Southern California Coastal Water Research Project Authority

Quarterly Director's Report
To the SCCWRP Commission

November 2012

(Detailing activities August 3, 2012 - October 25, 2012)

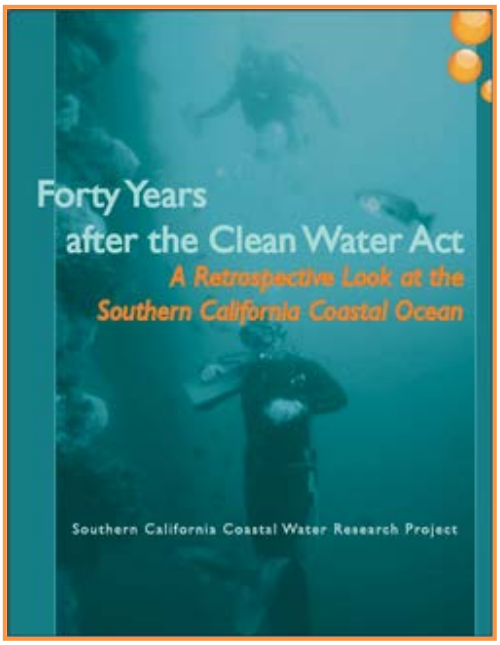
Stephen B. Weisberg
Executive Director

Table of Contents

HIGHLIGHTS

News:

Thematic document on Clean Water Act 40th anniversary released



SCCWRP released a report on October 18 (the 40th anniversary of the 1972 Clean Water Act) reflecting on changes in the region's coastal condition. The report was prepared collaboratively with SCCWRP member agencies and provides unparalleled insight into how southern California's water quality has changed in response to the many investments made by local, state, and federal agencies over the last four decades. Data from southern California's extensive monitoring programs were collated and synthesized to answer critical questions about the effectiveness in achieving the Clean Water Act goals. It illustrates many substantial improvements in the coastal environment, as well as remaining challenges. For more information on the report, please contact Karen Setty.

SCCWRP's new molecular lab now open

SCCWRP's new molecular lab opened on October 12. The lab features specialized airflow, flooring, bench tops, and equipment to accommodate SCCWRP's growing research into molecular methods. These methods often rely on detection of DNA or other molecular cell components, and require a "clean" environment. Questions about the laboratory can be directed to John Griffith.

Photo credit: Bruce Bealer

Freshwater cyanotoxins workshop to be held November 28

SCCWRP scientists are helping to plan an upcoming one-day workshop on freshwater cyanotoxins. The workshop will be held November 28 at the San Francisco Regional Water Quality Control Board in Oakland, CA. It is intended to educate managers about the potential harmful effects of cyanotoxins and factors leading to cyanotoxin production. Space is limited and attendees must register in advance through the Water Board Training Academy. For more information, please see the event flyer or contact Betty Fetscher or Meredith Howard.

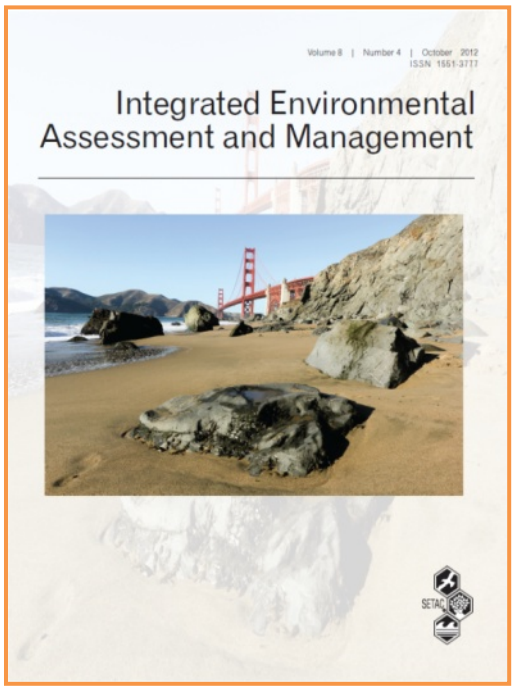
SCCWRP to host American Academy of Environmental Engineers event

The American Academy of Environmental Engineers will host a networking event, dinner, and seminar on November 9 at SCCWRP, starting at 6:30 PM. The seminar on global and regional ocean impacts will feature SCCWRP's Executive Director Steve Weisberg. Instructions to RSVP by November 2 are detailed in the event flyer. For additional information, please contact Denice Guerrero.

Planning underway for 2013 Bight Regional Monitoring Program

Photo credit: Bruce Bealer

A kickoff meeting was held September 24 to initiate planning for the 2013 Southern California Bight Regional Monitoring Program (Bight '13). Five groups (Toxics, Nutrients, Microbial Water Quality, Marine Protected Areas, Debris) successfully identified core questions around which to develop a study component. Planning committees are currently being formed for each group to further refine the questions, sampling design, and implementation assignments. Laboratory intercalibration exercises are expected to take place in spring 2013 as a precursor to summer field sampling. Questions about Bight '13 should be directed to Ken Schiff.



Sediment quality assessment work highlighted in October journal special series

Several SCCWRP scientists helped to author eight articles in a special journal series on California's Sediment Quality Objectives. The journal *Integrated Environmental Assessment and Management* (IEAM), published quarterly by the Society of Environmental Toxicology and Chemistry, is devoted to bridging the gap between scientific research and its application to policy, regulation, and environmental management. The October 2012 issue is also accompanied by a podcast by guest editor Steve Bay, head of SCCWRP's Toxicology department.

California's rocky intertidal monitoring network wins national award

The US Department of the Interior has recognized California's Multi-Agency Rocky Intertidal Network (MARINe) as a 2012 "Partners in Conservation" Award winner. MARINe, a partnership among public agencies, universities, and private groups, was formed in 2001 to monitor the health of rocky intertidal habitats and communicate this information on a statewide scale. SCCWRP scientists had a central role in MARINe, creating a unified data management structure for the partnership to share information among researchers, regulatory oversight agencies such as the Oil Spill Prevention and Response (OSPR), and the public. The Department of the Interior selected award winners from a large pool of nominees for their exceptional contributions to conservation and management of public lands. For more information on the award, please contact Steve Weisberg.

SCCWRP Scenes:

Photo credit: Meredith Raith

Early morning beach combing and water sample collection at Kiddie Beach in Ventura, which (along with Hobie Beach) is the site of the Quantitative Microbial Risk Assessment (QMRA) study.

PEOPLE

Honors and Awards:

- Nick Nezlin received an award for being a top-cited author from 2008-2012 in the journal *Estuarine, Coastal and Shelf Science* (Elsevier). He was the lead author on an article "Stormwater plume detection by MODIS imagery in the southern California coastal ocean" published in 2008.

Nezlin

Personnel:

- Leila Lackey, who was conducting her PhD at UCLA as a cooperative employee in SCCWRP's Biology department, completed her degree and left SCCWRP on August 31. She has relocated to Silver Spring, Maryland to work with the US Food and Drug Administration.
- Kerry Ritter, a statistician who provided cross-departmental support over the last ten years, left SCCWRP on August 10.

Clifford

Commission:

- Tully Clifford is the new Director and Alternate Commissioner from the Ventura County Watershed Protection District.

Commission's Technical Advisory Group:

- Nothing to report

Spotlight on Staff:

Karen Setty - Science Writer

Karen Setty is a Science Writer who provides cross-departmental support for SCCWRP. Her primary duties involve producing non-technical SCCWRP documents (e.g., Director's Report, Research Plan, fact sheets, synthesis and workshop reports), presentations, and other communication materials such as brochures, posters, and videos. A recent effort involved SCCWRP's thematic document on the 40th anniversary of the Clean Water Act. Setty also manages development of the SCCWRP website and touch screen display and handles planning for the annual SCCWRP Symposium in January. Her primary professional interests include communications at the interface of science and policy, appropriate technology for water and wastewater systems, and sustainable development.

Setty grew up near Youngstown, Ohio doing gymnastics, distance running, swimming, and generally playing outside. Her seventh grade science teacher organized participation in a regional extracurricular "Envirothon" competition, where Setty first recognized a talent and affinity for environmental science. The same year, she got involved in a science project examining an artificial wetland built to treat ammonia in landfill runoff. After high school, Setty went on to study environmental biology at the University of Dayton. Her undergraduate research involved examining riparian land use in agricultural watersheds, amphidromous larvae in Hawaiian streams, and mycorrhizal fungi in transplanted wetland soil. Always keeping busy, she was able to do internships with academic, agricultural, drinking water supply, public health, and regulatory organizations. Her involvement in the campus Sustainability Club also provided a taste for environmental advocacy. Setty decided to attend graduate school at the University of California Santa Barbara Bren School of Environmental Science and Management, which has a broad curriculum focusing on science-based management, policy, and group projects. This afforded an opportunity to work on appropriate technology application in Peru and southern Mexico.

Setty joined SCCWRP in 2007 to engage in communicating applied water research to the region's management community, which often sets precedents for environmental management approaches across California and the nation. She enjoys interacting with the many talented scientists at SCCWRP, members of the SCCWRP Commission's Technical Advisory Group, and other SCCWRP partners.

Karen currently lives in south Orange County with her husband Fabio (an import from Rome, Italy) and 6-month-old son Niccolò. They enjoy adventures in California, long walks/stroller rides, and traveling back to their hometowns to visit family.

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

Spotlight on Partners:

Dr. Alexandria Boehm - Stanford University

Dr. Alexandria (Ali) Boehm is an Associate Professor in the Department of Civil and Environmental Engineering at Stanford University. Her research activities focus primarily on coastal water quality, specifically the sources, transformation, transport, and ecology of biocolloids such as fecal indicator organisms, pathogens, and phytoplankton. She recently expanded her research to include drinking water quality, sanitation, and health in developing countries and is engaged in ongoing projects in Bangladesh and Tanzania.

Boehm grew up in Kailua, Hawaii and spent a lot of time at the beach and in the ocean, especially competitive sailing and surfing. She left home to pursue her BS in Engineering and Applied Science at the California Institute of Technology in Pasadena, where she was first exposed to environmental engineering and biological oceanography. Attracted to the rigor found in the marriage of engineering and environmental science, her passion for research led her to continue on to earn an MS and PhD in environmental engineering at UC Irvine. She then became a faculty fellow at UC Irvine for two years, teaching and performing research on microbial pollution at Huntington Beach. Boehm took a faculty position at Stanford in 2002. She finds it very rewarding to do research that the general public cares about and can improve public health. And, she points out, it's fun to do field work at the beach!

Dr. Boehm collaborates frequently with SCCWRP's Microbiology department, including Dr. John Griffith and Donna Ferguson (pictured above). She is currently working with SCCWRP on several projects including the Source Identification Protocol Project to develop a standard state protocol for conducting microbial source tracking. Other current and past collaborative projects include the beach epidemiology studies, examining how tides affect fecal bacteria in beach water, developing a standard method for monitoring bacteria in beach sand, and investigating whether enterococci in beach sands harbor pathogenic genes. She also works alongside SCCWRP Director Steve Weisberg and others on the state's Clean Beaches Task Force and the Ocean Protection Council Science Advisory Team. Boehm enjoys working with SCCWRP because "the projects are focused on deliverables that are useful to managers and the public."

Ali still loves to spend time outdoors surfing, rock climbing, running, and skurfing. During trips to southern California for meetings at SCCWRP, one of her favorite things (aside from the free soda) is to go surfing with her students. Ali's son Sage, now one, also came along to a meeting at SCCWRP when he was three months old.

For more information on Dr. Boehm and her research, please visit: http://www.stanford.edu/~aboehm/.

Spotlight on Commissioners:

Catherine Kuhlman – California Ocean Protection Council

Catherine (Cat) Kuhlman is the Executive Director of the California Ocean Protection Council (OPC), Deputy Secretary for Oceans and Coastal Matters at the California Natural Resources Agency, and one of the newest members of SCCWRP's Commission. The OPC was created in 2004 to promote coordination among state agencies and improve management and protection of California's vast coastal and ocean resources. Cat also helps to coordinate ocean resource management efforts with the States of Oregon and Washington on the Executive Committee of the West Coast Governors' Alliance on Ocean Health.

Kuhlman calls herself a "Lagunatic - a distinct tribe of southern California beach bums" having grown up and spent entire summers at Laguna Beach. She got her thrills diving, playing in the waves, and collecting sea glass and miniature shells to make necklaces, and she often dreamed of swimming to Catalina Island. Cat left home to study biology at Sonoma State University and was enchanted by the water she found everywhere. She spent plenty of time exploring the miniature world of mosses, lichens, aquatic insects, and algae with a hand lens and a sketch book. After graduating, Kuhlman took graduate classes at San Francisco State University and bounced around to various jobs, but she was fortunate to end up in the water division at the US Environmental Protection Agency (EPA) Region 9 office. She moved up through the ranks from 1978 to 2003, taking a turn as the Water Division Director and Director of the US-Mexico Border Program. While she calls regulatory work a "team sport," one of her proudest moments was promulgation of the California Toxics Rule, which is still being used more than 10 years later. Kuhlman next served as the Executive Officer for the North Coast Regional Water Quality Control Board from 2003 to 2012, where she oversaw adoption and implementation of waste discharge requirements for timber harvest operations and efforts to apply Total Maximum Daily Loads in the Klamath River Basin. Her gubernatorial appointment to the OPC in 2012 signifies a return to her first love: oceans.

Cat now works to consolidate the discussion of issues like ocean health, marine debris, climate change adaptation strategies for the coast, renewable energy, and harvest management planning. Current OPC efforts that overlap with SCCWRP research include monitoring in Areas of Special Biological Significance (one type of Marine Protected Areas) and ocean acidification science and management. Honored to be a member of the SCCWRP Commission, she looks forward to the next year with both personal and professional excitement to savor the ocean, learn about it at a new level, and contribute to its health.

For more information about the OPC, please visit http://www.opc.ca.gov/.

COMMUNICATIONS

Journal Articles - Published:

- Incorporating contaminant bioavailability into sediment quality assessment frameworks. 2012. KA Maruya, PF Landrum, RM Burgess, JP Shine. *Integrated Environmental Assessment and Management* 8:659-673.

- Effect of sample area and sieve size on benthic macrofaunal community condition assessments in California enclosed bays and estuaries. 2012. KK Hammerstrom, JA Ranasinghe, SB Weisberg, JS Oliver, WR Fairey, PN Slattery, JM Oakden. *Integrated Environmental Assessment and Management* 8:649-658.

- Habitat-related benthic macrofaunal assemblages of bays and estuaries of the western United States. 2012. JA Ranasinghe, KI Welch, PN Slattery, DE Montagne, DD Huff, H Lee II, JL Hyland, B Thompson, SB Weisberg, JM Oakden, DB Cadien, RG Velarde. *Integrated Environmental Assessment and Management* 8:638-648.

- Selection of methods for assessing sediment toxicity in California bays and estuaries. 2012. DJ Greenstein, SM Bay. *Integrated Environmental Assessment and Management* 8:625-637.

- Development and evaluation of sediment quality guidelines based on benthic macrofauna responses. 2012. KJ Ritter, SM Bay, RW Smith, DE Vidal-Dorsch, LJ Field. *Integrated Environmental Assessment and Management* 8:610-624.

- Comparison of national and regional sediment quality guidelines for classifying sediment toxicity in California. 2012. SM Bay, KJ Ritter, DE Vidal-Dorsch, LJ Field. *Integrated Environmental Assessment and Management* 8:597-609.

- Framework for interpreting sediment quality triad data. 2012. SM Bay, SB Weisberg. *Integrated Environmental Assessment and Management* 8:589-596.

- Transitioning sediment quality assessment into regulations: Challenges and solutions in implementing California's sediment quality objectives. 2012. C Beegan, SM Bay. *Integrated Environmental Assessment and Management* 8:586-588.

- Association of fecal indicator bacteria with human viruses and microbial source tracking markers at coastal beaches impacted by nonpoint source pollution. 2012. S McQuaig, J Griffith, VJ Harwood. *Applied and Environmental Microbiology* 78:6423-6432.

- Distribution and sources of polybrominated diphenyl ethers in the southern California Bight. 2012. NG Dodder, KA Maruya, GG Lauenstein, J Ramirez, KJ Ritter, K Schiff. *Environmental Toxicology and Chemistry* 31:2239-2245.

- Nontargeted comprehensive two-dimensional gas chromatography/time-of-flight mass spectrometry method and software for inventorying persistent and bioaccumulative contaminants in marine environments. 2012. E Hoh, NG Dodder, SJ Lehotay, KC Pangallo, CM Reddy, KA Maruya. *Environmental Science & Technology* 46:8001-8008.

- Framework and tool for rapid assessment of stream susceptibility to hydromodification. 2012. BP Bledsoe, ED Stein, RJ Hawley, D Booth. *Journal of the American Water Resources Association* 48:788-808.

- Channel evolution model of semiarid stream response to urban-induced hydromodification. 2012. RJ Hawley, BP Bledsoe, ED Stein, BE Haines. *Journal of the American Water Resources Association* 48:722-744.

- Performance of two southern California benthic community condition indices using species abundance and presence-only data: Relevance to DNA barcoding. 2012. JA Ranasinghe, ED Stein, PE Miller, SB Weisberg. *PLoS ONE* 7:e40875.

- Effectiveness of qPCR permutations, internal controls and dilution as means for minimizing the impact of inhibition while measuring Enterococcus in environmental waters. 2012. Y Cao, JF Griffith, S Dorevitch, SB Weisberg. *Journal of Applied Microbiology* 113:66-75.

Journal Articles - Published Online:

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

- Organic contaminants of emerging concern in sediments and flatfish collected near outfalls discharging treated wastewater effluent to the Southern California Bight. KA Maruya, D Vidal-Dorsch, SM Bay, JW Kwon, K Xia, KL Armbrust. *Environmental Toxicology and Chemistry*.

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

- Benthic macrofaunal assemblages of the San Francisco Estuary and Delta. B Thompson, JA Ranasinghe, S Lowe, A Melwani and SB Weisberg. *Environmental Monitoring and Assessment.*

Journal Articles - Accepted:

- Antifouling biocides in water and sediments from California marinas. Y Sapozhnikova, E Wirth, K Schiff, M Fulton. *Marine Pollution Bulletin.*

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

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

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

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

Technical Reports:

- Forty Years after the Clean Water Act: A Retrospective Look at the Southern California Coastal Ocean. 2012. K Setty, K Schiff, S Weisberg (eds.). Technical Report 727. Southern California Coastal Water Research Project. Costa Mesa, CA.

- Technical Design for a Status & Trends Monitoring Program to Evaluate Extent and Distribution of Aquatic Resources in California. 2012. ED Stein, LG Lackey. Technical Report 706. Southern California Coastal Water Research Project. Costa Mesa, CA.

Conference Presentations:

Pacific Northwest Clean Water Association - October 2012

- Science-based monitoring recommendations for Chemicals of Emerging Concern (CECs) in California's recycled water applications - K Maruya, P Anderson, N Denslow, JE Drewes, A Olivieri, D Schlenk, and S Snyder

Aquatic Toxicity Workshop - September-October 2012

- Application of a gene expression approach for sediment toxicity identification evaluation - SM Bay, C Vulpe

California Estuarine Research Society - September 2012

- Identifying thresholds of adverse effects of macroalgae on benthic habitat condition in estuarine intertidal flats - M Sutula, L Green, P Fong, G Cichetti, and N Detenbeck

32nd International Symposium on Halogenated Persistent Organic Pollutants - August 2012

- Halogenated natural products in marine biota using non-targeted mass spectrometry - K Maruya, N Dodder, E Hoh

Other Presentations:

- Ken Schiff gave a presentation on "Bight '08 Summary of Findings" to the San Diego Regional Water Quality Control Board on August 8 in San Diego, CA
- Steve Bay gave a presentation on "Management of brine discharges to coastal waters" to the State Water Resources Control Board on August 22 in Sacramento, CA.
- Eric Stein presented and participated in a panel discussion on hydromodification management under MS4 permit requirements on August 30 in San Diego, CA.
- Eric Stein gave a presentation on historical ecology for watershed planning at the Santa Ana Watershed Project Authority (SAWPA) Natural Resources Workgroup meeting on September 11 in Riverside, CA.
- Ken Schiff participated in an expert panel on "Effectiveness of Marine Protected Areas in the Central Coast of California" on September 11-12 in Santa Barbara, CA.
- Steve Weisberg gave a talk entitled "Transitioning genetic technology from research to application: three case studies" on September 19 at the Genomics Standards Consortium meeting in Oxford, England.
- Eric Stein gave a presentation on results of the wetland status and trends program at the Surface Water Ambient Monitoring Program (SWAMP) Round Table meeting on October 2-3 in Oakland, CA.
- Jeff Brown gave a presentation on results of the first year depressional wetland assessment at the SWAMP Round Table meeting on October 2-3 in Oakland, CA.
- Keith Maruya gave a presentation entitled “Pyrethroids and fipronil in southern California waterways” at the California Department of Pesticide Regulation on October 3 in Sacramento, CA.
- Keith Maruya gave a presentation entitled “A multiagency pilot study on contaminants of emerging concern (CECs) in California coastal bivalves” at the San Francisco Estuary Regional Monitoring Program 2012 Annual Meeting on October 9 in Berkeley, CA.
- Keith Maruya gave a presentation entitled “Monitoring of chemicals of emerging concern (CECs) in California’s receiving waters” at the State Water Resources Control Board meeting on October 16 in Sacramento, CA.
- Chris Solek co-instructed a 2-day training in the California Rapid Assessment Method for Wetlands (CRAM) estuarine module on October 18-19 at SCCWRP.

Professional Appointments:

- Shelly Moore was appointed to the Board of Directors for the Southern California Academy of Sciences effective 2012-2015.
- Steve Steinberg was appointed to the EPA Environmental Information Exchange Network, Network Partnership & Resources Group.

Meetings & Workshops Held at SCCWRP:

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Oct 23	CTD (Conductivity, Temperature and Depth) Compliance Assessment Workgroup	Weisberg
Oct 22	Clean Beaches Task Force	Weisberg
Oct 18-19	California Rapid Assessment Method (CRAM) Training: Estuarine Module	Solek
Oct 17-18	Biological Objectives Science Advisory Panel	Schiff
Oct 15	Society of Environmental Toxicology and Chemistry Southern California Chapter – Toxicity Advisory Group	Greenstein
Oct 15	South Orange County Beach Water Quality Workgroup	San Diego Regional Water Quality Control Board
Oct 12-13	Western Association of Marine Laboratories Annual Meeting	Weisberg
Oct 9	San Diego Lagoon Historical Ecology Team	Stein
Oct 9	Sediment Quality Objectives Advisory Committee	Bay
Oct 5	Seminar: Dr. Megan Rippy – "Physical and Biological Dynamics of Surfzone Bacterial Pollution: Sources, Transport and Survivorship Mechanisms"	Weisberg
Oct 1	South Orange County Beach Water Quality Workgroup	San Diego Regional Water Quality Control Board
Oct 1	Commission's Technical Advisory Group (CTAG) Wastewater Sub-Group	Weisberg
Sept 24	2013 Southern California Bight Regional Monitoring Program (Bight '13) Kickoff	Schiff

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Sept 18-20	Southern California Association of Marine Invertebrate Taxonomists	Schiff
Sept 18	Stormwater Monitoring Coalition Regional Watershed Monitoring Program Design - with Santa Ana Regional Water Quality Control Board	Mazor
Sept 14	Seminar: Dr. Rebecca Lewison – "Seabirds as Indicators of Ecosystem Processes"	Weisberg
Sept 11	Sediment Quality Objective Planning for Ports of LA and Long Beach	Bay
Sept 11	South Orange County Beach Water Quality Workgroup	San Diego Regional Water Quality Control Board
Sept 7	SCCWRP Commission	Weisberg
Sept 6	Southern California Association of Marine Invertebrate Taxonomists	Schiff
Aug 30	Southern California Stormwater Monitoring Coalition Data Submission Training	Mazor
Aug 28	South Orange County Beach Water Quality Workgroup	San Diego Regional Water Quality Control Board
Aug 27	Wetland Status and Trends Technical Advisory Committee - Implementation Planning	Stein
Aug 20	Santa Ana Watershed Project Authority (SAWPA) Data Integration into the California Environmental Data Exchange Network (CEDEN)	Steinberg
Aug 20	South Orange County Beach Water Quality Workgroup	San Diego Regional Water Quality Control Board
Aug 13	Level 3 (Intensive Site Assessment) Wetland Indicators	Stein
Aug 9	Commission's Technical Advisory Group (CTAG)	Weisberg
Aug 8	Beach Water Quality Work Group	Weisberg

Upcoming Commission/CTAG Meetings:

- The next CTAG meeting will be held on Thursday, November 1 from 9:00 to 4:00 at SCCWRP.
- The next Commission meeting will be held on Friday, December 7 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:

Quantitative Microbial Risk Assessment (QMRA)

Wetland Status and Trends

Depressional Wetlands

Effects of Ocean Outfall Diversion on Nutrient Cycling

New projects:

Non-perennial Streams

Portal Development

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 for a laboratory intercalibration study with fish tissue and spiked marine sediment were drafted and circulated for review. Next, staff will finalize the instructions, ship intercalibration materials to participating labs, and initiate the intercalibration 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: SCCWRP initiated an effort with project partners to identify and catalogue contaminants in eight dolphins from the Southern California Bight. Over the next quarter, researchers will analyze the

samples using the previously developed protocol and will develop new computational methods for sample comparison. This project will be highlighted in a session at the upcoming November SETAC North America Conference in Long Beach titled "Helping Contaminants Emerge: Non-targeted and Effect-directed Environmental Analysis."

Lead Investigator: Dodder

c. Passive Samplers

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

Update: Project partners met on September 7 to interpret analytical results from passive samplers and caged mussels deployed in Los Angeles Harbor and Santa Monica Bay. Data from passive sampler pre-calibration, preliminary pilot experiments, and field deployment exercises were analyzed by the project team and manuscripts are currently being prepared. In addition, a final agenda was sent to invitees of the Technical Workshop on Passive Sampling Methods (PSMs) for Contaminated Sediment Management co-sponsored by SCCWRP, the Society of Environmental Toxicology and Chemistry, and others. It will be held on November 7-9 at SCCWRP.

Lead Investigator: Maruya

d. Bioanalytical Screening Tools

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

Update: After a critical evaluation, the project team identified and ordered the necessary bioassay test kits from the preferred vendor, Life Technologies. Next, staff will evaluate and optimize the performance of bioassay test kits for selected endpoints of interest, including changes in reproductive hormones, genotoxicity, cytotoxicity, and compound specific molecular responses. Once optimized, five different labs will subject the test kits to an intercalibration to assess the technology transfer and reproducibility.

Lead Investigator: Maruya

2. Toxicity Assessment

a. Traditional Toxicity Identification Evaluation Methods

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

Update: Preparations are underway for a November 16 workshop in Long Beach to develop a research strategy to determine the cause of sediment toxicity in San Francisco Bay. The workshop will include sediment quality experts from throughout the US.

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: Progress continues on the interlaboratory comparison of differential gene expression analysis using a microarray developed for the amphipod *Eohaustorius estuarius*. Six laboratories in the US and Canada are analyzing samples of amphipods exposed to a pyrethroid pesticide, with preliminary results expected by the end of the year. In order to develop an improved gene microarray for fish, samples of RNA from hornyhead turbot liver and gonad tissue have been sequenced and are presently undergoing data analysis. Finally, a series of journal articles describing the results from the 2006 study of CEC effects on southern California coastal fish was completed and will be published as a special section in *Environmental Toxicology and Chemistry*.

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 sponsored by the Marine Protected Area Monitoring Enterprise on September 11-12 in Santa Barbara, CA, which helped to form the foundation and need for the rocky reef assessment index. SCCWRP expects to kickoff the assessment index development with a best professional judgment exercise, to occur in first or second quarter 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: The first draft of the final project report has been prepared, and a manuscript on the development of the algal IBI is under review by the journal *Ecological Indicators*. The manuscript describes alternative options for IBI implementation depending upon management needs and interim monitoring outcomes. A presentation on the this topic will also be made at the California Stormwater Quality Association (CASQA) conference in November.

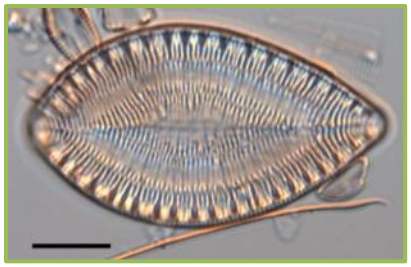


Photo credit: Betty Fetscher

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: Recently, progress was made on three fronts. First, data analysis was completed for the study evaluating various sample preservation methods, and researchers submitted a manuscript based on these results to *PLoS One*. Second, scientists prepared two manuscripts on barcoding results of freshwater specimens impacted by in-stream hydromodification structures. 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 is also making progress. Sample taxonomic identification is nearly complete; these samples will be shipped to the Canadian Centre for DNA Barcoding for molecular analysis. Third, marine barcoding specimens from the Oregon and Washington coasts are still being processed, and partner labs (the US Environmental Protection Agency and Life Technologies) continue testing various next-generation sequencing methods to analyze composite DNA samples.

Lead Investigator: Stein

d. Cyanobacteria

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

Update: SCCWRP partnered with the Southern California Stormwater Monitoring Coalition and the State Surface Water Ambient Monitoring Program to incorporate assessment of cyanotoxins into ongoing stream and depressional wetland monitoring efforts. This included a pilot study of a new technology for passive cyanotoxin sampling, using "SPATT bags" that are deployed in water bodies long-term. In total, over 150 samples were collected over the summer. A subset of SPATT bag samples (from stream sites where water-column toxicity was detected with traditional general toxicity assays) have been sent to collaborators at UC Santa Cruz for analysis of a broad suite of cyanotoxins. All of the other samples will be analyzed by SCCWRP scientists for total microcystins. SCCWRP scientists are also serving on the planning committee for an upcoming Freshwater Cyanotoxin Workshop to be held in Oakland in late November.

Lead Investigators: Fetscher, Howard

New Project

e. Non-perennial Streams

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

Update: A Technical Advisory Committee was formed to help staff develop appropriate assessment tools for non-perennial stream types. A conceptual model of form and function, and a classification for non-perennial stream types is currently being drafted. These elements will assist in guiding a detailed work plan.

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: SCCWRP scientists are collaborating with the City of Los Angeles, Los Angeles County Sanitation Districts, Los Angeles County Public Works, and Los Angeles County Health Department to compare three new qPCR chemistries for *Enterococcus* based on their susceptibility to environmental interferences at Los Angeles County beaches. Results will be analyzed over 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: Manuscripts describing the results of the microbial source identification method evaluation study were prepared and will be published concurrently in the journal *Water Research*. In addition, SCCWRP and its partners implemented microbial source identification methods in field studies, including an intense field campaign in Mission Bay in September. Data analysis and report preparation will occur over the next quarter.

Lead Investigator: Griffith

Highlight

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: Initial sampling was completed at the two target sites: Hobie and Kiddie beaches in Ventura County. Eight locations were sampled daily during July and August. Results indicated that 8% of samples exceeded beach water quality standards for fecal indicator bacteria, roughly double the previous five-year average for this same time period. Analysis of human fecal markers indicated a relatively frequent (about 50%) but low-level presence of human fecal material distributed across all monitoring locations. The presence of human fecal contributions was confirmed with a second human marker. The QMRA has been placed on hold until the human source(s) have been identified and removed.


Photo credit: John Griffith and Meredith Raith

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 attended a 2-day workshop in Monterey to summarize and review the project results with collaborators. Preparation of a manuscript synthesizing dissolved oxygen trends from quarterly discharger monitoring data was initiated.

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 conducted 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*).

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 was completed for the summer dry weather season. Researchers are currently waiting for microbiological (fecal indicator bacteria) and chemical analysis results to determine which samples should undergo microbial community analysis. Samples will be selected based on differences in chemical concentrations.

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 began 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 work plan was developed for monitoring and modeling nutrient-algal relationships in the Santa Margarita River watershed. A quality assurance project plan will be developed for monitoring next quarter, and sampling will begin in spring 2013.

Lead Investigator: Sutula

b. Nutrient Objectives in Estuaries

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

Update: Manuscript preparation was completed for experiments and field studies related to macroalgae biomass thresholds in intertidal flats and shallow subtidal habitats, as well as the Bight '08 eutrophication assessment in southern California estuaries. In addition, the first of two field experiments to quantify the effect of macroalgae on seagrass was completed. Finally, work on the San Francisco Bay nutrient numeric endpoints (NNE) strategy was also completed. Staff prepared a work plan for the development of a phytoplankton assessment framework for San Francisco Bay and work will begin on this component next quarter. Also, an article on NNE application within the San Francisco Estuary was published in the San Francisco Estuary Institute publication "Pulse of the Delta."

Lead Investigator: Sutula

c. Biological Objectives

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

Update: Official launching the public regulatory process for bio-objectives, the State Water Resources Control Board held four California Environmental Quality Act (CEQA) scoping meetings between September 5 and 12. This signifies that the majority of initial technical work is nearing completion. The project team has been finalizing assessment tool development, which includes two multi-variate models focused on species presence/absence (observed to expected model) or community assemblage metrics (predictive multi-metric model), based on expectations from reference sites with similar natural geophysical properties. In addition, the project team continued testing causal assessment tools in collaboration with the US EPA Office of Research and Development, so that regulated and regulatory agencies can determine what actions should be taken if the bio-objectives are not achieved. All of the technical progress was reviewed at a Science Advisory Panel meeting on October 17-18 at SCCWRP. Technical overview presentations were also given to the joint meeting of the State Water Board's Regulatory and Stakeholder Advisory Groups on October 12 in Sacramento. Their next meeting will be held December 3 at SCCWRP.

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: A meeting of the SQO advisory and agency coordinating committees was held at SCCWRP on October 9. The schedule for producing a revised water quality control plan and the priority issues for implementation of the plan were discussed. The next meeting will occur in early 2013. Work is in progress to revise the assessment framework in response to recommendations of the Scientific Steering Committee. Additionally, a special section of eight papers describing the development of the direct effects sediment quality assessment framework has been published in the journal *Integrated Environmental Assessment and Management*. Lastly, a small planning meeting was held September 11 related to a project focused on how to best apply SQOs in the Ports of Los Angeles and Long Beach.

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: Eric Stein participated in a one-day panel discussion on development of hydromodification monitoring and management plans for municipal stormwater programs in San Diego. The panel discussion was attended by co-permittees, Water Board personnel, and consultants from several

counties in southern California. In parallel, a first draft of the Hydromodification Monitoring Plan template document was completed. This document will provide an outline for developing hydromodification monitoring approaches.

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: The Bight '13 kickoff meeting occurred September 24 at SCCWRP. Attended by over 100 representatives of wastewater, stormwater, industry, academic, regulatory, and non-governmental agencies, the kickoff meeting generated the overall direction of the next regional marine monitoring program. At least 15 mutually agreed upon monitoring questions were developed that fell into one of five thematic areas: toxics, nutrients, microbiology, trash and debris, and marine protected areas. Each thematic area is now developing its own Planning Committee to better refine the study design, match resources to sampling requirements, and develop implementation strategies. SCCWRP staff will facilitate these Planning Committees in an effort to complete work plans by the first quarter of 2013.

Photo credit: Bruce Bealer

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 a series of manuscripts documenting results of the 2009-10 pilot survey in California for contaminants of emerging concern (CECs) in mussel tissue and passive samplers. Over the next quarter, the team will serve as guest editors for the submitted manuscripts, which will appear in a special issue of *Marine Pollution Bulletin*.

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 completed review of all 14 ASBS water bond grantees' monitoring plans for estimating pollutant reductions from structural best management practice (BMP) installations. They are now auditing each field program to ensure data quality. In addition, SCCWRP supported the development of three ASBS regional monitoring groups (Southern, Central, and Northern California) to measure the status of ASBS chemical, toxicological, and ecological integrity. Regional work plans have been drafted and are under review by the State Water Resource Control Board. Sampling will begin this winter.

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: The fourth year of sampling, comprised of approximately 100 sites, was completed this summer. SMC-participating agencies collected data on benthic macroinvertebrates, algae, toxicity, nutrients, trace metals, pesticides, major ions, physical habitat condition, riparian condition (California Rapid Assessment Method), flow, and other parameters. Data submission training was held at SCCWRP on August 30, and laboratory analysis and data submittal is currently underway. SCCWRP scientists also met with staff from the Santa Ana Regional Water Quality Control Board on September 18 and the Los Angeles and San Diego Regional Boards on September 26 to discuss the future evolution of the monitoring program (e.g., expanding to nonperennial streams, including reference sampling, and adding new indicators like CECs).

Lead Investigator: Schiff

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 the first spring-summer season of dry weather sampling at 12 sites in Orange and San Diego Counties. Sampling will continue at a subset of these sites including winter dry and wet weather (storm events) from October through April. Additional sites will also be added to include reference beaches.

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*).

Lead Investigator: McLaughlin

3. Regional Wetland Monitoring

Highlight

a. Wetlands Status and Trends

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

Update: The first phase of this project, including all technical analyses, is now complete and the final technical report has been released. Results were presented to the California Wetland Monitoring Workgroup and the State Water Board's Surface Water Ambient Monitoring Program Round Table. The California Natural Resources Agency will also be briefed over the next quarter. SCCWRP researchers are now preparing for the next phase of this work, to include development of the change assessment methodology, implementation manual production, statewide sample draw, and implementation of the program at approximately 200 plots across California. To that end, a Technical Advisory Committee meeting was held August 27.

Photo credit: Lisa Fong

To develop wetland restoration performance curves, SCCWRP staff conducted California Rapid Assessment Method (CRAM) assessments at 36 restored wetland sites throughout San Diego, Orange, Los Angeles, Ventura, and Santa Barbara counties. This exceeds the first year field data collection goal of 30 sites. Over the next quarter, data collection will be completed at the remaining sites in San Diego County and data analysis to develop the initial performance trajectories will begin.

Finally, a meeting was held for level 3 (intensive site assessment) wetland indicator development on August 13.

Lead Investigator: Stein

Highlight

b. Depressional Wetlands

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

Update: Field sampling at 23 depressional wetland sites was completed this quarter. Sampling included water chemistry, sediment toxicity, application of the California Rapid Assessment Method (CRAM), and collection of benthic macroinvertebrates and diatoms. Taxonomic identification of benthic invertebrates and diatoms is in progress and final CRAM calculations will be completed over the next quarter. Laboratory toxicity testing was also completed, and toxic sediments were found in two of the 23 wetlands sampled. An additional 15 sites will be sampled in 2013, with initial reconnaissance set to begin this winter.

In addition, the macroinvertebrate, diatom, and CRAM data from the first year of the project (2011) were recently analyzed. These indicators showed promise in assessing the condition of depressional wetlands, but additional indicator refinement and data are needed to confirm the trends of response to a gradient of disturbance. In particular, additional work is needed to refine the sampling index period for nonperennial wetlands that contain water for only part of the year. Results of the 2011 analysis were presented to the Surface Water Ambient Monitoring Program Roundtable.

Lead Investigator: Stein

c. Eelgrass

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

Update: The spatial and tabular data for 22 individual eelgrass mitigation projects are being incorporated into the California Wetlands Portal. This information will complement the existing regional

maps on the known extent and distribution of eelgrass in southern California bays and estuaries. In addition, basic web content for eelgrass has been developed for display on the Portal.

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. A project team meeting was held October 9 to review data, discuss preliminary interpretation, and evaluate options for presenting results. In addition, new historic coastal maps (t-sheets) continue to be merged with t-sheets processed during an earlier watershed historical ecology project. Staff began development of the crosswalk between the historical and contemporary classification systems in coordination with the Wetland Recovery Project's Wetland Managers Group (WMG). Following discussions with the WMG, the extent of digitization of coastal streams was increased.

Lead Investigator: Stein

D. INFORMATION MANAGEMENT AND ANALYSIS

a. Database Management

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

Update: Staff members met with the Santa Ana Watershed Project Authority on August 20 to discuss data integration into CEDEN. Staff members continue to oversee activities of the four CEDEN regional data centers and held a team meeting among the centers at SFEI on October 25. These 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: Several data processing and visualization projects were initiated, including automated data processing of sequential images from in situ cameras to quantify birds on beaches in association with our microbial source tracking studies. Staff members also continued development of a SCCWRP Geoportal to provide access to SCCWRP datasets and associated metadata via a user-friendly web interface.

Lead Investigator: Steinberg

New Project

c. Portal Development

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

Update: Development of both portals is well underway. A complete functional prototype for the Multi-Agency Rocky Intertidal Network "MARINe" portal was prepared. The next step is coordination with the State Water Resources Control Board to publish it to the web for review and testing. Multiple meetings have been held with partners to conceptualize and begin content development for the "Safe to Drink" portal. This will be followed by development of a working prototype early next year.

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: Quality assurance activities are now being coordinated through the Bight '13 regional marine monitoring program. Previously, staff scoped MQO attributes for benthic macro-invertebrate monitoring by meeting with SCCWRP member agencies and the Southern California Association of Marine Invertebrate Taxonomists (SCAMIT). A similar approach was used September 17 for trawl (fish) sampling and analysis at the Southern California Ichthyological Taxonomists and Ecologists (SCAITE) meeting. The next SCAITE meeting is scheduled for December 3 at SCCWRP, where an inventory of current MQOs within existing monitoring programs will be summarized. Finally, SCCWRP is facilitating a new technical advisory group affiliated with the Society of Environmental Toxicology and Chemistry Southern California Chapter to develop standard methods and MQOs associated with sediment toxicity testing. Their first meeting was held October 16 at SCCWRP.

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: Overall, glider operations continue to pose a challenge. The glider was most recently used to support studies associated with the Orange County Sanitation District (OCSD) outfall diversion (see *Effects of Ocean Outfall Diversion on Nutrient Cycling*). To prepare for the studies, staff members attended a 3-day glider calibration exercise on Catalina Island hosted by the University of Southern California Wrigley Institute for Environmental Studies with UC Santa Cruz and the Monterey Bay

Aquarium Research Institute. Participants worked to ensure their respective gliders would work in coordination during the diversion. SCCWRP's glider began monitoring the southern side of OCSD's short outfall on August 28. The mission was aborted two days later due to a circuit board malfunction, but the glider was recovered. A new circuit board was installed, and the glider was redeployed from September 18 to 26, when it was recovered due to unusual behavior (the cause of which is still under investigation). After a boy scout sailboat unexpectedly retrieved the UC Santa Cruz glider on Sept 16, data telemetering to shore is being limited to nighttime hours.

Photo credit: Bruce Bealer

Lead Investigator: Weisberg

Highlight

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: Staff members conducted field sampling and experiments in conjunction with the outfall diversion from August to mid-October. In partnership with OCSD and collaborators, this field campaign was perhaps the most intense ever conducted for assessing impacts to the nearshore from an ocean outfall diversion. Ship-based monitoring included water sample collection and water quality measurements at various depths using a conductivity, temperature, and depth (CTD) device; surface water quality data collection via a flow-through system; deployment of a hydroprobe to measure the depth of the photic zone; and plankton identification. Bottles of sea water were also collected and underwent various treatments and tests utilizing in situ incubation, which mimics exposure to natural light conditions. Next quarter, staff will continue to work on laboratory experiments and data analysis.

Photo credit: Michael Hang

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: Staff members initiated this project in August with meetings to define scoping details in conjunction with the Santa Ana Regional Water Quality Control Board (RWQCB) and Orange County Public Works. Scientists also met with the Santa Ana RWQCB to explore linkages and gain efficiency within different monitoring programs. Stakeholders are currently being identified in this watershed to help develop a collaborative monitoring design.

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: Progress was made in two areas. First, a manuscript was drafted describing the algorithm to define plume location based on colored dissolved organic matter (CDOM) that was developed over the last year. Second, a meeting was held on October 23, and an analytical framework was presented for deriving an algorithm that assesses whether oxygen conditions in plume-affected areas differs from that in reference areas. The project committee endorsed the general approach but asked for additional permutations, which will be presented in a follow-up meeting at the end of the year. The committee also recognized that the biggest impediment to adoption of the algorithm was reliability of the CDOM sensors. SCCWRP staff members will organize and host a workshop in spring 2013 with the CDOM manufacturers to convey the requirements for instrument performance if used in a regulatory context.

Primary Investigator: Weisberg