SCCWRP Director's Report

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SUMMER 2025 ISSUE

Stream biointegrity workshop highlights scientific advances

A State Water Board workshop that focused on the appropriateness of taking a biology-based approach to regulating the health of streams in the San Diego region has highlighted the scientific foundation that SCCWRP has built for using bioassessment tools for routine aquatic monitoring – including SCCWRP's work in recent years to address concerns and questions raised by stakeholders.

The workshop, held in Sacramento in May, centered around more than a decade of research by SCCWRP and its partners to help managers evaluate if policies known as biological objectives are ready to be used for protecting the health of California's stream ecosystems. Regulators, regulated agencies and environmental advocacy organizations all engaged in robust policy debate during the workshop, with SCCWRP science serving as the foundation for the workshop.

In 2020, the San Diego Regional Water Quality Control Board became the first in California to develop a stream biointegrity policy that uses a bioassessment scoring tool developed by SCCWRP to assess water quality in perennially and intermittently flowing streams across the San Diego region. The policy would apply to all natural and engineered channels with soft or natural streambeds, but would exclude streams that are deemed "fully hardened" as a result of being lined with concrete, rock and similar materials.

The policy must be approved by the State Water Resources Control Board before it can go into effect. Thus, the May workshop served as a mechanism for the State Water Board to gather information prior to bringing the San Diego Regional Board's policy forward for State consideration.

Unlike traditional chemistry- and toxicology-based monitoring of stream health, stream bioassessment tools focus on assessing the health of biological communities that are sensitive to changes in stream water quality. These tools, which produce a single numerical score for stream sites, include two statewide indices co-developed by SCCWRP: the California

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Cover photo: Streams that have been modified for flood control purposes, such as Arroyo Trabuco in southern Orange County, pictured, tend to receive uniformly lower bioassessment scores than other stream types. A State Water Board workshop in May provided a forum for discussing the appropriateness of taking a biology-based approach to regulating the health of modified channels and other streams.

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Calendar

Thursday, August 7
CTAG quarterly meeting
(In-person meeting)

Friday, September 5
Commission meeting
(In-person meeting)

Stream Condition Index (CSCI) and the Algal Stream Condition Index (ASCI).

But stakeholders have raised questions and concerns about the appropriateness of adopting a stream bioassessment-based approach across California's diverse watersheds, including whether stream bioassessment tools are applicable statewide and whether streams that have been modified for flood control purposes have the capacity to support healthy biological communities.

Following the San Diego Regional Board's decision to move forward with a stream biointegrity policy in 2020, SCCWRP launched a series of additional studies that were directly responsive to the concerns expressed by both regulated and regulatory stakeholders.

This body of work, which served as the scientific foundation for the State Water Board's stream biointegrity workshop in May, has generated insights and perspectives that are directly responsive to stakeholder questions about the use of stream bioassessment tools in the San Diego region and beyond.

Key issues that SCCWRP science has helped address following the San Diego Regional Board's 2020 action include:

» **Modified channels**: Streams that have been modified via the addition of hardened features, straightening and other changes to the channel's natural morphology tend to receive uniformly lower bioassessment scores than other stream types. As a result, stakeholders have expressed concerns about setting biological objectives for modified channels, given that managers may lack effective options for improving bioassessment scores in modified channels (short of removing or extensively modifying the channel hardening features, which would be costly and could compromise flood control). Over the past few years, SCCWRP research found that bioassessment scores can improve when water quality is improved, although this relationship can be greatly diminished in hard-bottom channels and other modified channels (SCCWRP Technical Report #1434, #1437). Ongoing SCCWRP research is examining whether water-quality improvements alone (i.e., without channel restoration) can improve biological health, plus whether channel restoration positively influences bioassessment scores.

Aquatic insects like the larval dragonfly, above, that are sensitive to human-triggered environmental changes are the focus of stream bioassessment-based monitoring statewide. SCCWRP has generated insights and perspectives in recent years that are directly responsive to questions being raised by stakeholders about the appropriateness of using biology-based assessments to regulate the health of streams in the San Diego region and beyond.

» **Intermittent streams**: The types of organisms that live in intermittently flowing streams can be significantly affected by natural stream drying, as some species lack adaptations to help them survive periods of dryness between flow events. As a result, stakeholders have expressed concerns that using bioassessment tools in intermittent streams could potentially misinterpret the absence of certain species in intermittent streams as signs of ecological degradation. Research conducted by SCCWRP over the past few years has found that across Southern California, intermittent streams have bioassessment index scores that are comparable to perennial streams, and moreover, the research found that low scores in intermittent streams can confidently be interpreted as signs of degradation. But in Northern California, intermittent streams may receive lower scores than their perennial counterparts, suggesting that poor bioassessment scores could reflect natural drying rather than signs of human-caused degradation. A recent SCCWRP study in the San Francisco Bay Area provided an example for how to minimize this risk by conducting comprehensive assessments that include both perennial and intermittent stream reaches (SCCWRP Technical Report #1419).

Although the State Water Board did not take any formal action following the workshop, the policy debate is expected to help frame potential future management discussions about the appropriateness of using bioassessment scoring tools as a regulatory mechanism for protecting stream health statewide.

For more information, contact Dr. Raphael Mazor.

Method for screening pesticides in water bodies validated for statewide accreditation

SCCWRP and its partners have successfully validated a new statewide method for detecting and measuring up to 140 pesticides simultaneously using an integrated set of processing and analysis steps – an effort that paves the way for statewide accreditation of the method.

The method validation work, completed last spring, will serve as the scientific foundation for California's Environmental Laboratory Accreditation Program (ELAP) to consider accrediting laboratories to use the method to generate State environmental data.

The method is designed for use with both grab water samples and passive sampling devices that sorb contaminants in water bodies. It eliminates the need for managers to turn to a diverse range of siloed processing and analysis methods to measure a broad array of current-use pesticides. These labor-intensive legacy methods have limited the number of individual pesticides that are practical to screen on a routine basis.

SCCWRP's role was to develop standard operating procedures (SOPs) and coordinate a multi-laboratory study (San José-Santa Clara Regional Wastewater Facility, Physis Environmental Laboratories, and Weck Laboratories) to validate the effectiveness of the method; both are necessary precursors for ELAP to consider statewide accreditation of the method.

California has historically lacked a single, streamlined method for screening water bodies for a broad suite of current-use pesticides. Although the U.S. Environmental Protection Agency (USEPA) has developed guidance for using passive samplers to measure legacy pesticides like DDT – as well as other types of contaminants like polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs) – there is little guidance on how to monitor current-use pesticides using passive samplers, whether in a consolidated or one-off fashion.

The method that SCCWRP and its partners validated was originally developed a decade ago by the Central Valley Regional Water Quality Control Board and the U.S. Geological Survey; the goal was to take advantage of passive sampling technology to screen water bodies for pesticides commonly used in agriculture and cannabis cultivation.

Passive samplers use simple polymer films that gradually sorb chemical contaminants in the water column; they can detect low contaminant levels that traditional sampling techniques may miss.

While many California monitoring programs still use traditional sampling methods for measuring pesticides, there is interest in using passive sampling methods for screening pesticides in agricultural and urban runoff.

California's Environmental Laboratory Accreditation Program (ELAP) announced in June its decision to develop capacity to accredit environmental laboratories to use the method. The accrediting body, which is responsible for assessing the competency of public and private laboratories across California, plays a key role in protecting the integrity of environmental data used in management decision-making.

Already, researchers have piloted the method to screen for pesticides in multiple Southern California water bodies.

SCCWRP also is planning to host a training workshop for assessors who review environmental laboratories in Ca lifornia as the final step prior to ELAP considering method adoption.

For more information, contact Dr. Danhui Xin or Dr. Charles Wong.

SCCWRP and its partners have successfully validated a new statewide method for detecting and measuring up to 140 pesticides simultaneously in aquatic environments – a streamlined method that will enable managers to efficiently screen water bodies like Morrison Creek in the Central Valley, above, for pesticides. California's Environmental Laboratory Accreditation Program (ELAP) is considering establishing a pathway for environmental laboratories to be accredited for the method.

Monitoring program successfully demonstrates how to evaluate estuary health statewide

SCCWRP and its partners have successfully demonstrated how a diverse network of monitoring partners can collaboratively implement a newly developed statewide program for monitoring the health of coastal estuaries – a proof-of-concept milestone that paves the way for California to begin producing comprehensive, routine assessments of wetland ecosystem health.

The initial implementation of the California Estuarine Marine Protected Areas (EMPA) Monitoring Program, described in a technical report published in June, showcased how seven partners working in geographically disparate settings with access to different levels of resources and expertise can produce a unified statewide assessment of coastal estuary health. Program participants will build on this demonstration phase as they scale and finalize the program in the coming months.

The monitoring program uses a standardized assessment approach that focuses on the ecological functioning of estuaries. Although this approach is advantageous in that it is directly tied to the beneficial-use goals that estuary managers are working to protect, it also is more complex and laborious to implement than traditional monitoring approaches, which rely on simpler measures of ecosystem condition like the wetland monitoring approach codified into the California Rapid Assessment Method (CRAM).

During the initial implementation of the monitoring program, the network monitored 16 sites statewide, including seven in Southern California, using monitoring methods that were recently standardized and vetted by SCCWRP.

SCCWRP supported the program's initial pilot monitoring phase by helping to coordinate program participants and managing the program's data management infrastructure, including a web-based data submission portal and data analysis and visualization tools.

Researchers' next step is to expand the monitoring to include a larger network of 25 estuary sites, including adding additional partners with more limited resources and monitoring experience.

Once fully developed and implemented in late 2026, the monitoring program will enable researchers to use standardized, rigorously vetted methods for comprehensively assessing the health of wetlands statewide, including assessing the health of the estuaries that have been designated Estuarine Marine Protected Areas (EMPAs). The monitoring program also will be used for evaluating the relative success of different estuary restoration projects and engaging in long-term climate resilience planning.

California has spent more than $600 million over the past two decades to protect and preserve wetlands, but these efforts have largely been site-specific and siloed, with managers lacking rigorous assessment tools and a unified monitoring program through which to assess the effectiveness of management interventions.

Coastal wetlands play a critical role at the land-sea interface, helping to buffer against coastal flooding, filter and retain contaminants, and provide critical habitat for vulnerable plant and animal communities.

A 2017 analysis by SCCWRP and its partners found that about half of the region's remaining wetlands are expected to become permanently submerged by 2100 as a result of sea level rise. But the news is not all bad: If Southern California realigned levees, roads and other infrastructure, the region has the potential to experience a net gain of up to 4,800 acres of wetlands.

In 2018, the Southern California Wetlands Recovery Project – a consortium of seven State agencies, five federal agencies, and six local agencies – developed a master, long-term strategy calling on the region's wetlands to be managed as an interconnected, interdependent network, and to build capacity to conduct regional assessments of wetland health.

The consortium is developing a regional estuary monitoring program for Southern California that integrates seamlessly with both California's EMPA Monitoring Program and the Southern California Bight 2023 Regional Monitoring Program's Estuaries study element.

For more information, contact Dr. Jan Walker.

Courtesy of Central Coast Wetlands Group, Moss Landing Marine Labs

The new California Estuarine Marine Protected Areas (EMPA) Monitoring Program has demonstrated how a diverse network of monitoring partners can collaboratively implement coordinated, statewide wetland monitoring, including at Morro Bay Estuary, above, one of 16 coastal estuary sites to be monitored during the program's initial implementation phase.

Study links HF183 fecal marker in runoff to illness risks

SCCWRP and its partners have completed a study establishing the inflection point, or threshold, at which levels of the fecal contamination marker HF183 in wet-weather runoff correspond to an elevated illness risk for people swimming in contaminated receiving waters – a finding that paves the way for a follow-up investigation examining what actions are appropriate for managers to take based on the level of HF183 measured.

The three-year study, conducted in partnership with the Southern California Stormwater Monitoring Coalition (SMC) and described in a pair of journal manuscripts published in February and April, found that 100 gene copies of HF183 in a 100-mL sample is the threshold at which a water body with contaminated stormwater is deemed unsafe to swim in.

By contrast, an estimated 557 gene copies per 100-mL sample are present on average during wet weather in southern California coastal watersheds. What this means is that wet-weather runoff in Southern California, on average, would need to be diluted about 5.5-fold to fall within the safe-to-swim range established by the U.S. Environmental Protection Agency.

Translated into illness risks, the fecal contamination levels that researchers measured in Southern California runoff correspond to a predicted average of 190 gastrointestinal illnesses per 1,000 swimmers. The EPA-approved health risk threshold is 32 illnesses per 1,000.

These insights have helped close a critical knowledge gap about the illness risks associated with beachgoers and others who inadvertently ingest water containing fecal contamination.

For more than a decade, managers have been measuring HF183 in wet-weather runoff to detect human-specific sources of fecal contamination. Unlike other commonly measured indicators of fecal contamination like *Enterococcus* and *E. coli*, HF183 can distinguish human fecal contamination from other animal sources. Human sources present a public health risk, whereas most other animal sources do not.

Surfers paddle away from shore at San Diego's Ocean Beach shortly after a storm. SCCWRP and its partners have completed a study establishing the threshold at which levels of the HF183 fecal marker in wet-weather runoff correspond to an elevated illness risk for people swimming in contaminated receiving waters.

The challenge is that when managers detect HF183 in runoff, they historically have had no context for understanding what degree of illness risk the HF183 levels represent for humans who are exposed to contaminated runoff in receiving water bodies downstream – limiting managers' ability to take follow-up actions based on based on HF183 measurements.

During the follow-up investigation that will launch this summer, researchers will facilitate the deliberations of a management advisory committee that will develop recommendations for how to apply the HF183 threshold in a water-quality management context. The committee, which is comprised of both stormwater regulated and regulatory parties as well as public health departments and an environmental advocacy organization, will explore what actions are appropriate for managers to take upon measuring HF183 exceedances in runoff.

The committee's recommendations are expected in summer 2027.

HF183 is a specific fragment of genetic material found in a ubiquitous human gut bacterium known as *Bacteroides*.

Although the HF183 thresholds derived by SCCWRP and its partners are not the first estimates of illness risks based on HF183 measurements, the prior studies were desktop modeling exercises that did not involve field data collection; the earlier studies also were focused on sewage spills instead of contaminated wet-weather runoff.

During the SCCWRP-led study, researchers collected wet-weather data from 31 watershed sites across coastal Southern California, and took advantage of recent advances in droplet digital PCR (polymerase chain reaction) technology to directly measure six common pathogens, including human norovirus, adenovirus, *Campylobacter*, and *Salmonella*. Health risk modeling was then used to derive the HF183 thresholds.

For more information, contact Dr. Joshua Steele.

Updates by Thematic Area

SCCWRP Research Themes BIOASSESSMENT • ECOHYDROLOGY • EUTROPHICATION • CLIMATE RESILIENCY • CONTAMINANTS OF EMERGING CONCERN • MICROBIAL WATER QUALITY • STORMWATER BMPs • REGIONAL MONITORING

BIOASSESSMENT

Study to probe influence of water-quality improvements, channel restoration on stream biological health

SCCWRP and its partners have launched a three-year study to evaluate if improving water quality in urban streams – either alone or in tandem with stream restoration – can positively influence biological condition scores.

The goal of the study, which kicked off in July in partnership with the Southern California Stormwater Monitoring Coalition (SMC), is to identify potential actions that managers could take to address biological degradation, which is widespread in modified channels and other urban streams. Researchers will investigate two key questions: whether improving water quality alone can increase bioassessment scores in engineered channels (i.e., without removing their channel modification features), and whether improved water quality in combination with stream channel restoration projects can increase their bioassessment scores.

Urban streams – especially those that have been modified through hardening of their banks and/or bottom, and/or through changes to their channel shape – are much more likely to receive lower biological condition scores than their counterparts in less developed areas, underscoring the need to identify effective management actions for improving urban stream health.

SCCWRP's member agencies are welcome to join the project's recently convened technical advisory committee and to suggest stream sites to study. For more information, contact Dr. Raphael Mazor.

ECOHYDROLOGY

Effort launched to expand, enhance statewide framework for establishing stream flow targets

SCCWRP and its partners have launched a three-year effort to expand and enhance the California Environmental Flows Framework (CEFF) – a standardized statewide approach that watershed managers use to establish flow targets for streams that are intended to protect ecosystem health.

The project, which kicked off in June, will focus on improving understanding of the intersection between stream flow patterns, groundwater extraction practices and water-quality changes. The existing tools that support CEFF do not adequately account for the influence of groundwater extraction – which can reduce surface stream flows – nor the ways that changes in stream flows can affect key water-quality parameters, including stream temperatures and specific conductance.

Researchers' goal for this project, which is titled "From Framework to Flows (F2F)", is to extend the management utility of CEFF, paving the way for CEFF to answer more integrated management questions.

CEFF, which was co-developed by SCCWRP, provides a rigorous, standardized approach for determining how to allocate limited surface flows that balance both human and ecosystem needs for flowing water.

Effort launched to streamline process for requesting stream flow diversions

SCCWRP and its partners have begun working to streamline the process by which Californians requesting to divert stream flows can assess whether the flow reductions will adversely affect the streams' ecological health – the third phase of an effort to standardize how California evaluates flow diversion requests.

The study's third phase, launched in June, is intended to reduce the need for flow-diversion applicants to generate

Courtesy of Ted Grantham, University of California, Berkeley

California cannabis growers, including this farm in Northern California, above, are among the parties requesting to divert water from nearby streams to support their operations. Researchers are working to streamline the process by which these applications can assess whether their proposed flow reductions will adversely affect stream ecological health.

watershed-specific curves that show the relationship between flows and ecological response; instead, applicants will be able to use pre-developed regional curves in their analyses. The approach is consistent with the California Environmental Flows Framework (CEFF), a scientific approach co-developed by SCCWRP to bring consistency and standardization to how flow targets get set statewide.

The study was originally motivated by a statewide effort to standardize the process by which California cannabis growers can demonstrate that the water they're requesting to divert from nearby streams to support cannabis cultivation does not adversely affect the streams' ecological health; however, the underlying approach developed via this study will be applicable to other types of flow diversion requests across California.

While this approach is being piloted initially in the North Coast region of California, it is designed to be readily adapted for use in each of the 14 regions statewide.

Effluent discharge studies exploring management options for offsetting stream temperature increases

A pair of studies investigating how discharges of treated wastewater effluent into the Los Angeles and upper Santa Clara Rivers affect stream health has begun exploring a range of potential management options for how to offset increased water temperatures – the latest step in an ongoing investigation that could be widely applicable to other Southern California streams facing temperature management challenges.

The scenario development phase, launched in May, is exploring how combinations of traditional engineered solutions, including process modifications and effluent chiller systems that cool wastewater before being discharged, might be used in tandem with nature-based solutions to optimally mitigate increased water temperatures. Nature-based solutions refer to any landscape or structural modification that is designed to improve or protect ecological health by closely mimicking natural processes; these solutions include shading and mixing surface waters with groundwater.

Researchers are working to understand how combinations of traditional engineered solutions might be used in tandem with nature-based solutions to optimally mitigate increased water temperatures in watersheds such as the Santa Clara River, above, where treated wastewater effluent is being discharged. The study is motivated by a new generation of wastewater discharge permits that have changed the permissible temperatures at which receiving waters must be maintained.

The study is motivated by a new generation of wastewater discharge permits that have lowered the maximum temperature at which receiving water is required to be maintained from 86 to 80 degrees Fahrenheit; the permits also prohibit effluent discharges from triggering more than a 5-degree increase in water temperature.

The lower allowable temperatures are more difficult to reach because wastewater effluent is typically discharged into streams above the stream's ambient temperature.

CLIMATE RESILIENCY

Expert panels develop recommendations to standardize, streamline coastal habitat mapping in California

A series of expert advisory panels convened by SCCWRP and its partners has developed recommendations for how California can streamline and standardize the process by which coastal habitats get mapped in California – part of an ongoing effort to develop a more continuous, parsimonious process for keeping maps of coastal habitats up to date and relevant for supporting management decisions.

The recommendations, finalized in May, are intended to improve California's ability to do routine, consistent, sustainable mapping of four coastal habitats: rocky intertidal areas, coastal wetlands/estuaries, eelgrass beds, and beaches and dunes. The recommendations cover how to define habitat boundaries, collect and analyze data, and produce annual updates to maps in a routine and cost-effective manner.

The maps – which document key habitat features, including boundaries, topography, and relationships to adjacent habitats – are foundational in building California's capacity to monitor the long-term resiliency of coastal habitats to sea level rise and climate change. Because mapping is done at different times and varying frequencies, maps of California coastal habitats tend to be perpetually outdated, which can slow down progress on coastal restoration projects and impede managers' ability to evaluate restoration success.

The California Ocean Protection Council and other agencies are planning to use the

panels' recommendations to explore how to enable routine coastal mapping; the recommendations also provide guidance for agencies that are currently doing coastal habitat mapping.

EMERGING CONTAMINANTS

Post-fire aquatic monitoring network reaches consensus on thresholds for evaluating chemical exposure risks

A water-quality monitoring network that was formed to track pollution and debris from the Palisades and Eaton fires has reached consensus on a set of thresholds to use for evaluating the human health risks associated with recreational exposure to post-fire chemical contaminants – a key milestone in efforts to bring consistency to how individual monitoring partners use the network's data to evaluate exposure risks.

The thresholds, which monitoring partners reached consensus on in June, define the concentrations at which recreational exposure to heavy metals and PCBs (polychlorinated biphenyls) in aquatic environments begin to pose an elevated health risk for humans. The thresholds were derived using a U.S. Environmental Protection Agency-developed risk calculator tool.

Prior to reaching consensus on the thresholds, individual monitoring partners were using different sets of thresholds, leading to inconsistent interpretation of the health risks of exposure to these common post-fire contaminants.

The Los Angeles-area Post-Fire Water Quality Monitoring Network, which SCCWRP helped convene in February following two of the most destructive fires in L.A. County history, is tracking how pollution and debris from the Palisades and Eaton fires are spreading through coastal ecosystems and adversely affecting ecological and human health. About 25 agencies are working together to generate high-quality, comparable data on the levels and types of common post-fire contaminants in aquatic systems, as well as general chemistry measurements such as dissolved oxygen and suspended particles.

A field crew from the Los Angeles Regional Water Quality Control Board collects a water sample near the Rustic Creek storm drain at Will Rogers State Beach in Pacific Palisades. The Los Angeles-area Post-Fire Water Quality Monitoring Network, which SCCWRP helped convene, has reached consensus on a set of thresholds to use for evaluating the health risks associated with recreational exposure to post-fire chemical contaminants.

Expanded microplastics toxicity database helping to advance California's microplastics management strategy

SCCWRP and its partners have nearly doubled the size of a public, web-based repository of toxicity data summarizing how microplastics exposure adversely affects humans and aquatic life – a major expansion that better positions the database to serve as a scientific foundation for microplastics management, not only in California but around the world.

The new version of the Toxicity of Microplastics Explorer (ToMEx), known as ToMEx 2.0 and unveiled in June, reflects microplastics toxicity data from more than 350 high-quality, published scientific studies, including about 150 studies that were published after the original version of ToMEx was developed.

Already, researchers are making plans to use the expanded database to refine preliminary microplastics exposure thresholds for aquatic life; the preliminary thresholds for California were originally derived using the first version of ToMEx. Researchers also plan to use the database to begin identifying aquatic organisms that could become bioindicator species to routinely monitor for potential adverse effects from microplastics exposure.

Meanwhile, California's microplastics toxicity database is being leveraged around the world to develop microplastics management frameworks and strategies, including Japan and Canada. The International Joint Commission, which manages water quality and other issues for the Great Lakes, announced earlier this year that it is adapting California's microplastics risk management framework, including ToMEx, for the Great Lakes. And researchers in Japan are leveraging ToMEx to conduct a preliminary risk assessment of microplastics in Tokyo Bay.

STORMWATER BMPS

Low-cost sensors for detecting illicit discharges transitioned to end users

SCCWRP and its partners have successfully transitioned a network of low-cost field sensors that play a key role in automating detection of illicit pollutant discharges to a monitoring team at Orange County Public Works, following the completion of a pilot study in Orange County storm drains.

During a workshop held at SCCWRP in June, researchers trained end users from Orange County on field deployment, sensor maintenance, and data analysis. The sensors are coupled with an algorithm that automates detection of illicit pollutant discharges that can pass rapidly through storm drain systems. The technology was developed by the BoSL Water Monitoring and Control Research Team in Australia.

Historically, researchers have conducted periodic, in-person field sampling during dry weather to detect these discharges – a monitoring approach that can limit managers' chances of detecting transitory pollutant discharges. Additionally, processing field samples can take weeks to generate results, further hampering the time managers have to detect an illicit discharge and then track it back to an upstream source.

By contrast, automated monitoring produces a continuous stream of real-time data that enables the algorithm to alert managers to spikes and other sudden changes in water quality and flow that can lead to focused source-tracking follow-up work.

A monitoring team from Orange County Public Works explores how to use low-cost field sensors to automate detection of illicit pollutant discharges during a workshop at SCCWRP in June. SCCWRP and its partners have successfully transitioned this technology to Orange County end users, following the completion of a pilot study in Orange County storm drains.

Tool developed to calculate runoff infiltration rate for BMPs

SCCWRP has developed an open-source tool for calculating the infiltration rate of runoff as it passes through stormwater BMPs (best management practices) – a resource intended to help stormwater managers take a streamlined, standardized approach to generating this key indicator of BMP performance.

The Infiltration Analysis Calculator, which was published online in July, determines how quickly runoff is processed across a BMP's soil-water interface. Historically, infiltration rates have been calculated using inconsistent, ad-hoc methods that rely on subjective judgment, limiting reproducibility and comparability across studies.

Infiltration rates provide quantitative insights about BMP performance over time, thus helping to inform when maintenance is needed.

Already, the Southern California Stormwater Monitoring Coalition (SMC) has begun using the Infiltration Analysis Calculator alongside a suite of other SCCWRP-developed BMP tools to analyze data for the SMC's Regional BMP Monitoring Network.

Effort launched to assess BMP maintenance condition across L.A. region

SCCWRP has launched a summer-long effort to visually assess the condition of biofiltration stormwater BMPs (best management practices) across the Los Angeles region using a standardized, rapid method – an inspection effort that will enable researchers to build a baseline regional understanding of the state of operations and maintenance (O&M) for these systems.

The study, which kicked off in July, is aiming to inspect 40 to 50 publicly accessible biofiltration BMPs for visible maintenance issues, such as erosion, clogging, and overgrown vegetation. A web-based form is being used to capture monitoring data on a mobile device.

Researchers plan to use the insights to better understand how O&M practices affect biofiltration performance, as well as help managers develop more effective O&M plans.

In Southern California, stormwater managers have spent billions of dollars implementing and managing stormwater BMPs to remove pollution from runoff. However, the O&M needs for these systems can vary from site to site, making it challenging for managers to allocate O&M resources and train staff.

To nominate BMPs for a SCCWRP maintenance condition assessment, contact Dr. Elizabeth Fassman-Beck.

New SCCWRP Publications

Journal Articles

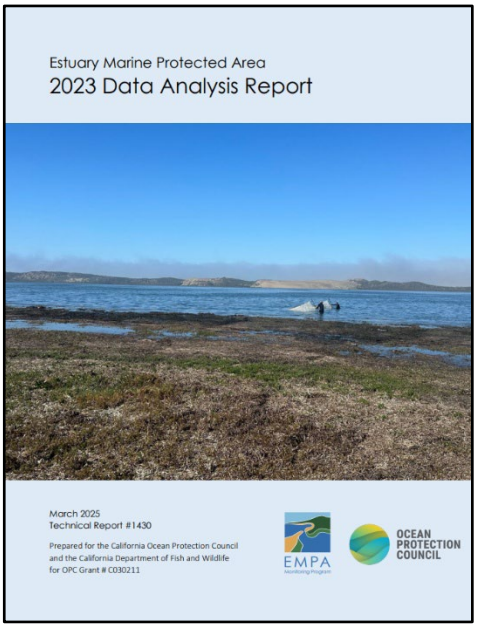
Fassman-Beck, E., E.D. Tiernan, K.L. Cheng, K.C. Schiff. 2025. A data-driven index for evaluating BMP water quality performance. *Water Research* 282:123769.

Hoel, P., D. Bianchi, K.C. Cavanaugh, C.A. Frieder, F. Kessouri. 2025. Influence of anthropogenic nutrient sources on kelp canopies during a marine heat wave. *Marine Pollution Bulletin* 216:117788.

Irving, K., K.T. Taniguchi-Quan, A. Santana, M.L. Treglia, R.N. Fisher, J. Haas, C. Loflen, C. Brown, E.D. Stein. 2025. Vulnerability of an Endangered Amphibian to Climate-Change Induced Hydrologic Change. *River Research and Applications* DOI:10.1002/rra.4455.

Steele, J.A., A.G. Zimmer-Faust, T.J. Clerkin, A. Gonzalez-Fernandez, S.A. Lowry, A.D. Blackwood, K. Raygoza, K. Langlois, A.B. Boehm, R.T. Noble, J.F. Griffith, K.C. Schiff. 2025. Survey of pathogens and human fecal markers in stormwater across a highly populated urban region. *Environmental Science: Processes & Impacts* 27:1354-1367.

Tiernan, E.D., J. Gray, L.S. Beck, E. Fassman-Beck. 2025. Design of a Mobile, Field-Scale Rainfall Generator for Urban Runoff Water Quality Studies. *Journal of Irrigation and Drainage Engineering* DOI:10.1061/JIDEDH.IRENG-10507.



SCCWRP, in partnership with the California Ocean Protection Council, has published a technical report summarizing monitoring efforts at 16 estuaries across California as part of the new Estuarine Marine Protected Areas (EMPA) Monitoring Program.

Journal Articles (Accepted)

Nissen, K., M. Borst, E. Fassman-Beck. Influence of Volumetric Water Content Sensor Configuration in Evaluating Bioretention Planter Retention and Evapotranspiration. *Journal of Hydrologic Engineering*.

Xin, D., A.P. Davis, E. Fassman-Beck. Assessment of PFOA and PFOS Sorption to Engineered Media in Biofiltration Columns. *Journal of Sustainable Water in the Built Environment*.

Technical Reports

Mazor, R.D., A.C. Rehn, N. Lombardo, M. Sutula. 2025. A Technical Foundation for Biointegrity and Eutrophication Indicators and Thresholds for Modified Channels, Intermittent Streams, and Streams on the Central Valley Floor: 2025 Update. Technical Report 1343. Southern California Coastal Water Research Project. Costa Mesa, CA.

Mazor, R.D., K. Irving, D.J. Gillett, J.S. Brown, A. Santana. 2025. Improving biointegrity in engineered channels. Technical Report 1437. Southern California Coastal Water Research Project. Costa Mesa, CA.

Mazor, R.D., J.S. Brown. 2025. An assessment of the biological condition of streams in the San Francisco Bay. Technical Report 1419. Southern California Coastal Water Research Project. Costa Mesa, CA

O'Connor, K., B. Fulkerson, J.B. Walker, E.D. Stein, C. Whitcraft, J.S. Huckeba. 2025. Estuary Marine Protected Area - 2023 Data Analysis Report. Technical Report 1430. Southern California Coastal Water Research Project. Costa Mesa, CA.

Quarter in Review

Conference Presentations

Fassman-Beck, E. Tiernan. Measuring Runoff Water Quality Improvement from Street Sweeping in Southern California. Environmental and Water Resources Institute (EWRI) Congress. May 19-21, 2025. Anchorage, AK.

Fassman-Beck, E. Tiernan, K. Schiff. A Multi-metric, Data-driven Index to Evaluate BMP Water Quality and Hydrologic Mitigation Performance. Environmental and Water Resources Institute (EWRI) Congress. May 19-21, 2025. Anchorage, AK.

Gillett, D.J., S. Weisberg, S. Alin, D. Cadien, K. Barwick, W. Enright, C. Larsen. Changes in Infaunal Macrobenthos of the Southern California Continental Margin Over Five Decades. European Marine Biology Symposium. July 6-9, 2025. Bodø, Norway.

Jansen, L.S., R. Hill, L. Yuan, D. Kopp, S. Rumschlag. Temperature drives benthic macroinvertebrate assemblages in lotic and lentic ecosystems, but response among shared taxa vary. Society of Freshwater Science Annual Meeting. May 19-23, 2025. San Juan, Puerto Rico.

Jansen, L.S., R. Hill, J. Corona. K. Swedberg. Advancing economic valuation and policy analysis of freshwaters via collaborations between ecologists,

economists and policymakers. Society of Freshwater Science Annual Meeting. May 19-23, 2025. San Juan, Puerto Rico.

Mazor, R.D., E.D. Stein, D.J. Gillett, A. Santana, A. Dunn, M. Teng. Protective assessment: A new project aimed at keeping healthy streams healthy. Society for Freshwater Science Annual Meeting. May 18-21, 2025. San Juan, Puerto Rico.

Mazor, R.D., D. Gillett, K. Irving, K. Taniguchi-Quan, E.D. Stein. Using large-scale monitoring datasets to inform site- and watershed-scale causal assessments. Society for Freshwater Science Annual Meeting. May 18-21, 2025. San Juan, Puerto Rico.

Steele, J., E. Dudley, B. Badgeley, E. Owings, S. Ulrich. Solving Tomorrow's Challenges in Applied and Environmental Microbiology. American Society for Microbiology Microbe Annual Conference. June 19-22, 2025. Los Angeles, CA

Stein, E.D, J. Brown, P. Hough, B. Topping. Evaluation of Compensatory Mitigation Site Resiliency: Demonstration of a Statewide Assessment Framework. Society of Wetland Scientists Annual Meeting. July 15-18, 2025. Providence, Rhode Island.

Tiernan, E., J. Gray, D. Nguyen, B. Shi, M. Wang, K. Dunn, J. Peng, D. McCarthy, E. Fassman-Beck. Application of low-cost IoT sensors for automated real-time detection of illicit discharge in Orange County's MS4. Environmental and Water Resources Institute (EWRI) Congress. May 19-21, 2025. Anchorage, AK.

Tiernan, E., A. Massoudieh, D. Xin, A. Davis, E. Fassman-Beck. Mechanistic model of copper sorption in engineered stormwater filtration media. Environmental and Water Resources Institute (EWRI) Congress. May 19-21, 2025. Anchorage, AK.

Xin, D., E. Fassman-Beck, A.P. Davis. Media cation exchange capacity as a predictor of copper sorption in biofiltration. Environmental and Water Resources Institute (EWRI) Congress. May 19-21, 2025. Anchorage, AK.

Xin, D., S. Dial-Sauers, W. Lao, E. Fassman-Beck. Monitoring microplastics in biofiltration: runoff and media sample collection and analysis. Environmental and Water Resources Institute (EWRI) Congress. May 19-21, 2025. Anchorage, AK.

Walker, J.B., K. O'Connor, K. Wasson, C. Crain, K. Johnston, R. Ambrose, C. Whitcraft, J. Crooks, K. Beheshti, M. Hall, K. Nichols, M. Clemens, E. Stein. Sentinel site networks as a mechanism to evaluate progress toward meeting restoration goals in altered and unaltered landscapes. Society of Wetland Scientists Annual Meeting. July 15-18, 2025. Providence, Rhode Island.

Conference Posters

Steele, J.A., A. Zimmer-Faust, T. Clerkin, A. González-Fernández, S. Lowry, K. Raygoza, K. Langlois, A. Leang, A. Boehm, R. Noble, K. Schiff, J. Griffith. Linking Indicators of Fecal Contamination to Human Health Risk in Urban Stormwater. American Society for Microbiology Microbe Annual Conference. June 19-22, 2025. Los Angeles, CA

Zimmerman, J.A., A. Leang, J. Steele, J. Griffith. Interlaboratory Comparison of HF183 and CrAssPhage in Wastewater-Spiked Environmental Waters Using Multiple Digital PCR Platforms. American Society for Microbiology Microbe Annual Conference. June 19-22, 2025. Los Angeles, CA

Other Presentations

Fassman-Beck, E. Automated Detection of Transient Illicit Discharges Using IoT Sensors. Presentation to State and Regional Water Boards. July 11, 2025. Via webinar.

Fassman-Beck, E. Automated Detection of Transient Illicit Discharges Using IoT Sensors. Center for Watershed Protection Webcast: IDDE From Detection to Prevention. June 11, 2025. Via webinar.

Mazor, R.D. Bioassessment in Streams: State of the science. Update for the State Water Resources Control Board's workshop on San Diego's biological objectives. May 6, 2025. Sacramento, CA.

Mazor. R.D. Assessing the health of streams: Methodologies and biological indices. California Stormwater Quality Association seminar series. July 10, 2025. Via webinar.

Thornton Hampton, L.M. Building the Microplastic Monitoring Toolbox to Address Management Needs. City of Los Angeles Bureau of Sanitation seminar series. May 21, 2025. Playa Del Rey, CA.

Walker, J.B. Southern California Wetland Recovery Project Regional Monitoring Program: Final Regional Monitoring Plan and Agency Guidelines. SCWRP Wetland's Manager's Group. June 10, 2025. Via webinar.

Walker, J.B. Development of a coastal wetland (L3) functional assessment dashboard and toolkit to support project prioritization and evaluation. California Estuary Monitoring Workgroup. June 4, 2025. Via webinar.

Weisberg, S.B. Latest scientific developments at SCCWRP. April 26, 2025. Santa Ana Regional Water Quality Control Board. Santa Ana, CA.

SCCWRP Personnel Notes

Commission

Dr. **Earthea Nance**, the newly appointed Director of the Ventura County Watershed Protection District, was named a SCCWRP Commissioner in July, filling a vacancy.

Hayley Luna, Deputy Director of Water Resources for the Ventura County Watershed Protection District, was named an Alternate Commissioner in July, replacing Arne Anselm, who retired. Anselm served on the Commission for more than eight years.

CTAG

Amanda Magee, Senior Engineering Geologist Supervisor for the California State Water Quality Control Board, was named a CTAG Representative in July, replacing Lori Webber, who was promoted into a new role. Webber served on CTAG for more than seven years.

Laurel Warddrip, Environmental Program Manager for the California State Water Quality Control Board, was named an Alternate CTAG Representative in July, replacing Katherine Faick, who served as an Alternate Representative for 1-1/2 years.

Rachel Le, a Life Scientist at the U.S. Environmental Protection Agency, Region 9, was appointed a CTAG Alternate Representative in July, supporting Dr. Eric Dubinsky, who remains the lead CTAG Representative.

Scientific Leadership

Dr. **David Gillett** has been appointed to the Coastal and Estuarine Research Federation (CERF) International Membership/European Expansion Committee.

Dr. **David Gillett** has been appointed to the National Estuarine Research Reserve System Catalyst/Knowledge Exchange grant review panel.

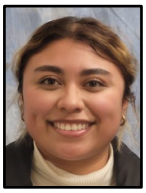
Dr. **David Gillett** has been appointed an Associate Editor of the journal *Estuaries and Coasts*.

Dr. **Martha Sutula** has been appointed a reviewer for the NOAA Ocean Acidification Program Regional Vulnerability Assessment Grant Program.

Dr. **Kris Taniguchi-Quan** has been appointed Chair of the California Environmental Flows Workgroup for the California Water Quality Monitoring Council.

Dr. **Leah Thornton Hampton** has been appointed to the Ph.D. committee of Justin Hunt at Texas Christian University.

Promotion



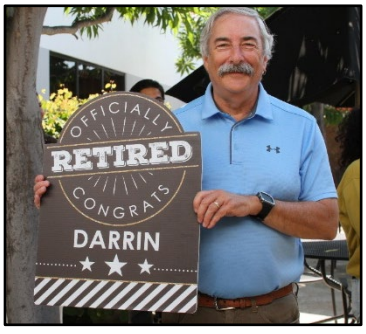
Andrea Benitez, who has worked SCCWRP as a Laboratory Assistant in the Microbiology Department since 2021, was promoted in May to a full-time Research Technician. She recently graduated with a B.S. in microbiology from California State University, Long Beach.

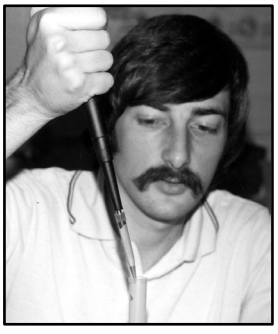
Departures

Dr. **Katie Irving**, who has worked at SCCWRP as a Scientist in the Biology Department since 2019, left SCCWRP in May to relocate to England.

Dr. **Edward Tiernan**, who has worked at SCCWRP as an Engineer in the Engineering Department since 2022, left SCCWRP in June to relocate to Austin.

Samuel Lillywhite, who has worked at SCCWRP since 2022, most recently as a Research Technician in the Biogeochemistry Department, left SCCWRP in May.



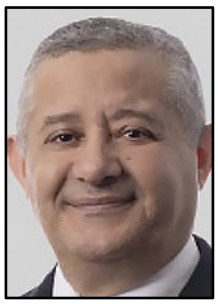


Darrin Greenstein, who has worked at SCCWRP since 1982, most recently as a Research Coordinator in the Toxicology Department, retired in June after 43 years of service to SCCWRP. He is SCCWRP's longest-serving staff member. Greenstein played a pivotal role in numerous SCCWRP scientific advances over the years, including development and implementation of multiple toxicology-based methods for assessing water quality and sediment quality.

SCCWRP COMMISSIONER SPOTLIGHT

Deputy director blends mentorship into management

For the past 36 years, Adam Ariki has not only dedicated his career to protecting communities and water resources in the Los Angeles region, but he has also embraced his role as a teacher and mentor to his fellow stormwater engineers.



Adam Ariki, P.E.

Ariki found his passion for teaching and mentoring as a student at New Mexico State University, where he tutored classmates and even substituted for some classes. That early experience working with and helping others naturally shaped his management style as the Deputy Director of the Water Resources Branch at Los Angeles County Public Works.

"We're a team, so we strategize and work on ways to innovate people, especially our younger staff, and get them excited about the work we do," Ariki said. "Even though it's not really traditional mentoring, I want to help them find their potential and realize that they're making an impact."

Ariki became a SCCWRP Commissioner in February 2024, filling a vacancy after Keith Lilley retired.

In his role, Ariki oversees about 1,000 employees across five divisions responsible for water resource management, including planning, engineering, operations and maintenance for the L.A. County Flood Control District. He also oversees the Safe, Clean Water Program and the County's Waterworks Districts.

"This role is challenging, but it's also rewarding to be of great value to the community as a whole," Ariki said. "It's neat that we get to protect the communities from flooding, and by the same token make the water supply for the region sustainable."

Ariki first became aware of SCCWRP early in his career as a civil engineer at L.A. County Public Works working on the National Pollutant Discharge Elimination Systems (NPDES) permit. SCCWRP had been working with the County on a study looking at total maximum daily loads (TMDLs).

Adam Ariki tours a vineyard in the Santa Ynez Valley in Santa Barbara County.

Adam Ariki, P.E.

Job: Deputy Director, Water Resources, Los Angeles County Public Works (since March 2024)

SCCWRP role: Commissioner (started February 2024)

Prior jobs: *36 years with Los Angeles County Public Works (1989-present)*: Assistant Deputy Director, Stormwater Engineering Division (2021-2024); Assistant Deputy Director, Waterworks District (2007-2021); Principal Engineer (2003-2007); Senior Civil Engineer (2001-2003); Supervising Civil Engineer (1999-2001), Civil Engineer (1992-1999); Senior Civil Engineering Assistant (1989-1992)

Education: M.S. civil engineering, New Mexico State University (1988); B.S. civil engineering, New Mexico State University (1986)

Residence and hometown: Pasadena

Family: Wife Menerva, a retired civil engineer; daughter Nicole, 22, a law school student

Hobbies: Reading; hiking; running

Although he later became more involved with the drinking water sector, he is excited to once again be able to collaborate with SCCWRP on projects related to stormwater best management practices (BMPs).

Born and raised in Middle East, Ariki initially studied civil engineering at the American University of Beirut before moving to the U.S. in 1981 amidst the Lebanon War. He attended New Mexico State University, where he received both his B.S. and M.S. in civil engineering.

During his first year of grad school, Ariki wanted to study structural engineering, but later lost interest in the subject. He then talked to his advisor, who invited Ariki to work with him as a research assistant in wastewater engineering instead.

"What I found really exciting was being able to combine engineering principles with biology and chemistry to solve different types of problems," Ariki said. "Then it dawned on me that there is potential to really make an impact in this field of work."

After graduating, Ariki found an opportunity to work in a large urban city and accepted an offer to work at L.A. County Public Works – where he has stayed at since.

In his spare time, Ariki enjoys unwinding with a good book and hiking in the San Gabriel Mountains. He is also an avid runner and always starts his morning with a five-mile run.

CTAG SPOTLIGHT

Environmental planner pivots from photography

Before starting her career in environmental science, Emily Kochert dreamed of exploring the world as a photographer for *National Geographic*.

Emily Kochert

Kochert had always been captivated by the photos in the magazine and wanted a career where she could learn about the world through this lens. She initially pursued photography during her undergrad at University of Florida, but soon realized she was more excited about understanding the world from a technical and scientific perspective rather than artistic one.

She pivoted her career track and received a B.A. in anthropology, and later studied geography at San Diego State University, where she began working with geographic information systems (GIS) and was introduced to watershed science. Kochert then went on to also study watershed science at Utah State University.

"I really enjoyed watershed modeling since it was similar to the archaeological modeling I was already doing for my geography courses," Kochert said. "Though they're all pretty different from each other, I'd like to think that all of my experiences have complemented each other to get me to where I am today."

Kochert, who has been with San Diego County for six years, became her agency's Alternate CTAG Representative in February 2025.

In her current role, Kochert leads monitoring and planning in the San Diego River and San Luis Rey watersheds, including managing projects and contracts to ensure compliance with National Pollutant Discharge Elimination System (NPDES) permits.

Kochert first joined the County as a student worker in the Department of Planning and Land Use, and later worked as a GIS analyst in the Department of Parks and Recreation after grad school. She then worked for multiple environmental consulting firms before returning to the County in its Watershed Protection Program.

Emily Kochert visits the Franz Josef glacier at Westland Tai Poutini National Park in New Zealand.

Although she has stepped back from daily GIS work, Kochert still serves as a bridge between the GIS staff and others in the Watershed Protection Program who may not have the same technical background.

"Not everyone who works in water quality knows about GIS, and not everyone who does GIS knows how to talk about water quality," Kochert said. "I often serve as sort of an intepreter to make sure that everyone is interfacing with each other effectively."

Growing up in Florida, Kochert often spent time in the wetlands surrounding her family's home, which has helped shaped her early connection to the environment and passion for learning about the world around her.

In her spare time Kochert enjoys gardening and traveling around the world – making it a point to not travel back to the same place twice. Her favorite place so far has been Iceland, where she saw the northern lights. She is also active in her local roller derby community and often volunteers as a referee.

Emily Kochert

Job: Land Use Environmental Planner III, San Diego County Watershed Protection Program (since 2024)

SCCWRP role: Alternate CTAG Representative (started February 2025)

Prior jobs: Conservation Manager, San Dieguito River Valley Conservancy (2021-2022); Associate Environmental Scientist, Rincon Consultants, Inc. (2019-2021); Environmental Specialist, Burns & McDonnell (2011-2019); GIS Specialist, SWCA Environmental Consultants (2010-2011); GIS Analyst, San Diego County Parks and Recreation (2008-2010)

Education: Master of natural resources, Utah State University (2018); graduate study in geography, San Diego State University (2007); B.A. anthropology, University of Florida (2001); A.A. photography, Santa Fe Community College (1999)

Residence: La Mesa

Hometown: Gainesville, Florida

Family: Dogs Margie, 10, and Lucy, 4, both mixed breeds; cat George, a Russian Blue mix

Hobbies: Traveling; gardening; refereeing for roller derby

SCCWRP PARTNER SPOTLIGHT

Scientist leads nutrient program for S.F. Bay area

Back when he was a graduate student at the Massachusetts Institute of Technology, Dr. David Senn mainly used pencil-and-paper methods to model the fate and transport of heavy metals and other contaminants in Massachusetts lakes.

Dr. David Senn

His research primarily involved doing field work and analyzing samples in the lab, so Senn didn't have time to develop a computer model.

Now, as a Senior Scientist at the San Francisco Estuary Institute (SFEI), Senn and his team are utilizing advanced numerical modeling to investigate the sources, cycling, and impacts of nutrients on water quality in San Francisco Bay.

"There is a really vibrant community of people who are open to sharing their knowledge," Senn said. "The richness of information that comes with modeling really lets us understand water-quality management challenges at a different level."

Senn is also the Co-Director of SFEI's Clean Water Program and leads its San Francisco Bay Nutrient Management Strategy. He and his team of seven people pursue a range of water quality and nutrient-related issues such as emerging contaminants, microplastics, and harmful algal blooms.

Senn is a long-time SCCWRP research partner and first collaborated with SCCWRP to develop the document that eventually served as the framework for SFEI's Nutrient Management Strategy.

Most recently, Senn has worked with SCCWRP on using a set of a modeling tools known as ROMS-BEC (Regional Ocean Modeling System-Biogeochemical Elemental Cycling) to assess the effects of nutrient discharges on ocean acidification along the Central Coast.

Dr. David Senn provides an overview of a *Heterosigma akashiwo* harmful algal bloom event at the 2024 annual meeting of the Regional Monitoring Program for Water Quality in San Francisco Bay.

David Senn, Ph.D.

Job: Senior Scientist, San Francisco Estuary Institute (started July 2011)

SCCWRP role: Partner on water quality, nutrient, and ocean acidification modeling

Prior jobs: Senior Researcher, Swiss Federal Institute of Technology and Swiss Federal Institute of Aquatic Science and Technology (2007-2011); Research Associate, Harvard School of Public Health (2002-2007); Center Scientist, Harvard School of Public Health (2004-2006); Instructor, Harvard School of Public Health (2002-2006)

Education: Ph.D. civil and environmental engineering, Massachusetts Institute of Technology (2001); B.S. civil and environmental engineering, Rutgers University (1992)

Residence: Berkeley

Hometown: Philadelphia, Pennsylvania and Ocean City, New Jersey

Family: Wife Shannon, a public school teacher; son Niko, 16; daughter Maggie, 14; cats Loki and Bowie

Hobbies: Playing guitar

"At both SFEI and SCCWRP, we have the pretty unique opportunity to work closely with regulators and stakeholders to identify and then pursue the science work that's needed to inform environmental management decisions," Senn said. "We have the opportunity to take on complex challenges to help answer management questions about water quality."

Senn received a B.S. in civil and environmental engineering from Rutgers University. After graduating, he moved to New Orleans to teach middle school math for two years before deciding to go back for his Ph.D in civil and environmental engineering at MIT.

For the next 11 years, Senn continued working as an academic researcher, first at the Harvard School of Public Health and then abroad in Switzerland at the Swiss Federal Institute of Technology (ETH-Zurich), where he studied the impacts of dams on carbon and nitrogen cycling in Zambia and Zimbabwe.

"My wife Shannon and I both wanted to find an opportunity to live and work abroad, and I had a strong interest in working on water resource issues in developing countries," Senn said. "I feel really fortunate that it was the right time in my life and I was with the right person for that adventure."

SCCWRP STAFF SPOTLIGHT

Ecologist investigates HABs in mountain lakes

Dr. Lara Jansen found herself drawn to understand the intricate interactions in an ecosystem after learning about how drivers such as elevation influence the effects of fish stocking on invertebrate and algal communities in mountain lakes.

Dr. Lara Jansen

When Jansen started her graduate work, she knew how harmful algal blooms (HABs) could arise from excess nutrients or rising temperatures in a waterbody. But as she dug deeper, she learned how diverse and complex algal communities can be.

"It's really fascinating to understand how everything in an ecosystem interacts with each other and the potential impacts that come out of it," Jansen said. "I continue to feel drawn to learning more about that, especially with how it relates to water quality management."

Jansen joined SCCWRP in April as a Scientist in the Biology Department. She will be focused on ongoing efforts examining how different water quality stressors impact the biological health of streams.

Jansen recently completed her postdoctoral fellowship with the U.S. Environmental Protection Agency, where she developed species distributions models for macroinvertebrates communities in streams and lakes to support an effort looking at macroinvertebrates as bioindicators of ecosystem health.

She also worked on projects assessing the ecological health of mountain lakes across the United States as well as the drivers of freshwater HABs in mountain and non-mountain lakes in the U.S.

"We don't generally expect HABs in mountain lakes, but they do still occur and it's not really understood why," Jansen said. "There's opportunities to explore how drivers and dynamics of HABs vary from inland lakes to estuaries to the coast, and those are questions that we don't ask as often as we should."

Dr. Lara Jansen takes a canoe out on Trillium Lake in the Oregon Cascades to sample phytoplankton in 2019.

Lara Jansen, Ph.D.

Job: Scientist, SCCWRP Biology Department (started April 2025)

Prior jobs: Postdoctoral Fellow, U.S. Environmental Protection Agency (2023-2025); Graduate Student Fellow, Global Lake Ecological Observatory Network, NASA (2022-2025); Water Resources Intern, Lake Oswego Corporation (2021-2023); Doctoral Student Researcher, Portland State University (2018-2023); Hydrology Intern, Chicago Botanic Garden, Bureau of Land Management (2015); Post Baccalaureate Research Intern, Archbold Biological Station (2014-2015); Summer Research Intern, Sandia National Laboratories (2012)

Education: Ph.D. aquatic ecology, Portland State University (2023); M.S. natural resources, Humboldt State University (2018); B.S. environmental systems, University of California, San Diego (2014)

Residence: Costa Mesa

Hometowns: Maui, Hawaii and Livermore, California

Family: Dog Baz, a two-year-old Labrador/Australian shepherd mix

Hobbies: Trail running with Baz; surfing; backpacking; hiking; cooking

Jansen has always considered herself a West Coast gal. She was born in Maui, Hawaii and then moved to Livermore, California in 2001. She then attended UC San Diego, where she received a B.S. in environmental systems, and later went to Humboldt State University for grad school.

Jansen received a Ph.D. in aquatic ecology from Portland State University, where she studied impacts of anthropogenic and natural drivers on algal communities in Oregon mountain lakes.

"I'm really interested in bioindicators, especially the potential for biotic communities to both impact and improve water quality, and I'm excited to apply that to SCCWRP's work in different ways," Jansen said.

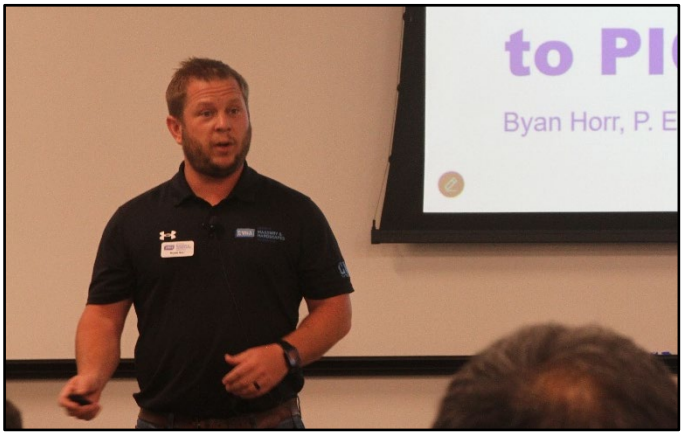
In her spare time, Jansen enjoys trail running with her dog Baz. Her favorite trail is the 93-mile Wonderland Trail that circles around Mount Rainier in Washington. Jansen looks forward to exploring Southern California's hiking spots and would like to hike Mount Baldy.

Jansen also likes cooking and incorporating all types of flavors in her recipes. Recently, she has made garlic miso ice cream and orange fennel shortbread.

SCCWRP SCENES

Transferring knowledge on permeable pavement

Stormwater managers learned how to design, specify, construct and maintain a type of stormwater BMP (best management practice) known as permeable interlocking concrete pavement (PICP) during a day-long workshop at SCCWRP that was co-hosted by the Concrete Masonry and Hardscapes Association. More than 40 participants, including engineers, field crews and member agency staff members, attended technical presentations on PICP, which is designed to reduce runoff drainage by combining pavement with detention and infiltration. Five local concrete masonry producers also attended the workshop to discuss their products with participants during an on-site vendor fair.



Clockwise from top left, SCCWRP's Dr. Elizabeth Fassman-Beck provides an overview of permeable pavement BMPs in Southern California during a permeable pavement workshop at SCCWRP; Gary Stowe, President of Stowe Contracting, a paving stone business, discusses the construction of permeable interlocking concrete pavement (PICP) with workshop attendees; and Bryan Horr, Division Engineer of Segmental Pavements at the Concrete Masonry and Hardscapes Association, provides an introduction to PICP.