Southern California Coastal Water Research Project Authority

Quarterly Director's Report
To the SCCWRP Commission

February 2013

(Detailing activities October 26, 2012 - January 30, 2013)

Stephen B. Weisberg
Executive Director

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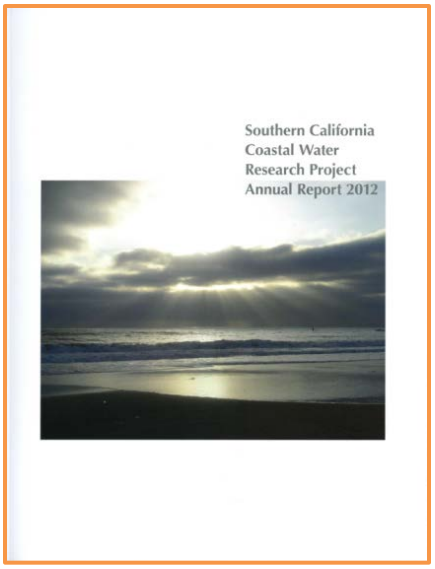
HIGHLIGHTS

News:

2012 SCCWRP Annual Report released



The 2012 SCCWRP Annual Report was released on January 24. It is a compendium of 25 scientific articles detailing SCCWRP research activities over the past year. The articles are arranged into four main areas: chemistry, physical habitat, biology and microbiology. Hard copies will be mailed out to several hundred individuals at SCCWRP's partner organizations in early February, and articles are also available electronically on the SCCWRP website. To be added to the SCCWRP Annual Report mailing list, please send your name and mailing address to Angelica Bajza.

SETAC Pellston Workshop on passive samplers hosted by SCCWRP

SCCWRP hosted a workshop November 7-9 in conjunction with the Society of Environmental Toxicology and Chemistry (SETAC). The event invited top experts from around the world to develop guidance on obtaining bioavailability measurements for management of contaminated sediments using passive sampling devices (PSDs). The outcomes will be documented through five manuscripts in a dedicated section of the society's journal. Pellston Workshops have been held regularly since 1977 to evaluate current and prospective environmental issues and produce comprehensive, state-of-the-science reviews for use by environmental scientists, engineers, regulators, and managers. For more information on the workshop, please contact Dr. Keith Maruya.

Photo credit: Bruce Bealer

New SCCWRP fact sheet on harmful algal blooms (HABs)

SCCWRP released its fifth in a series of fact sheets on topics of interest to coastal environment managers in southern California. The most recent features general information about harmful algal blooms (HABs) and activities SCCWRP is engaged in to investigate and monitor HABs. All SCCWRP fact sheets are available electronically and printed copies can be requested by contacting Karen Setty. For more information on HABs, please contact Dr. Meredith Howard.

Photo credit: John Griffith

State-of-the-science workshop on microbial source identification (MST)

SCCWRP visiting scientist Dr. Chuck Hagedorn organized a state-of -the-science workshop November 28-29 on MST tools, their current potential uses, and needs for further development. Managers and experts from around the country discussed (a) the scientific foundation for determining and interpreting sources of fecal contamination, and (b) scientific uncertainties associated with potential source evaluation at beaches with non-human fecal contamination sources. Presentations and the meeting summary are available on SCCWRP's website. For more information, please contact Dr. Steve Weisberg.

Conference on sea level rise held at SCCWRP

A conference jointly sponsored by the California Ocean Protection Council, Tijuana River National Estuarine Research Reserve, University of Southern California Sea Grant, and the West Coast Governors Alliance on Ocean Health was held December 19 at SCCWRP. Entitled "Beyond Bathtub: Modeling and Responding to Sea Level Rise and Shoreline Change," it brought together scientists and managers to discuss how modeling can be applied to understand the impacts associated with shoreline change. It also included an update from the National Research Council and state and federal climate change adaptation guidance. For more information, please contact Sarah Flores of the Ocean Protection Council.

Photo credit: Ben Ferraro

SCCWRP Symposium draws in staff from member agencies

The 6th annual SCCWRP Symposium was held on January 24. This invitation-only event brings together staff from SCCWRP's 14 member agencies to hear about current research topics, interact with each other, and meet SCCWRP scientists. This year's Symposium featured 25 brief presentations and three longer demonstrations on topics such as bioassessment tools, nutrient biogeochemistry, pathogen tracking, and emerging contaminants. More information about the Symposium is available by contacting Karen Setty.

SCCWRP Scenes:

Photo credit: Bruce Bealer

SCCWRP Commissioner Bob Ghirelli from the Orange County Sanitation District describes how SCCWRP interacts with its member agencies at the 6th annual SCCWRP Symposium on January 24.

PEOPLE

Honors and Awards:

- Steve Weisberg and Ken Schiff received the US Department of the Interior Partners in Conservation Award for SCCWRP's role in coordinating the Multi-Agency Rocky Intertidal Network (MARINe).

Personnel:

- Alvina Mehinto will begin February 1 as a scientist in the Toxicology Department. Dr. Mehinto recently finished a postdoctoral position at the University of Florida.

Mehinto

Commission:

- Diego Cadena has left the Los Angeles County Department of Public Works. His replacement as their Alternate Commissioner has yet to be named.

Commission's Technical Advisory Group:

- Nothing to report

Spotlight on Staff:

Marlene Merchain - Database Programmer/Analyst

Marlene Merchain is a Database Programmer and Analyst in SCCWRP's Information Management and Analysis Department. Her primary focus is managing the Southern California Regional Data Center, one of four regional arms of the state's California Environmental Data Exchange Network (CEDEN). Since joining SCCWRP in March 2010, her other roles include processing data requests, assisting with the Bight '13 Information Management Planning Committee, and planning and implementing internal database structures.

Marlene was born and raised in East Los Angeles, California. She first developed an interest in math at the age of 7 while playing coin-counting and multiplication games with her grandfather (and watching episodes of Bonanza and The Rifleman). She naturally excelled in math at school and began taking advanced courses in middle school, continuing into high school. Indulging her passion for the subject, she entered Chapman University's mathematics program for 2 ½ years, and then transferred to California Lutheran University (CLU) in Thousand Oaks, California to pursue a dynamic regimen of courses. As an undergraduate, Marlene also participated in CLU's fast-pitch softball program earning Second Team All-Conference Honors and Third Team All-Region Honors as a catcher. While still in school, Marlene served as the Database Programmer and Database Administrator for an environmental laboratory part time. She graduated in 2005 and received her BS in math with an emphasis in combinatorics. She then continued her consulting position full time (over 7 years in total) before making SCCWRP her new home.

On working at SCCWRP, she says "There's no better feeling than knowing someone has your back. Everyone in the organization works together toward a common goal." Marlene's enthusiasm resonates through the hallways and in her work, and she is also well-known for her holiday spirit. She loves working with a team that is as eager as she is to accomplish the task at hand.

Marlene currently resides in Huntington Beach with her fiancé Richard and their two frisky special-needs Huskies (Lancer is blind and Winter is deaf). She returns often to LA to visit her mother Helen and her grandmother Rose. In her free time she enjoys urban mushing (dog sledding on wheels), playing slow-pitch softball, hot yoga, running, arts & crafts, cooking, watching baseball and football, and planning her upcoming nuptials.

For more information on Merchain and her work, please visit:
http://www.sccwrp.org/AboutSCCWRP/SCCWRPStaff/MerchainMarlene.aspx.

Spotlight on Partners:

Dr. Larry Crowder – Center for Ocean Solutions

Dr. Larry Crowder is the Science Director at the Center for Ocean Solutions (COS) in Monterey, California – a partnership of Stanford University, the Monterey Bay Aquarium, and the Monterey Bay Aquarium Research Institute. His main responsibilities include engaging scientists in a collaborative network and serving as a "catalyst" to solve ocean challenges, both by developing new knowledge and translating this knowledge to policy actions. In addition to his position at COS, Dr. Crowder is a Professor of Biology at Stanford's Hopkins Marine Station. His teaching and research activities focus on marine conservation and fisheries.

Larry grew up in Fresno, California and attended CSU Fresno as an undergrad, double-majoring in biology and math. He then attended graduate school in zoology at Michigan State University and completed a postdoc at the University of Wisconsin. Seeking warmer temperatures, he took his first faculty position at North Carolina State University. Crowder next moved to Duke University, where he is still an adjunct professor. He enjoys teaching and creating new courses and received Duke's Scholar/Teacher Of The Year Award in 2008-2009. He and his wife, also a California native, always imagined they would return to the West Coast, and Crowder joined Stanford University in 2011. He has been working with COS, a relatively new organization, for the last couple years.

Crowder first learned about SCCWRP when Director Steve Weisberg visited Monterey and their lunch meeting stretched into a three-hour session with sparks flying and ideas bouncing off the walls. The collaboration is natural as he says "COS is solving problems in the real world and so is SCCWRP." Crowder is currently working with Weisberg and Dr. Martha Sutula on a working group to determine the causes of ocean hypoxia and how to address it. The main question is whether natural or human forces and reducing oxygen levels in the region. The working group has documented recent declines in oxygen that could be driven by the shoaling of the deep oxygen-minimum layer or by landside nutrient inputs. The group is also exploring how these changes might affect the nearshore zone where sensitive organisms like abalone reside.

Larry and his wife currently live south of Monterey on a mountain in the Carmel Valley, where they can see a little slice of the ocean and recently observed California condors flying overhead. (As an environmental scientist, he is glad to remember a few success stories.) The couple has three adult children and will celebrate their 40th anniversary in April. Larry's hobby is restoring antique furniture and cars, including a 1933 Plymouth Coupe, 1949 Dodge Coronet, and a patched together "Franken-truck."

Spotlight on Commissioners:

Grace Chan – Sanitation Districts of Los Angeles County

Grace Robinson Chan, P.E., is the Chief Engineer and General Manager for the Sanitation Districts of Los Angeles County (LACSD). She was appointed to the position and began serving on the SCCWRP Commission in early 2012. LACSD provides solid waste and wastewater management services to more than five million people throughout the LA metropolitan region and is widely recognized for its progressive and innovative programs such as green energy production and water recycling. In addition to overseeing LACSD's seven departments, Chan serves on the Boards for the Puente Hills Native Habitat Authority, the Inland Empire Regional Composting Authority, and the Commerce Refuse-to-Energy Authority, as well as the Santa Monica Bay Restoration Commission and the Los Angeles County Integrated Waste Management Task Force.

Chan was born and raised in Longview, Texas. She attended the University of Texas at Austin, earning a Bachelor of Science in Civil Engineering. After taking an introductory course to Environmental Engineering during her undergraduate years, she became very interested in the field and continued on to earn a Master's Degree from the University of North Carolina at Chapel Hill. Attracted to the idea of a public sector career, she began working at LACSD shortly after graduation. In her nearly 30-year tenure, Grace has worked in different areas of solid waste management (research, operations, and planning) and wastewater management (operations). She helped manage the re-permitting of Puente Hills Landfill, one of the largest landfills in the US. She also managed the operation of ten water reclamation facilities throughout Los Angeles County, including the San Jose Creek Water Reclamation Plant, which treats approximately 100 million gallons of wastewater daily and reuses about 35 million gallons.

Since joining the SCCWRP Commission, Grace has enjoyed getting to know her fellow Commissioners and learning more about the history and work of SCCWRP. Though she says she still has "much more to absorb," she finds the research fascinating. LACSD is collaborating with SCCWRP on several efforts including developing molecular tools for toxicity identification evaluation and testing autonomous underwater vehicles for ocean monitoring. She still finds the public service aspect of her work most satisfying, and observes that the economic challenges in recent years have brought about difficult but overall positive changes in public sector work. As an agency that represents 78 cities and unincorporated county areas, each facing their own significant concerns, LACSD has a clear task of providing services in the most environmentally friendly and cost-effective manner.

Grace's personal interests are reading, cooking, and spending time with her family (including two wonderful grandchildren!). In the future she hopes to do some travelling, both in the US and overseas.

COMMUNICATIONS

Journal Articles - Published:

- Metals and bacteria partitioning to various size particles in Ballona Creek storm water runoff. 2013. JS Brown, ED Stein, D Ackerman, JH Dorsey, J Lyon, PM Carters. *Environmental Toxicology and Chemistry* 32:320-328.

- Determining the impacts of contaminants of emerging concern in marine ecosystems. 2012. SM Bay, DE Vidal-Dorsch. *Environmental Toxicology and Chemistry* 31:2672-2673.

- Integrated coastal effects study: synthesis of findings. SM Bay, DE Vidal-Dorsch, D Schlenk, KM Kelley, KA Maruya, JR Gully. *Environmental Toxicology and Chemistry* 31:2711-2722.

- Regional assessment of marine and estuarine sediment toxicity in Southern California, USA. 2013. D Greenstein, S Bay, M Jacobe, C Barton, K Sakamoto, D Young, K Ritter, K Schiff. *Environmental Monitoring and Assessment* 185:2055-2065.

- Evaluation of reproductive endocrine status in hornyhead turbot sampled from southern California's urbanized coastal environments. 2012. JA Reyes, DE Vidal-Dorsch, D Schlenk, SM Bay, JL Armstrong, JR Gully, C Cash, M Baker, TD Stebbins, G Hardiman, KM Kelley. *Environmental Toxicology and Chemistry* 31:2689-2700.

- Annual and seasonal evaluation of reproductive status of hornyhead turbot at municipal wastewater outfalls in the Southern California Bight. 2012. KL Forsgren, SM Bay, DE Vidal-Dorsch, X Deng, G Lu, J Armstrong, JR Gully, D Schlenk. *Environmental Toxicology and Chemistry* 31:2701-2710.

- Contaminants of emerging concern in municipal wastewater effluents and marine receiving water. 2012. DE Vidal-Dorsch, SM Bay, K Maruya, SA Snyder, RA Trenholm, BJ Vanderford. *Environmental Toxicology and Chemistry* 31:2674-2682.

- Effect of platform, reference material, and quantification model on enumeration of Enterococcus by quantitative PCR methods. 2013. Y Cao, M Sivaganesan, J Kinzelman, AD Blackwood, RT Noble, RA Haugland, JF Griffith, SB Weisberg. *Water Research* 47:233-241.

- Evaluating ethanol-based sample preservation to facilitate use of DNA barcoding in routine freshwater biomonitoring programs using benthic macroinvertebrates. 2013. ED Stein, BP White, RD Mazor, PE Miller, EM Pilgrim. *PLoS ONE* 8: e51273.

- A framework for evaluating regional hydrologic sensitivity to climate change using archetypal watershed modeling. 2012. SR Lopez, TS Hogue, ED Stein. *Hydrology and Earth System Sciences Discussions* 9:13729-13771.

- The effect of co-occurring polychlorinated biphenyls on quantitation of toxaphene in fish tissue samples by gas chromatography negative ion mass spectrometry. 2012. W Lao, D Tsukada, KA Maruya. *Journal of Chromatography A* 1270:262-268.

- Oceanic pollution. 2012. SB Weisberg, KE Setty. pp. 133-154 in: R.H. Friis (ed.), *The Praeger Handbook of Environmental Health*. Volume 1, Foundations of the Field. ABC-CLIO, LLC. Santa Barbara, CA.

- Descriptive trends in SCB demersal fish assemblages since 1994. 2012. EF Miller, K Schiff. *CalCOFI Reports* 53:107-131.

- Passive sampling to measure baseline dissolved persistent organic pollutant concentrations in the water column of the Palos Verdes shelf superfund site. 2012. LA Fernandez, W Lao, KA Maruya, C White, RM Burgess. *Environmental Science & Technology* 46:11937-11947.

- A two-component mass balance model for calibration of solid-phase microextraction fibers for pyrethroids in seawater. 2012. W Lao, KA Maruya, D Tsukada. *Analytical Chemistry* 84:9362-9369.

- Stormwater contaminant loading following southern California wildfires. 2012. ED Stein, JS Brown, TS Hogue, MP Burke, A Kinoshita. *Environmental Toxicology and Chemistry* 31:2625-2638.

- Mesoscale eddies and variability of chlorophyll-a in the Sea of Oman. 2012. SA Piontkovski, NP Nezlin, A Al-Azri, K Al-Hashmi. *International Journal of Remote Sensing* 33:5341-5346.

- Correlation between quantitative polymerase chain reaction and culture-based methods for measuring Enterococcus over various temporal scales and three California marine beaches. 2012. RR Converse, JF Griffith, RT Noble, RA Haugland, K Schiff, SB Weisberg. *Applied and Environmental Microbiology* 78:1237-1242.

Journal Articles - Published Online:

- Metals and bacteria partitioning to various size particles in Ballona Creek stormwater runoff. JS Brown, ED Stein, D Ackerman, JH Dorsey, J Lyon, and PM Carter. *Environmental Toxicology and Chemistry.*

- Seasonal and annual dynamics of harmful algae and algal toxins revealed through weekly monitoring at two coastal ocean sites off southern California, USA. E Seubert, AG Gellene, MDA Howard, P Connell, M Ragan, BH Jones, J Runyan, DA Caron. *Environmental Science and Pollution Research*.

Journal Articles - Accepted:

- Reach-scale geomorphic and biological effects of localized stream bank armoring. ED Stein, MR Cover, AE Fetscher, C O'Reilly, R Guardado, CW Solek. *Journal of the American Water Resources Association.*

- The salinity transition zone between the southern Everglades and Florida Bay System functioning and implications for management. J Day, F Sklar, J Cable, D, Childers, C Coronado-Molina, S Davis, S Kelly, C Madden, B Perez, E Reyes, D Rudnick, M Sutula. pp. 1-24. *in:* J Day and A Yanez (eds), *Ecosystem-Based Management, Volume 4. Gulf of Mexico Origin, Waters, and Biota*. Texas A&M University Press, College Station, TX.

- Performance of forty-three microbial source tracking methods: A twenty-seven lab evaluation study. AB Boehm, L Van De Werfhorst J Griffith, P Holden, J Jay, O Shanks, D Wang, S Weisberg. *Water Research*.

- Evaluation of the repeatability and reproducibility of a suite of qPCR-based microbial source tracking methods. DL Ebentier, KT Hanley, Y Cao, BD Badgley, AB Boehm, JS Ervin, KD Goodwin, M Gourmelon, JF Grffith, PA Holden, CA Kelty, S Lozach, C McGee, LA Peed, M Raith, H Ryu, MJ Sadowsky, EA Scott, JS Domingo, CD Sinigalliano, OC Shanks, LC Van De Werfhorst, D Wang, S Wuertz, JA Jay. *Water Research*.

Technical Reports:

- Southern California Bight 2008 Regional Monitoring Program: VIII. Estuarine Eutrophication. 2012. K McLaughlin, M Sutula, L Busse, S Anderson, J Crooks, R Dagit, D Gibson, K Johnston, N Nezlin, L Stratton. Technical Report 711. Southern California Coastal Water Research Project. Costa Mesa, CA.

Conference Presentations:

California Aquatic Bioassessment Workgroup Meeting - November 2012

- Probability-based mapping program for assessing status and trends of streams and wetlands - E Stein

- Assessment scoring tools: The new California Stream Condition Index - R Mazor

- Causal assessments in California: Concepts, case studies, and a vision for its future application - D Gillett

CASQA Conference: Solving the Stormwater Compliance Puzzle - November 2012

- Using algae for bioassessment of California wadeable streams - B Fetscher

- Historical analysis as a tool to inform watershed-based stormwater management - ED Stein and S Dark
- Incorporating nonperennial and ephemeral streams in bioassessment programs - R Mazor, C Solek, E Stein, and P Ode
- The prevalence of cyanobacteria and cyanotoxins in southern California waterbodies - MDA Howard, R Kudela, M Sutula, E Stein, L Busse, D Greenstein, S Bay, and T Magrann
- Has the Clean Water Act been successful? A 40-year retrospective analysis of the southern California coastal ocean - K Setty, C Crompton, and B Posthumus
- Riverine nutrient inputs and extent of estuarine eutrophication in the Southern California Bight - K McLaughlin, M Sutula, L Busse, S Anderson, S Birosik, R Dagit, J Crooks, D Gibson, K Johnston, L Stratton

Society of Environmental Toxicology and Chemistry (SETAC) Annual Meeting - November 2012

- Short course: Using multiple lines of evidence for sediment quality assessment in regulatory programs – S Bay, D Greenstein
- Changes over the past four decades in fishability and ecosystem health in the southern California coastal ocean - K Setty
- Effects of southern California wildfires on storm water contaminant runoff - ED Stein, J Brown, TS Hogue, and MP Burke
- Development of interagency partnerships for wetland monitoring and assessment: Lessons learned from ten years of program development and implementation in California - ED Stein and J Collins
- Linkage between laboratory and field exposures of low-density polyethylene film as passive sampler in seawater - W Lao, D Tsukada, and K Maruya
- The prevalence of cyanobacteria and cyanotoxins in southern California waterbodies - MDA Howard, R Kudela, M Sutula, E Stein, L Busse, D Greenstein, S Bay, and T Magrann
- Toxicogenomic approach to determine contaminant exposure using hornyhead turbot (*Pleuronichthys verticalis*) - DE Vidal-Dorsch, SM Bay, M Brown-Augustine, and C Vulpe
- Gene expression of fathead minnows exposed to municipal wastewater effluents - DE Vidal-Dorsch, SM Bay, DJ Greenstein, CR Colli-Dula, L Wiborg, D Petschauer, and N Denslow
- Occurrence of CECs in bivalve tissues from the California Mussel Watch pilot study - N Dodder, K Maruya, S Klosterhaus, R Grace, J Ramirez, M La Guardia, L Ferguson, K Kimbrough, G Lauenstein, and D Gregorio

- A non-targeted GC×GC/TOF-MS method, data analysis tools, and data reporting system for the advancement of environmental monitoring - E Hoh, N Dodder, and K Maruya
- Using macrobenthic community structure to identify stressors in Southern California estuaries, bay, and harbors - D Gillett
- Incorporating non-perennial streams into bioassessment programs – R Mazor, E Stein
- Polyethylene-water partition coefficients for in situ passive sampling of contaminants of emerging concern in Santa Monica Bay and Los Angeles Harbor – AS Joyce, MS Pirogovsky, W Lao, JF Haw, RG Adams, KA Maruya
- Occurrence of contaminants of emerging concern in coastal California waters using passive sampling devices – DA Alvarez, K Maruya, N Dodder, E Furlong, K Smalling, W Lao
- Using two types of passive samplers to measure dissolved persistent organic pollutants in the water column of the Palos Verdes Shelf Superfund site – LA Fernandez, W Lao, KA Maruya, C White, RM Burgess
- Measuring sediment porewater organochlorine concentration gradients on the Palos Verdes Shelf using passive samplers – LA Fernandez, W Lao, KA Maruya, C White, RM Burgess
- Prioritizing chemicals of emerging concern for monitoring in recycled waters in California – P Anderson, K Maruya, N Denslow, J Drewes, A Olivieri, G Scott, D Schlenk, S Snyder
- California Science Advisory Panel recommendations for CEC monitoring in receiving waters – D Schlenk, K Maruya, P Anderson, N Denslow, J Drewes, A Olivieri, G Scott, S Snyder
- Contaminants of emerging concern early warning network: regional expansion of National Centers for Coastal Ocean Science Mussel Watch Program – K Kimbrough, G Lauenstein, J Christensen, N Dodder, K Maruya, S Weisberg, D Alvarez, E Furlong, S Klosterhaus, D Gregorio
- Occurrence and fate of chemicals of emerging concern (CECs) in an effluent dominated river in southern California – A Sengupta, M Lyons, D Smith, A Heil, D Heil, J Drewes, S Snyder, K Maruya
- Determination of pharmaceuticals in near-shore marine sediment samples from the southern California Bight – E Furlong, S Werner, A Pait, M Choi, K Maruya, H Choi
- Developing bioanalytical techniques to address water quality – N Denslow, P Anderson, J Drewes, A Olivieri, G Scott, D Schlenk, S Snyder, S Westerheide, K Maruya
- Development of stable isotope based methods to predict bioavailability of hydrophobic organic contaminants – J Gan, D Schlenk, W Lao, K Maruya

- The role of non-targeted analysis in the evaluation of CECs – S Snyder, P Anderson, N Denslow, J Drewes, A Olivieri, G Scott, D Schlenk, K Maruya

- Development of standardized methods for assessing antibiotic resistance risks – G Scott, M Fulton, J Moore, S Norman, M Uyaguari, N Denslow, D Schlenk, K Maruya

- Comparing the fingerprint 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

Other Presentations:

- Martha Sutula gave a presentation on "Quantifying the effect of anthropogenic nutrients on hypoxia and acidification" to the Southern California Coastal Ocean Observing System Governing Board Meeting on November 8 in San Diego, CA.

- Steve Bay conducted a workshop on "Causes of sediment toxicity in California marine waters" on November 16 in Long Beach, CA.

- Steve Weisberg gave a presentation entitled "Impacts on our Oceans: Global and Regional" at the American Academy of Environmental Engineers and Scientists meeting on November 18 at SCCWRP.

- Eric Stein taught a one-day workshop on "Hydromodification assessment and management in California" at the State Water Resources Control Board on November 28 Sacramento, CA.

- Meredith Howard gave a presentation on "Cyanotoxins in southern California water bodies" at the California Cyanotoxin Workshop hosted by the San Francisco Regional Water Quality Control Board on November 28 in Oakland, CA.

- Betty Fetscher gave a presentation entitled "The prevalence of cyanotoxins in southern California water bodies" at the California Cyanotoxin Workshop hosted by the San Francisco Regional Water Quality Control Board on November 28 in Oakland, CA.

- Keith Maruya gave a presentation entitled "A tiered, adaptive strategy for monitoring of unregulated chemicals in California's water resources" at the University of Arizona on December 3 in Tucson, AZ.

- Meredith Howard gave a presentation on "Comparison of natural and anthropogenic nutrient sources and their influence on algal blooms in the SCB" at the State Water Resources Control Board on December 6 in Sacramento, CA.

- Martha Sutula gave a presentation on "Science supporting estuarine nutrient criteria" to the US Environmental Protection Agency Office of Research and Development on December 7 in Newport, OR.

- Chris Solek gave a presentation on the California Rapid Assessment Method (CRAM) to the Department of Fish and Game and the County Engineers Association of California, Regional Collaboration Task Force on December 11 in Los Alamitos, CA.

- Steve Bay and Darrin Greenstein conducted a short course on "Sediment quality analysis for SQOs" at the Los Angeles Regional Water Quality Control Board on December 17-18 in Los Angeles, CA.

- Steve Steinberg gave a presentation on the California Environmental Data Exchange Network (CEDEN) to the City of Los Angeles Environmental Monitoring Division on January 30 in Los Angeles, CA.

Professional Appointments:

- Steve Steinberg was elected Co-Chair of the West Coast Governors Alliance on Ocean Health, Regional Data Framework Action Coordination Team.

- Karen McLaughlin was elected Treasurer of the California Estuarine Research Society.

- Martha Sutula was elected President of the California Estuarine Research Society.

- Yiping Cao was elected to serve on the Board of Directors for the Southern California Chinese-American Environmental Protection Association.

- Steve Weisberg was elected Chair of the Steering Committee for the California Current Acidification Network.

- Martha Sutula and Steve Weisberg were appointed to the California Ocean Protection Council's Acidification and Hypoxia Science Panel.

- Steve Weisberg was appointed to the Chapman University School of Earth and Environmental Science Advisory Council.

Meetings & Workshops Held at SCCWRP:

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Jan 30	Bight '13 Contaminant Impact Assessment Committee	Schiff
Jan 30	Hydromodification Technical Advisory Committee	Stein

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Jan 29	Bight '13 Executive Advisory Committee	Schiff
Jan 28	California Wetland Monitoring Workgroup Level 2 Committee	Solek
Jan 28	Bight '13 Marine Protected Areas	Schiff
Jan 24	6th Annual SCCWRP Symposium	Setty
Jan 18	Seminar: Dr. Ben Houlton – "California's nitrogen cycle: Potential couplings between land and the sea"	Weisberg
Jan 16	Bight '13 Debris	Sutula
Jan 14	Southern California Society of Environmental Toxicology and Chemistry (SETAC) Toxicity Advisory Group	Greenstein
Jan 11	Sediment Quality Objective Planning for Ports of LA and Long Beach	Bay
Jan 8-9	Flow Ecology Project Team	Stein
Jan 4	Bacterial Marker Degradation Planning	Griffith
Jan 3	CTD (Conductivity, Temperature and Depth) Compliance Assessment Workgroup	Weisberg
Dec 19	Workshop: "Beyond Bathtub: Modeling and Responding to Sea Level Rise and Shoreline Change"	California Ocean Protection Council
Dec 17	Beach Epidemiology Study Team	Schiff
Dec 14	Puget Sound Best Professional Judgment Exercise for Benthic Condition Assessment	Ranasinghe
Dec 14	Seminar: Dr. Andrew Whitehead – "Using Genomics to Diagnose Impacts of Environmental Pollutants at Physiological and Evolutionary Timescales"	Weisberg
Dec 13	Biological Objectives - Physical Habitat Analysis Team	Stein
Dec 13	Bight '08 Microbiology	Griffith

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Dec 12	Shipping Industry Discharge Monitoring Program Planning	Weisberg
Dec 12	Episodic Streams Technical Advisory Committee	Stein
Dec 12	Course: "How to Use Ocean Observing System Data Related to Water Quality Assessment"	Water Boards Training Academy
Dec 7	SCCWRP Commission	Weisberg
Dec 5	Southern California Wetland Recovery Project - Wetland Managers Group	Solek
Dec 4	Bight '13 Debris	Sutula
Dec 3	Southern California Ichthyological Taxonomists and Ecologists (SCAITE)	Diehl
Dec 3	Biological Objectives	Schiff
Nov 30	Southern California Society of Environmental Toxicology and Chemistry (SETAC) Toxicity Advisory Group	Greenstein
Nov 28-29	Microbial Source Identification Stat-of-the-Science Symposium	Weisberg
Nov 26	Sediment Quality Objectives Planning	Bay
Nov 26	Bight '13 Nutrients	Howard
Nov 26	Regional Kelp Monitoring	Schiff
Nov 20	Bight '13 Toxicology	Schiff
Nov 15	Bight '13 Marine Protected Areas	Schiff
Nov 15	Marine Protected Areas Monitoring Enterprise	California Ocean Science Trust
Nov 14	Beach Water Quality Work Group	Weisberg
Nov 13	Bight '13 Microbiology	Griffith

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Nov 9	American Academy of Environmental Engineers	Weisberg
Nov 7-9	Society of Environmental Toxicology and Chemistry (SETAC) Pellston Workshop on Passive Sampling Devices	Maruya
Nov 1	Commission's Technical Advisory Group (CTAG)	Weisberg
Oct 30	Southern California Association of Marine Invertebrate Taxonomists	Schiff

Upcoming Commission/CTAG Meetings:

- The next CTAG meeting will be held on Wednesday, February 6 from 9:00 to 4:00 at SCCWRP.
- The next Commission meeting will be held on Friday, March 8 from 9:30 to 12:00 at SCCWRP.

PROJECTS

Note: The following progress updates describe accomplishments for each of SCCWRP's projects in the last quarter. More details about each project can be found in SCCWRP's 2012-2013 Research Plan.

Projects with significant activity this quarter:

Traditional Toxicity Identification Evaluation Methods

Cyanobacteria

Nutrient Objectives in Estuaries

Eelgrass

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: Instructions were finalized for a laboratory intercalibration study with fish tissue and spiked marine sediment samples. Materials will be shipped to participating labs soon to initiate the study.

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: A preliminary screen of contaminants was completed for eight dolphin samples using comprehensive two dimensional gas chromatography mass spectrometry (GC×GC-TOF). Identified compounds include several classes of CECs, indicating the analytical method works as intended. Over the next quarter, researchers will complete the chemical identifications and build an initial version of the mass spectral library.

Lead Investigator: Dodder

c. Passive Samplers

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

Update: The Technical Workshop on Passive Sampling Methods for Contaminated Sediment Management co-sponsored by SCCWRP, the Society of Environmental Toxicology and Chemistry, and others was held on November 7-9 at SCCWRP. Next, SCCWRP will initiate experiments to determine the extent of equilibrium for passive samplers using preloaded performance reference compounds.

Photo credit: Bruce Bealer

Lead Investigator: Maruya

d. Bioanalytical Screening Tools

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

Update: Staff members procured the necessary test kits to perform commercially available bioassays for selected endpoints of interest. Next, SCCWRP will perform initial evaluations before analyzing intercalibration samples from five different labs in the US and Australia.

Lead Investigator: Maruya

2. Toxicity Assessment

Highlight

a. Traditional Toxicity Identification Evaluation Methods

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

Update: A workshop on determining the causes of sediment toxicity to amphipods in California bays and estuaries was held on November 16 in Long Beach. Over 20 scientists with expertise in geochemistry,

benthic ecology, toxicology, and risk assessment evaluated the state of the knowledge regarding the potential cause of sediment toxicity in San Francisco Bay and developed recommendations to address uncertainties. A workshop report is in preparation. Recommendations from the workshop include conducting retrospective data analyses to investigate associations among toxicity test responses, sediment characteristics, resident macrofauna, and chemical constituents (documenting the influence of clay particles on test results); and investigating the role of seasonal changes in test animal condition on the test results. Research is also in progress to develop TIE methods for the pesticide fipronil.

Lead Investigator: Bay

b. Molecular Tools for Toxicity Identification Evaluation

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

Update: Sample analysis is in progress for the interlaboratory comparison study using the amphipod gene microarray. Six laboratories are analyzing split samples of amphipod tissue extracts as well as separate samples of whole amphipods. Some laboratories have experienced difficulties in extracting RNA from the tissue samples, resulting in delays in completion. Initial results from the comparison are expected in March. Work is also continuing to sequence RNA from hornyhead turbot tissue samples and develop an improved gene microarray. Technical difficulties with analysis of the sequencing results have resulted in some delays.

Lead Investigator: Bay

3. Biological Assessment

a. Rocky Reefs

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

Update: Staff members participated in a report card workshop on December 6 sponsored by the Marine Protected Area Monitoring Enterprise. This was the second in a series of two workshops held in Santa Barbara, CA to form the foundation and need for the rocky reef assessment index. In addition, planning continues for a best professional judgment exercise to occur in the second quarter of 2013.

Lead Investigator: Schiff

b. Periphyton

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

Update: A manuscript on development of the algal IBI is under review and work on the development of a SWAMP reporting module for calculation of stream algae IBI metrics is complete. A presentation on

the tools and information resources available for using algae for stream bioassessment was made at the California Stormwater Quality Association (CASQA) conference on November 7.

Lead Investigator: Fetscher

c. DNA Barcoding

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

Update: First, a manuscript was published describing the results of a study evaluating various sample preservation methods. It showed that successful barcodes can be obtained with 95% ethanol, typical dilution ratios used in the field, and holding times of up to six months. Two manuscripts on barcoding results of freshwater specimens impacted by in-stream hydromodification structures are in preparation. Taxonomic identification was completed and samples were sent out for barcoding analysis for a follow-up study testing the effect of molecular-based taxonomy on resolution of bioassessment indices across a gradient of condition in the San Gabriel River Watershed. Marine barcoding specimens from the Oregon and Washington coasts are still being processed, and partner labs continue testing various next-generation sequencing methods to analyze composite DNA samples. Finally, two new barcoding studies may be included in Bight '13. The first will investigate sample preservation methods for marine barcoding specimens and the second will use barcoding methods to help differentiate cryptic organisms important for use in marine benthic indices.

Lead Investigator: Stein

Highlight

d. Cyanobacteria

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

Update: SCCWRP partnered with the Southern California Stormwater Monitoring Coalition, the San Diego Regional Water Quality Control Board, and the County of San Diego to incorporate assessment of cyanotoxins into ongoing stream and depressional wetland monitoring efforts. In total, over 150 samples were collected over this past summer. Multiple types of cyanotoxin were found to occur in both depressional wetlands and wadeable streams throughout the region. Cyanotoxins were observed in association with various land-use types including relatively undisturbed reference sites. In addition, SCCWRP scientists played a key role in organizing and executing a Freshwater Cyanotoxin Workshop held in Oakland in November 28. Personnel from over 30 federal, state, and local agencies participated in the workshop.

Lead Investigators: Fetscher, Howard

e. Non-perennial Streams

Purpose: Develop and test bioassessment tools for use in non-perennial streams

Update: The new Technical Advisory Committee for episodic stream assessment met on December 12 and agreed upon a conceptual model and classification system for non-perennial stream types for the project work plan. A project QAPP is currently being drafted and study site selection for the 2013 field season is in progress. A member of the San Francisco Estuary Institute (SFEI) was also added to the TAC for this project.

Lead Investigators: Solek; Mazor

4. Microbiological Assessment

a. Rapid Water Quality Indicators

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

Update: Preliminary results are available comparing three new qPCR chemistries for *Enterococcus* based on their susceptibility to environmental interferences at Los Angeles County beaches. A meeting to discuss results will be scheduled during the next quarter.

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: Data analysis and report preparation is underway for the field study applying microbial source identification methods in Mission Bay in September. Manuscripts describing the results of the microbial source identification method evaluation/comparison study are pending publication in a special issue of *Water Research*.

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 non-human sources of fecal indicator bacteria

Update: Due to detection of human sources of fecal bacteria at the two target sites (Hobie and Kiddie beaches in Ventura County) during the source-tracking phase of this study, the QMRA has been placed on hold until the human source(s) have been identified and removed. Report preparation is currently underway and will be completed this quarter.

Lead Investigator: Schiff

5. Biogeochemical Cycling Assessment

a. Coastal Hypoxia

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

Update: Staff members continued work on a manuscript summarizing dissolved oxygen trends from quarterly discharger monitoring data. They also began drafting sections of a manuscript reviewing hypoxia trends, causal factors, effects, and management implications in upwelling systems.

Lead Investigator: Sutula

b. Harmful Algal Blooms

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

Update: Staff members and collaborators completed field sampling and nutrient uptake experiments for the Ecology and Oceanography of Harmful Algal Blooms (ECOHAB) research program. This sampling campaign was coordinated with the Orange County Sanitation District outfall diversion (see *Effects of Ocean Outfall Diversion on Nutrient Cycling*). Laboratory analysis of samples is underway.

Lead Investigator: Howard

c. Microbial Response to Environmental Gradients in Streams

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

Update: Sample collection is complete and laboratory analyses of stressors (i.e., fecal indicator bacteria, chemical contaminants, and toxicity measurement) are near completion. Sample selection for microbial community analysis will occur upon evaluation of the complete stressor data.

Lead Investigator: Cao

B. TECHNICAL SUPPORT FOR MANAGEMENT/REGULATORY PROGRAMS

a. Nutrient Objectives in Streams

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

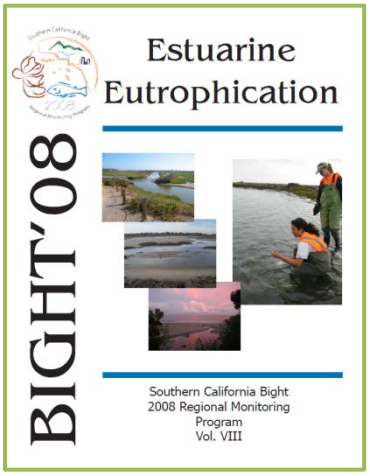
Update: Analysis of statewide bioassessment data continues to: 1) identify tipping points or thresholds between algal biomass and benthic invertebrates, and 2) validate the nutrient numeric endpoint

spreadsheet tool. Data analysis will continue into the next quarter. In addition, a Quality Assurance Project Plan was developed for monitoring and modeling nutrient-algal relationships in the Santa Margarita River watershed. The monitoring campaign will begin this fall.

Lead Investigator: Sutula

Highlight

b. Nutrient Objectives in Estuaries



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

Update: The Bight '08 report on eutrophication assessment in southern California estuaries was completed and released. This work was presented to stakeholders in a webinar on October 31. Data analysis began for experiments linking macroalgae to seagrass. Finally, work began on the San Francisco Bay phytoplankton assessment framework.

Lead Investigator: Sutula

c. Biological Objectives

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

Update: The State Water Board continues its regulatory progression towards bio-objectives, completing its California Environmental Quality Act (CEQA) scoping meetings in September and holding its first Public Workshop January 22 in Sacramento. SCCWRP staff and Science Team collaborators provided testimony on the effectiveness (and limitations) of the technical tools at each of these public forums. The Science Team has been completing documentation of technical tools, including an assessment index (the California Stream Condition Index or CSCI), the statewide reference condition network, and a Causal Assessment Guidance Manual (for regulated and regulatory stakeholders). Beginning in February, the Science Advisory Panel (comprised of seven of the nation's experts in bioassessment) and California's Stakeholder and Regulatory Advisory Groups will review the technical documents.

Lead Investigators: Schiff, Stein

d. Sediment Quality Objectives (SQOs)

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

Update: Two short courses on applying the SQO methodology for assessment and Total Maximum Daily Load (TMDL) activities were recently conducted. One was held in Long Beach on November 11 as part of the Society of Environmental Toxicology and Chemistry national meeting and was attended by scientists, regulators, and graduate students from throughout the country. The second short course was

conducted December 17-18 in Los Angeles for Regional Water Board staff. Both short courses included hands-on instruction in data analysis methods and presentations of case studies. A meeting among upper-level managers of the State Water Board, Los Angeles Regional Board, and Ports of Los Angeles and Long Beach was held on January 11 to coordinate activities related to implementing the SQO methodology into the PCB TMDL for the port area. The participants agreed to work together over the next few years on the data analyses and interpretation needed to develop a TMDL management strategy for PCB-contaminated sediment. Work is also in progress to compile fish tissue and sediment contamination data from multiple bays and estuaries to support statewide application of the SQO indirect effects framework.

Photo credit: Chris Beegan

Attendees at the December 17-18 LA Regional Water Quality Control Board short course.

Lead Investigator: Bay

e. Hydromodification Assessment and Management

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

Update: Drafts of this project's final two technical documents, a hydromodification monitoring plan template document and a guidance document on hydromodification modeling and management, have been produced. These two reports will be presented at the final Technical Advisory Committee Meeting for this project, scheduled for January 30. In addition, a one-day workshop was held November 28 at the State Water Resources Control Board in Sacramento on the application of hydromodification tools, assessment, and monitoring. The course was attended by co-permittees, Water Board personnel, and consultants from several counties in California.

Lead Investigator: Stein

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: Bight '13 planning has begun and the pace is quickening towards firm commitments and defined logistics. Five thematic elements emerged from the kickoff meeting in September: contaminant impact assessment, nutrients, microbiology, trash and debris, and Marine Protected Areas. Each thematic area has its own Planning Committee; these committees have met a number of times over the last quarter and developed a list of monitoring questions, created a basic monitoring design (matching resources to sampling requirements), and discussed implementation strategies. In addition, at least five Technical Working Groups are being formed to begin working out detailed logistics and executing quality assurance exercises. SCCWRP staff members are facilitating these Planning Committees and Technical Working Groups in an effort to complete work plans by the first quarter of 2013.

Lead Investigator: Schiff

b. Pollutant Sources Data Cataloguing

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

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

Lead Investigator: Sutula

c. Mussel Watch

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

Update: The project team completed submission of a series of manuscripts, which will appear in a special issue of *Marine Pollution Bulletin,* documenting results of the 2009-10 pilot survey in California for contaminants of emerging concern. Over the next quarter, the team will address reviewer comments and complete re-submission of final manuscripts.

Lead Investigator: Maruya

d. Areas of Special Biological Significance (ASBS)

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

Update: Staff members continue auditing each of the 14 ASBS water bond grantees' field monitoring programs to ensure high data quality. Regional work plans and quality assurance plans for three ASBS regional monitoring groups (Southern, Central, and Northern California) have been approved by the State Water Resources Control Board. Sampling awaits significant rainfall events.

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: Scientists are compiling and organizing data from the 2012 sampling season, which was the fourth year of this program. Most chemistry, toxicity, physical habitat, reconnaissance, and riparian condition (i.e., CRAM) data have been submitted. Laboratory analysis of benthic macroinvertebrate and algae data are nearly complete and should be finished in the next quarter. SCCWRP and collaborators are now preparing for the 2013 sampling season. This will be the fifth and final year for the first cycle of this program. Discussions have been initiated with the technical workgroup to identify special studies for the 2014 season. Following that season, planning will commence for the next five year cycle. SCCWRP scientists have also been meeting with personnel from the Department of Fish and Wildlife to discuss how the program will continue its integration with the statewide SWAMP Perennial Stream Assessment.

Lead Investigator: Mazor

b. Background Concentrations of Contaminants in Reference Streams

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

Update: Researchers completed quality assurance activities and preliminary data analysis for the first year's data. Results were presented to stakeholders and used to refine sampling site selection. The sampling campaign for the second year began in November with the first storms of the season. Dry weather sampling was re-initiated in January and will continue through September 2014. Stakeholders decided to fund a beach bacteria reference study, so a work plan and Quality Assurance Project Plan was developed to guide the study plan.

Lead Investigator: Sutula

c. Atmospheric Deposition of Nutrients to Coastal Watersheds

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

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

Lead Investigator: McLaughlin

3. Regional Wetland Monitoring

a. Wetlands Status and Trends

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

Update: The second phase of this project was initiated, focusing on identifying ways to reduce sample error and evaluate proposed change assessment methodologies. The project team is working to refine the technical approach. In addition, scientists are working with an interagency team consisting of the Natural Resources Agency, Department of Fish and Wildlife, State Water Board, and Department of Water Resources on developing a long-term implementation and funding strategy for this effort. For the wetland performance curves project, SCCWRP staff members continued to analyze results from the first year's data collection and to select sites for next year's sampling.

Lead Investigator: Stein

b. Depressional Wetlands

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

Update: Taxonomic identification was completed this quarter for wetland diatoms collected during the 2012 spring/summer seasons. These data will be converted using an index of biological integrity (IBI) originally developed for streams to help determine if this index can also be applied to depressional wetlands. Identification of benthic invertebrates and final CRAM calculations are in progress and will be completed over the next quarter. Plans are also being made for additional work at seasonal wetlands (those that contain water for only part of the year). These wetlands may have been sampled too late in the season in 2011, such that macroinvertebrates had already started receiving cues that the ponds were beginning to dry. A repeated measurement investigation, wherein seasonal wetlands will be sampled multiple times in the spring and early summer of 2013, will help identify the most appropriate sampling time frame for macroinvertebrates.

Lead Investigator: Stein

Highlight

c. Eelgrass

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

Photo credit: NOAA

Update: Twenty-four individual eelgrass mitigation projects have been incorporated into the California Wetlands Portal. This information complements the existing regional maps on the known extent and distribution of eelgrass in southern California bays and estuaries. Eelgrass web content has also been developed for addition to the state's My Water Quality website.

Lead Investigator: Solek

d. Historical Ecology

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

Update: Data compilation continues for the north San Diego Lagoon historical ecology project. Preliminary results were presented to a group of agencies and other stakeholders in December. The meeting helped to refine technical questions about use of the data that will ultimately be useful for guiding restoration planning. For the regional t-sheet mapping, new historic coastal maps (t-sheets) continue to be merged with t-sheets processed during an earlier watershed historical ecology project. A crosswalk between the historical and contemporary classification systems is being developed and applied in coordination with the Wetland Recovery Project's Wetland Managers Group.

Lead Investigator: Stein

D. INFORMATION MANAGEMENT AND ANALYSIS

a. Database Management

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

Update: Staff continues to oversee activities of the four CEDEN regional data centers and to support data providers in the submission of water quality monitoring data to CEDEN through the Southern California Regional Data Center housed at SCCWRP. The regional centers are processing new data records and types from data providers throughout the state on an ongoing basis.

Lead Investigator: Steinberg

b. Dynamic Data Processing and Visualization

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

Update: Methods have been developed for automated object identification in sequential images collected by *in situ* cameras. Image analysis to quantify birds on beaches in association with our microbial source tracking studies will be undertaken this summer once data collection is complete. The SCCWRP Geoportal to provide access to SCCWRP datasets and associated metadata via a user-friendly web interface has been completed and will be implementation on the SCCWRP website in February.

Lead Investigator: Steinberg

c. Portal Development

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

Update: Development of the MARINe portal has been completed and submitted to the SWRCB for addition to the Monitoring Council website. A mock-up of the "Safe to Drink" portal has been developed and is currently undergoing review. This will be followed by development of a working prototype in the coming months.

Lead Investigator: Steinberg

E. MEMBER AGENCY SUPPORT

b. Quality Assurance for Offshore Monitoring

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

Update: In coordination with Bight '13, staff previously created an inventory of quality assurance activities for trawling by SCCWRP member agencies. The results of this inventory were presented at the Southern California Ichthyological Taxonomists and Ecologists (SCAITE) meeting December 3. More similarities than differences were observed, largely due to the comparability evaluations surrounding the Bight Regional Monitoring Program. Additional data analysis will be used to set appropriate Method Quality Objectives for discussion at a future SCAITE meeting.

Lead Investigator: Schiff

c. Pilot Monitoring with Autonomous Underwater Vehicle (AUV)

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

Update: The SCCWRP glider has recently been performing without incident (following a difficult start last quarter). It completed 48 days of sampling in support of the Orange County Sanitation District (OCSD) outfall diversion (see *Effects of Ocean Outfall Diversion on Nutrient Cycling*). The longest continuous deployment at sea on one set of batteries was 27 days. SCCWRP has also achieved sufficient proficiency

to perform glider calibration activities onsite, making deployment and recovery logistics more efficient. In addition, SCCWRP is coordinating with USC and UC Santa Cruz researchers, who also operated gliders in support of the outfall diversion. A USC glider was struck by a boat and lost a wing but sustained no other damage. The UC Santa Cruz glider was lost at sea on October 11, but was recovered on December 4 and temporarily stored at SCCWRP until transport back to the university was arranged. Fortunately, the glider had minimal corrosion and no internal leakage after 56 days on the bottom of the ocean.

Lead Investigator: Weisberg

d. Effects of Ocean Outfall Diversion on Nutrient Cycling

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

Update: Field sampling and experiments were completed in mid-October, and analysis of laboratory samples has begun.

Lead Investigator: Howard

e. Newport Bay Watershed Model Monitoring

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

Update: The Regional Water Quality Control Board launched this project at the Newport Bay Executive Advisory Committee meeting in November. Watershed stakeholders were identified and contacted to gauge their interest in participating in the project. The first collaborative meeting with stakeholders will be held in February.

Lead Investigator: Schiff

f. Water Quality Compliance Assessment for Offshore Outfalls

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

Update: A meeting was held on January 3 at which additional permutations were presented for the algorithm differentiating oxygen conditions in plume-affected areas from reference areas. The project committee endorsed the general approach and neared agreement on the algorithm but asked for a few additional permutations to be presented at the next meeting on February 21. The committee also discussed how the algorithm would be modified to address compliance questions for pH and water clarity, as the Ocean Plan compliance criteria for these parameters differ slightly from the dissolved oxygen criteria.

Primary Investigator: Weisberg