- [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* 47:6909-6920.

- [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* 47:6873-6882.
- [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* 10:69-77.
- [Coastal upwelling linked to toxic *Pseudo-nitzschia australis* blooms in Los Angeles coastal waters, 2005–2007](#). 2013. A Schnetzer, BH Jones, RA Schaffner, I Cetinic, E Fitzpatrick, PE Miller, EL Seubert, DA Caron. *Journal of Plankton Research* 35:1080–1092.
- [The occurrence and fate of chemicals of emerging concern \(CECs\) in coastal urban rivers receiving discharge of treated municipal wastewater effluent](#). 2013. A Sengupta, MJ Lyons, DJ Smith, JE Drewes, SA Snyder, A Heil, KA Maruya. *Environmental Toxicology and Chemistry* 33:350–358.
- [Seasonal climatologies of oxygen and phosphates in the Bering Sea reconstructed by variational data assimilation approach](#). 2013. G Panteleev, V Luchin, NP Nezlin, T Kikuchi. Elsevier. *Polar Science* 7:214-232.
- [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* 59:285–297.
- [Towards establishing a human fecal contamination index in microbial source tracking](#). 2013. Y Cao, C Hagedorn, OC Shanks, D Wang, J Ervin, JF Griffith, BA Layton, CD McGee, TE Riedel, SB Weisberg. *International Journal of Chemical and Environmental Engineering Systems* 4:46-58.

Journal Articles — Published Online:

- [Passive sampling methods for contaminated sediments: State of the science for organic contaminants](#). 2013. MJ Lydy, PF Landrum, AMP Oen, M Allinson, F Smedes, AD Harwood, H Li, KA Maruya, J Liu. *Integrated Environmental Assessment and Management* DOI 10.1002/iearn.1503.
- [Selecting the optimum plot size for a California design-based stream and wetland mapping program](#). 2013. LG Lackey, ED Stein. *Environmental Monitoring and Assessment* DOI 10.1007/s10661-013-3563-y.
- [Factors affecting the relationship between quantitative polymerase chain reaction \(qPCR\) and culture-based enumeration of *Enterococcus* in environmental waters](#). 2013. MR Raith, DL

Ebentier, Y Cao, JF Griffith, SB Weisberg. *Journal of Applied Microbiology* DOI 10.1111/jam.12383.

- [Does DNA barcoding improve performance of traditional stream bioassessment metrics?](#) 2013. ED [Stein](#), BP White, RD Mazor, JK Jackson, JM Battle, PE Miller, EM Pilgrim, BW Sweeney. *Freshwater Science* DOI 10.1086/674782.
- [Benchmarking organic micropollutants in wastewater, recycled water and drinking water with in vitro bioassays.](#) 2013. BI Escher, M Allinson, R Altenburger, PA Bain, P Balaguer, W Busch, J Crago, ND Denslow, E Dopp, K Hilscherova, AR Humpage, A Kumar, M Grimaldi, BS Jayasinghe, B Jarosova, A Jia, S Makarov, KA [Maruya](#), A Medvedev, AC Mehinto, JE Mendez, A Poulsen, E Prochazka, J Richard, A Schifferli, D Schlenk, S Scholz, F Shiraishi, S Snyder, G Su, JYM Tang, B van der Burg, SC van der Linden, I Werner, SD Westerheide, CKC Wong, M Yang, BHY Yeung, X Zhang, FDL Leusch. *Environmental Science & Technology* DOI 10.1021/es403899t.
- [Passive sampling methods for contaminated sediments: Practical guidance for selection, calibration, and implementation.](#) 2013. U Ghosh, SK Driscoll, RM Burgess, MTO Jonker, D Reible, F Gobas, Y Choi, SE Apitz, KA [Maruya](#), WR Gala, M Mortimer, C Beegan. *Integrated Environmental Assessment and Management* DOI 10.1002/iearn.1507.
- [The use of sediment toxicity identification evaluation methods to evaluate clean up targets in an urban estuary.](#) 2013. DJ [Greenstein](#), SM Bay, DL Young, S Asato, KA Maruya, W Lao. *Integrated Environmental Assessment and Management* DOI 10.1002/iearn.1512.
- [Comparison of four species-delimitation methods applied to a DNA barcode data set of insect larvae for use in routine bioassessment.](#) 2013. BP [White](#), EM Pilgrim, LM Boykin, ED Stein, RD Mazor. *Freshwater Science* DOI 10.1086/674982.
- [Cryptic biodiversity in streams: a comparison of macroinvertebrate communities based on morphological and DNA barcode identifications.](#) 2014. JK Jackson, JM Battle, BP [White](#), EM Pilgrim, ED Stein, PE Miller, BW Sweeney. *Freshwater Science* DOI 10.1086/675225.

Journal Articles — Accepted:

- Integrating intermittent streams into watershed assessments: Applicability of an index of biotic integrity. RD [Mazor](#), ED Stein, PR Ode, K Schiff. *Freshwater Science*.

Technical Reports:

- [The California microbial source identification manual: A tiered approach to identifying fecal pollution sources to beaches.](#) 2013. JF [Griffith](#), BA Layton, AB Boehm, PA Holden, JA Jay, C Hagedorn, CD McGee, SB Weisberg. Technical Report 804. Southern California Coastal Water Research Project. Costa Mesa, CA.

- [Sediment quality assessment technical support manual](#). 2013. SM [Bay](#), DJ Greenstein, JA Ranasinghe, DW Diehl, AE Fetscher. Technical Report 777. Southern California Coastal Water Research Project. Costa Mesa, CA.

Conference Presentations:

Society of Environmental Toxicology and Chemistry (SETAC) — November 2013

- [Amphipod microarray – Interlaboratory calibration project](#) — DE [Vidal-Dorsch](#), SM Bay, B Layton, S Moore, AC Mehinto, M Augustine, C Vulpe, H Poynton, L Escalon, N Garcia-Reyero, C Colli-Dula, N Denslow, J Bruno, L Brown
- [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, A Jia
- [Chiral pesticides: the names have changed but the song remains the same](#) — K [Maruya](#), W Lao, W Vetter
- [Correction for non-equilibrium measurement of hydrophobic organic chemicals using polyethylene passive samplers](#) — W [Lao](#), D Tsukada, K Maruya
- [Refining contaminant transport modeling at the Palos Verdes Shelf Superfund site using data from passive samplers](#) — L Fernandez, W [Lao](#), E Adams, K Maruya, R Burgess
- Comparing the profile of halogenated organic compounds in two ecotypes of Southern California bottlenose dolphins using non-targeted analysis — N Shaul, E Hoh, N [Dodder](#), K Maruya, L Aluwihare
- Relationship between sorption kinetics and hydrodynamic condition in passive sampling of hydrophobic organic chemicals with polyethylene film — W [Lao](#), D Tsukada, KA Maruya

Other Presentations:

- Eric [Stein](#) gave a presentation entitled “Tracking status and trends of California’s wetlands and streams” to the Central Valley Joint Venture Management Board at the Sacramento National Wildlife Refuge on November 14 in Willows, CA.
- Steve [Weisberg](#) gave a seminar about SCCWRP’s research directions on November 14 at the University of California, Irvine.
- Eric [Stein](#) co-facilitated the fourth hydromodification seminar and workshop on “Sediment management and modeling” in coordination with the Water Board Training Academy College of Stormwater on November 21 in Sacramento, CA.

- Steve [Steinberg](#) gave a presentation on the “West Coast Ocean Data Portal” to the Executive Committee of the West Coast Governor’s Alliance on Ocean Health on January 9 in Portland, OR.
- Meredith [Howard](#) presented a seminar entitled “The prevalence of cyanobacteria and cyanotoxins in Southern California water bodies” at the Malibu Creek Watershed Technical Advisory Group Meeting on January 16 in Calabasas, CA.
- Steve [Weisberg](#) gave a presentation on microbial source identification to the State Water Resources Control Board on January 21 in Sacramento, CA.
- Eric [Stein](#) presented a talk entitled “Stormwater quality and innovative management in Southern California” to the Rotary International Club on January 22 in Fullerton, CA.
- Karen [McLaughlin](#) presented a talk on “Ocean acidification changing the ocean’s chemistry” to the Coastal Coalition on January 23 in Newport Beach, CA.
- Shelly [Moore](#) gave a presentation on “Using science to make a difference” at the Ocean Discovery Institute on February 5 in San Diego, CA.
- Nathan [Dodder](#) presented an invited seminar entitled “Monitoring strategies for contaminants in marine ecosystems” at Babcock Laboratories on February 5 in Riverside, CA.

Professional Appointments:

- Keith [Maruya](#) was appointed as an editor for the journal *Chemosphere*.

Meetings & Workshops Held at SCCWRP:

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Nov 12	Southern California Association of Ichthyological Taxonomists and Ecologists	Diehl
Nov 12	Conductivity, Temperature, and Depth (CTD) Users’ Group	Orange County Sanitation District
Nov 12	Commission’s Technical Advisory Group (CTAG) – Publicly Owned Treatment Works (POTW) Subgroup	Weisberg
Nov 13	Beach Water Quality Work Group	Weisberg
Nov 18-21	West Coast Data Network - West Coast Governor’s Alliance on Ocean Health	Steinberg
Nov 18	Commission’s Technical Advisory Group	Weisberg

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Nov 21	Bight '13 Contaminant Impact Assessment	Schiff
Dec 2	Bight '13 Contaminant Impact Assessment: Benthic Committee	Gillett
Dec 3	Harbor Technical Workgroup — Total Maximum Daily Load Coordination for Ports of Los Angeles and Long Beach	Bay
Dec 3	Southern California Stormwater Monitoring Coalition – Regional Watershed Monitoring Committee	Mazor
Dec 4	Bight '13 Nutrients — Acidification Subcommittee	McLaughlin
Dec 4	Southern California Wetland Recovery Project Wetland Managers Group	Solek
Dec 5	Southern California Association of Ichthyological Taxonomists and Ecologists	Diehl
Dec 6	SCCWRP Commission	Schiff
Dec 6	Statewide CEC Monitoring Prioritization Pilot Study	Maruya
Dec 10-11	Workshop: “Modeling in Support of Coastal Hypoxia, Acidification and Nutrient Management in the California Current Ecosystem”	Sutula
Dec 12	Newport Bay Conservancy	Stein
Dec 13	Seminar: Dr. Sergey Nuzhdin — “Geographical genomics in mosquitos and legumes”	Weisberg
Dec 16	Southern California Association of Ichthyological Taxonomists and Ecologists	Diehl
Dec 18	Bight '13 Contaminant Impact Assessment: Toxicology Committee	Bay
Jan 10	Predictive Beach Water Quality Models for the California Coast	Stanford University
Jan 21	Beneficial Use Study to Examine Relationships Between Water Quality, Benthic Macroinvertebrate, and Vertebrate (Amphibian) Monitoring Data	US Geological Survey
Jan 22	Bight '13 Contaminant Impact Assessment: Trawl Committee	Schiff

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Jan 23	Harbor Technical Workgroup — Sediment Quality Objectives Compliance for Ports of Los Angeles and Long Beach	Bay
Jan 23-24	Bioanalytical Techniques for Screening Emerging Contaminants in Recycled Water (Cross-Project with WateReuse Foundation)	Maruya
Jan 30	Bight '13 Marine Protected Areas/Rocky Reef	Schiff
Jan 30	Biological Health of Streams	Heal the Bay
Jan 30	Stormwater Monitoring Coalition: Alternative Compliance Planning	Stein
Feb 4	Southern California Wetland Recovery Project	Stein
Feb 5	Southern California Wetland Recovery Project Wetland Managers Group	Solek
Feb 5-7	SCCWRP Expert Review Panel	Weisberg

Upcoming Commission/CTAG Meetings and Seminars:

- SCCWRP will host the next [CTAG](#) meeting on Thursday, February 13 from 9:00 to 4:00.
- The next SCCWRP seminar on “Watershed management planning under the new MS4 permit” will be presented by Michael Drennan and Dr. Huub Cox on Friday, February 14 from 11:00 to 12:00.
- SCCWRP will host the next [Commission](#) meeting on Friday, March 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 [2013–2014 Research Plan](#).

Projects with significant activity this quarter:

[Bioanalytical Screening Tools](#)

[DNA Barcoding](#)

[Causal Modeling](#)

[Flow Criteria](#)

[Mobile Data Acquisition Technologies](#)

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

Update: Researchers worked with academic collaborators to prepare two manuscripts, one on the analysis of cetacean blubber samples and the second on the analysis of black skimmer eggs. Manuscript preparation will continue over the next quarter.

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: Processing continues for passive samplers from phase II of our Palos Verdes Shelf deployment (September 2013). Next, researchers will complete analysis of these samplers and plan for deployment of samplers pre-loaded with performance reference compounds (PRCs) in 2014.

Lead Investigator: [Maruya](#)

d. [Emerging Contaminant Prioritization](#)

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

Update: Researchers began validating protocols for analyzing sediment and fish tissue samples from Southern California watersheds for high priority CECs. SCCWRP will next begin processing and analyzing the sediment and fish tissue samples using these validated protocols. In addition, SCCWRP generated draft targeted and special study requirements for the State Water Board, which is developing a pilot statewide CEC monitoring plan. Next, SCCWRP will circulate draft statewide CEC pilot monitoring requirements for comment and review.

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: Moving along parallel paths, SCCWRP partnered with an Australian-led team of researchers funded by the WaterReuse Research Foundation last year to judge the efficacy of new bioanalytical screening tools. Their [second cross-project meeting](#) was held at SCCWRP on January 23-24 and included decision makers from the State Water Board, water districts, manufacturers, and contract laboratories. One outcome was that some bioanalytical screening tools are near-ready for the transition process from research to more routine CEC screening, while others still need further development. A second outcome was that SCCWRP will continue intercalibrations with Australian and other researchers to compare performance with target performance specifications identified at the cross-project meeting, which is part of the transition process.

Lead Investigator: [Maruya](#)

Highlight



Members of the California project team and Australian scientists from the WaterReuse Research Foundation met at SCCWRP January 23-24.

2. Toxicity Assessment

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: Results from the amphipod microarray interlaboratory study indicated good agreement among laboratories in identifying differentially expressed genes when using a threshold of more than two times change (relative to the control). Statistical analysis of the results continues, with a summary report to come out next quarter. Researchers completed laboratory analysis of 74 liver samples using a newly developed hornyhead turbot microarray. The samples came from recent field collections off Palos Verdes and Dana Point, plus a laboratory exposure to PBDEs and PCBs. Researchers will conduct statistical analysis to investigate differences in gene expression among the treatment groups over the next two quarters.

Lead Investigator: [Bay](#)

3. Biological Assessment

a. [Rocky Reefs](#)

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

Update: SCCWRP, in collaboration with the Ocean Science Trust and Occidental College, compiled regional rocky reef monitoring data from Bight '08 and the Marine Protected Area baseline monitoring program. These monitoring sites were overlaid with GIS layers quantifying fishing pressure and water quality. Sites with minimal fishing pressure and good water quality will constitute the biological expectation for unimpacted sites. Researchers will next begin ecosystem modeling to predict biological richness.

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: First, approximately 100 environmental DNA (eDNA) samples collected in the fall were extracted and amplified. It appears that eDNA might be a valuable tool for invasive species screening based on the 100% detection of New Zealand mud snail DNA in water column samples from sites known to be infested. Furthermore, stream spiking experiments with benign DNA were observed at least 300 meters downstream. Second, eDNA samples have been sent to research partners at the US EPA lab in Cincinnati and the University of Georgia for full community sequencing analysis. After comparing the list of species from sequencing analysis of water samples to whole organism species identifications collected from the same site, researchers will assess the feasibility of reconstructing the benthic invertebrate community composition from eDNA samples. Third, researchers finished preparing marine invertebrate samples for sequencing after various preservation techniques. The goal is to evaluate the optimum preservation method for minimizing interferences with sequencing analysis while maximizing integrity for later morphological examination. Fourth, sequencing was completed for the San Gabriel River pilot study to evaluate the effect of barcoding on bioassessment metric sensitivity. Researchers are now transitioning to the data analysis phase of this project.

Lead Investigator: [Stein](#)

c. [Cyanobacteria](#)

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

Update: Sea Grant funds for sample analysis just became available this quarter. Researchers will initiate analyses of samples from streams, lakes, and estuaries next quarter.

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, SCCWRP completed fieldwork for the season and is working on analyzing the performance of proposed arid stream indicators. This work will continue over the next quarter. For the nonperennial streams project, SCCWRP staff continued to analyze flow data from pressure transducers recovered last quarter. In addition, staff initiated site reconnaissance for the 2014 sampling season, which target a range of streams along an infiltration/evapotranspiration gradient. Collaborators at California State University, Northridge are working on models to predict the

Highlight

likelihood of a stream being perennial. They have set up several GIS models for predicting stream flow, and are working on testing the performance of the various 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 conducted a laboratory intercalibration exercise designed to gauge the effectiveness of the qPCR training held last quarter. Next quarter, most of these laboratories will begin analyzing samples collected as part of the Bight '13 microbiology effort.

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 completed a [source identification manual](#) summarizing work over the past three. The manual concept, which focuses on a tiered approach with ever increasingly complexity and cost, was presented to the State Water Resources Control Board (SWRCB) in January. The SWRCB adopted the manual to fulfill its mandate for AB 538. Next, the research team will submit individual reports detailing the results of source identification studies from Doheny State Beach, Topanga State Beach, Arroyo Burro Beach, and Cowell Beach on which the manual was developed.

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: SCCWRP kicked off a pilot study this winter to assess the feasibility and need for a larger, more rigorous study. The study team created a work plan, which the project Advisory Committee approved. The Human Subjects Review Committee also approved the study instrument. The pilot effort will enroll at least 200 surfers between January 15 and February 28, and track their health weekly for up to three months using a smart phone app. The pilot study targets two sentinel beaches: Ocean Beach and Tourmaline Surfing Park in San Diego. Daily water quality samples collected at the sentinel beaches will be analyzed for fecal indicator bacteria and microbial source tracking markers of human contamination. More information, including downloading the app, can be found at the [study website](#).

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: Data analysis for the spring 2013 data and planning for the spring 2014 field season continues.

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

Update: Researchers put the finishing touches on a manuscript for *Limnology and Oceanography* describing the status and trends in quarterly discharger dissolved oxygen data. Researchers also continued work on a review paper synthesizing hypoxia data in upwelling-dominated systems.

Lead Investigator: [Sutula](#)

c. [Ocean Acidification](#)

Purpose: Improve ocean acidification monitoring capacity for the US West Coast

Update: SCCWRP researchers are presently working through the California Current Acidification Network (C-CAN) to develop how-to manuals that will help standardize acidification monitoring practices. As part of that effort, SCCWRP is analyzing data from an intercalibration study of Durafet pH sensors to help develop a best practices manual. Researchers are also working with the Bight '13 offshore water quality team to begin adoption of improved acidification monitoring practices among the SCCWRP member agencies.

Lead Investigator: [McLaughlin](#)

Highlight

d. [Causal Modeling](#)

Purpose: Evaluate the relative roles of anthropogenic and natural oceanographic nutrient input sources on hypoxia and acidification in Southern California

Update: SCCWRP hosted a 2-day modeling workshop on December 10-11. The goal of the workshop was 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. Over 40 leading scientists and modelers participated. The experts concluded that modeling to address such questions is feasible and suggested several next steps to achieve that. The workshop report is expected next quarter.

Lead Investigator: [Sutula](#)



A breakout group at the workshop “Modeling in support of coastal hypoxia, acidification, and nutrient management in the California Current ecosystem”

B. TECHNICAL SUPPORT FOR MANAGEMENT/REGULATORY PROGRAMS

1. Nutrient Objectives

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

Purpose: Provide 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 completed a report summarizing analysis to identify thresholds in the relationship between nutrients, algal biomass, and indicators of aquatic life use (benthic invertebrate and algal community composition). The report will undergo Environmental Protection Agency peer review before submission for stakeholder review. In a separate project on the Santa Margarita River, sampling is being initiated 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: Researchers have begun preparing a manuscript based on the results of field experiments quantifying the effect of macroalgae on seagrass. In addition, researchers worked on the San Francisco Bay nutrient numeric endpoints (NNE) assessment framework, which will continue over the next six months with a series of expert workshops. The first workshop is planned for February 11-12, 2014. Fieldwork continues to document the natural background levels of dissolved oxygen, macroalgae, and phytoplankton in bar-built estuaries, which are estuaries closed to the ocean by sandbars 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: First, the Harbor Technical Workgroup (HTWG) met December 3 and January 23. At these meetings, the HTWG reviewed upcoming studies to quantify the load of contaminants into Los Angeles/Long Beach Harbor and discussed approaches for using the SQO assessment frameworks for TMDL compliance. Second, research is progressing on applying the preliminary human health SQO assessment framework to bays throughout California. Data from multiple sources have been compiled, screened, and standardized to facilitate integration. Preliminary data analysis tools have also been developed to facilitate more efficient application of the Tier I and Tier II frameworks.

Lead Investigator: [Bay](#)

3. [Flow Criteria](#)

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

Update: The project work plan was completed over the last quarter and will be presented during the first project advisory group meeting in early March. Research partners from USGS have completed the

first phase of the stream classification task and will provide that information to SCCWRP partners at Colorado State University for the first phase of the flow analysis. In addition, the project team is working on selecting and reconnoitering candidate sites for sampling in 2014. This sampling will target sites with long-term flow data, but without corresponding bioassessment data.

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 teamed with UC Irvine and researchers from The Centre for Aquatic Pollution Identification and Management (CAPIM) in Melbourne, Australia to develop a decision support tool optimizing water resource management in the Jackson Creek Watershed, Australia. A draft work plan was developed to describe the collaborative project and is currently under review by team members. Definition of the conceptual model underlying the framework will begin next quarter.

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 began the process of estuarine model setup and parameterization. This work will continue into the next quarter.

Lead Investigator: [Sengupta](#)

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: Analysis of chemistry, toxicity, and infauna from nearly 400 sites for the Contaminant Impact Assessment (CIA) element is currently underway. Researchers in the second element, Trash and Debris, are dissecting over 1,000 fish collected during CIA trawl sampling to analyze plastic ingestion. The third element, Microbiology, will continue sampling through this summer. The fourth element, Marine Protected Areas, continues quantifying indices of fishing pressure and water quality based on data

collected between 2004 and 2012 (see project [Rocky Reefs](#)). The last element, Nutrients, is finalizing plans to begin fieldwork this spring.

Lead Investigator: [Schiff](#)

b. [Pollutant Sources Data Cataloguing](#)

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 as well as monitoring data from smaller point source discharges.

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 researchers helped each of the 14 ASBS water bond grantees develop their field monitoring programs to ensure data quality and comparability. As the grantees complete monitoring activities, SCCWRP is compiling data to assess load reductions from bond-funded improvements. In addition, SCCWRP has coordinated sampling at about 40 reference sites throughout Southern, Central, and Northern California. These sites will serve as the backbone for translating narrative Ocean Plan objectives into numerical guidelines for ASBS water quality evaluations.

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: Chemistry, toxicity, and biological community sample processing and data analyses are underway after the fifth field season of the SMC regional stream monitoring program concluded. Planning for the upcoming sampling season will include a special study focused on non-perennial streams.

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: Sampling for the third year of wet and dry weather monitoring in reference streams for nutrients, metals, and bacteria will continue over the next two quarters. The beach bacteria study was delayed and will begin next 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 completed field sampling and initiated data analysis. Reporting will begin next quarter.

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: Over the past quarter, the project team has been working on an inter-mapper variability exercise that will determine expected (and acceptable) levels of variability due to interpretation by individual mapping teams. The results of this analysis will be used to establish data quality objectives for the ultimate mapping protocols and standard operating procedures (SOPs).

Lead Investigator: [Stein](#)

b. Depressional Wetlands

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

Update: Assessments of the 2013 sites using the California Rapid Assessment Method (CRAM) were completed this quarter. Analyses are underway to evaluate relationships between CRAM data (combined with data from the previous two years of the study) and landscape-scale disturbances. Taxonomic identification of benthic invertebrates and diatoms from dozens of depressional wetlands is in progress, and will be completed during the next quarter. As part of the effort to help develop a statewide monitoring strategy for assessing depressional wetlands in California, SCCWRP researchers have prepared a draft Standard Operating Procedures (SOP) for application of field methods in depressional wetlands. The Surface Water Ambient Monitoring Program (SWAMP) review panel is currently examining this document for inclusion as an official SWAMP SOP. SCCWRP has also been 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 has completed the first draft report for the project, which will be reviewed by the project's Technical Advisory Committee during the next quarter. For the regional t-sheet mapping, the map attribution system and crosswalk between historic and contemporary mapping has been completed. The regional geodatabase has been updated with these historic t-sheets. The project team is currently analyzing historical patterns, change assessment, and type conversion patterns. Once completed, the t-sheet website will be updated with the new and more comprehensive results.

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 has successfully deployed a new mobile application for Android (Galaxy) and iOS (iPhone) as part of the wet-weather epidemiology pilot study in San Diego County. The app is being used by field staff to enroll surfers in the study and, subsequently, by the enrolled participants to submit personal information on water exposure and health symptoms on a weekly basis for up to three months.

Lead Investigator: [Steinberg](#)

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 continues to implement recently developed quality assurance data checkers and to receive data submissions as CEDEN's Southern California Regional Data Center.

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

Highlight

Update: Collaborating with staff at the California Department of Public Health, a mockup of the new “Safe to Drink” data portal was presented to the California Water Quality Monitoring Council. The portal will be finalized for release later this spring or in early summer. In December, SCCWRP researchers participated in a workshop at the Tijuana River Estuary to continue discussing approaches to visualizing wetland restoration scenarios in the Tijuana River Valley.

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: SCCWRP continues to work with the Bight '13 technical working groups to evaluate and agree upon data quality objectives for biological sampling, such as trawl-caught fish or benthic infauna. Results from Bight '13 will be used to assess the success using these data quality objectives.

Lead Investigator: [Schiff](#)

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: Manuscript preparation is underway. The results from this project will be published in a special issue of *Estuarine, Coastal and Shelf Science*.

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: Researchers facilitated a stakeholder meeting January 27 to gain final consensus on project conclusions. After working with watershed stakeholders to identify monitoring questions, inventory monitoring effort, and assess current monitoring design effectiveness, SCCWRP has been analyzing historical data to increase monitoring efficiency. While several elements of the existing monitoring design performed well, stakeholders agreed to a focus on improving trend detection.

Lead Investigator: [Schiff](#)

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: SCCWRP researchers continue to work with the member agencies on two manuscripts that describe work from this project. The first manuscript captures the rationale for using CDOM to identify the location of plumes. The second manuscript details development of the assessment algorithm for dissolved oxygen assessments. SCCWRP researchers also provided the member agencies a compiled version of MATLAB code that runs the plume detection algorithm.

Primary Investigator: [Weisberg](#)