SoCal SETAC News

Society of Environmental Toxicology and Chemistry
Southern California Chapter

Volume 26 Number 3 Fall 2019

FEATURE ARTICLE

Leveraging Citizen Science for Effective Environmental Advocacy

By Ben Pitterle,
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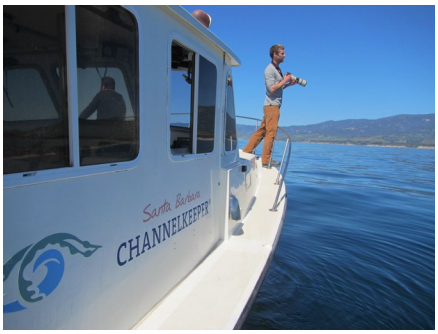
As a small, non-profit environmental organization, Santa Barbara Channelkeeper incorporates environmental monitoring and citizen science to increase our impact within the community. Santa Barbara Channelkeeper's mission is to protect and restore the Santa Barbara Channel and its watersheds through science-based advocacy, education, field work and enforcement. As a member of the global Waterkeeper and California Coastkeeper Alliances, Channelkeeper is one of 13 like-minded Waterkeeper organizations in California, six of which are located in Southern California.



Monitoring MPA compliance off the RV-Channelkeeper

Like many of our sister organizations, Channelkeeper values and leverages traditional citizen science applications to monitor water quality in local watersheds. Our flagship volunteer monitoring program, Stream Team, is one of the longest running and largest citizen water quality monitoring programs in the State. Initiated in 2001, Stream Team collects baseline water quality data every month at up to 43 sites in our region. Over 1,400 community volunteers have participated in the Stream Team program, all trained to follow State approved quality control protocols. Stream Team data is uploaded to the State's California Environmental Data Exchange Network. The data has been used as lines of evidence to support multiple listings on the State's 303(d) Impaired Water Bodies List as well as to support development of Total Maximum Daily Load programs in multiple local watersheds.

Technological innovations in the field of water quality monitoring have enhanced Channelkeeper's ability to monitor local watersheds. Specifically, we integrate the use of deployable sensors and data loggers to collect continuous data for various applications. In the Ventura River watershed, Channelkeeper deploys dissolved oxygen data loggers each summer to monitor the water quality effects of algae growth and diminished stream flow. This data was recently used in an evaluation of minimum flow thresholds necessary to preserve water quality for endangered steelhead trout. We also use deployable data logging devices, such as pressure transducers and conductivity sensors, to document and

President's Corner

Erika Holland, CSU Long Beach

I am so honored to be acting as the 2019-2020 President for the SoCal SETAC Chapter and excited for the year to come. I have been fortunate to be part of SETAC since starting my doctoral program at UC Davis in 2008 where I participated in the NorCal Chapter and related activities. When I started here at CSULB (January 2016) I was eager to get involved in the local toxicology scene and knew the best way to get to know the area was through the SoCal SETAC Chapter. I have been beyond grateful for the welcoming atmosphere, the great networking opportunities for me and my students, and the overall engagement of the group.

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INSIDE THIS EDITION

FEATURE ARTICLE (continued)

track illicit discharges emanating from the municipal storm drain system. In 2012, this technique helped us monitor the daily, illegal discharge of industrial brine waste into a local watershed in the City of Goleta. This discovery led to intervention of local and state authorities and the eventual elimination of the pollution source.

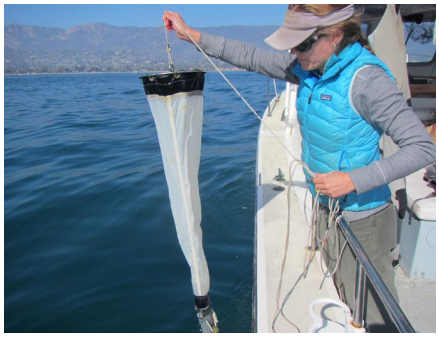
Citizen science has been instrumental in helping stakeholders understand the water quality impacts of algae growth in the Ventura River

Channelkeeper continuously evaluates our monitoring efforts to ensure that they remain relevant to important issues the community is facing. In the aftermath of the Plains All American oil spill in 2015, the existence of natural oil seeps that regularly oil beaches off the Santa Barbara coastline led to uncertainty regarding the source of oil on fouled beaches. Our Tar Ball Monitoring Program was initiated to establish a quantitative baseline dataset of natural oil seep fouling that resource agencies can utilize in the future when evaluating both whether to mobilize cleanup efforts and what appropriate cleanup endpoints should be. To develop this baseline, we survey 14 local beaches along the coastline and document the extent, magnitude, and frequency of natural oiling.

Building on community partnerships is another way that we leverage our monitoring resources. Channelkeeper's 31-foot research vessel, the RV-Channelkeeper, has been utilized to assist the Department of Public Health with biotoxin monitoring, the Department of Fish and Wildlife with Marine Protected Area compliance monitoring, and University of California Santa Barbara researchers with everything from ocean acidification monitoring, biological surveys, and e-DNA sampling of eelgrass beds.

Finally, while the data that Channelkeeper collects has been used for many important purposes, it is important not to overlook ancillary benefits that citizen monitoring programs produce by exposing community members to their local environment.

Particularly in urban or even semi-urban environments, decades of neglect, urban impact, and restricted access can result in community apathy for the resource. Citizen monitoring programs expose people to these ecosystems and provide an opportunity for exploration and appreciation that has the potential to transform apathy into grassroots stewardship. Effectively channeled, this energy may support development and implementation of broader restoration efforts that require community support and investment.



Collecting plankton tows to assist the Dept. of Public Health with harmful algal bloom monitoring

Rich Gosset, Physis Environmental Laboratories, updates us on the relative sediment quality of Southern California

Kate Buckley

Our Fall 2019 dinner meeting was at Alcapulco in Long Beach, where we met and talked over tasty tacos. After dinner, esteemed guest speaker Rich Gossett from Physis Environmental Laboratories presented on sediment quality in the SoCal region and the United States at large. His presentation compared benthic sediment results from the 2013 Bight Survey to the 2015 US EPA National Coastal Condition Assessment Program, providing context as to how Southern California sediment chemistry results compares to national averages.

Rich Gossett discusses relative sediment quality of the SoCal region

Interestingly, while metal and organic concentrations were typically lower in Southern California benthic sediment overall, certain strata types were greatly above national averages. Rich also provided information as to how NCCA site ratings from several US regions have changed over time. Thanks for the informative talk Rich and we look forward to seeing more data as new data comes in from these long term monitoring programs.

PRESIDENT'S CORNER (continued)

I am lucky to be stepping into the position with such a well-established organization, which is often recognized for being one of the strongest chapters in North America. I have some big shoes to fill as I am falling on the heels of the ever-positive Chris Stransky and Keith Maruya our 2018-2019 President and Past President. Together they lead one of the Chapter's most successful years to date, which culminated in our annual meeting at Scripp's Forum in La Jolla, CA. Great venue, great platform and poster presentations, and great conversations. Thankfully Chris, our new Past President, has agreed to act as a mentor and has already been a sounding board for the best way to lead the group. Keith is off enjoying retirement and we hope we continue to see him at upcoming events. I am also thankful to be working with the rest of the Chapter's leadership including our Co-secretaries Misty Mercier and Alvina Mehinto that work tirelessly to keep the Chapter organized and moving in the right direction, our Webmaster Violet Renick who masterfully keeps our online presence up-to-date and engaging and our Treasurer Joe Freas who keeps us on-top-of our finances. Finally, I am excited to work with Nick Hayman who showed great leadership as a Chapter board member for the 2018-2019 season including giant contributions while helping to organize our annual meeting. His efforts were well recognized when he received the nomination and was unanimously accepted as our VP. He has already begun taking charge of the quarterly newsletters and championing our student travel and research awards. So even though I was worried about taking on the role of President this earlier in my tenure process I couldn't pass up the opportunity to work with our Officers and the rest of the Board. Thanks for the vote of confidence and the opportunity. I look forward to working together to continue the Chapter's vibrant character.

In addition to a great group of Officers, we have always had strong advocates in our Board. I am grateful for those members that will be continuing from last year including Mary Woo, Karin Wisenbaker, Nicol Parker, and Jun Zhu and to those who are rotating off including Scott Coffin, Wendy Hovel and Amro Hamdoun. Together they contributed to a number of activities throughout the year including acting as reviewers for student presentations and grant applications, hosting science fairs and community outreach events, and helping with the annual meeting. Also, extending a thank you to Dimitri Deheyn, a prior Board Member, who is acting as a member at large and who played a major role in securing the Scripps venue earlier this year. Thanks to you all for making last year a success. Finally, voted onto the board for the 2019-2021 cycle we are joined by Varenka Lorenzi, a previous Board member who agreed to step back into the Academic Board position, Ashley Parks as our new Public Board member, Kate Buckley as our new Private Board Member, and Amanda Russell as our new Student Representative. If you see them at an upcoming event please extend your congratulations.

This year we will continue to host a number of events to bring together the SoCal Community. We started off with a dinner meeting on October 16th at Acapulco's in Seal Beach with our guest Rich Gossett from Physis Environmental Laboratories. Check out a short summary of his talk regarding historical monitoring programs in the United States along with pictures from the event in this newsletter. A lot of will also be heading off to the National SETAC Meeting held Nov. 3-7th in Toronto, Ontario Canada. Please see the list of presentations from southern California chapter members in this newsletter. We look forward to seeing everyone at the annual event and checking out the presentations from SoCal members. Also please join us for a SoCal get together at the Amsterdam Brewhouse on Tuesday, Nov. 5th starting at 7 PM. Please reach out if you would like to bring light to an upcoming event or want information on volunteer opportunities.

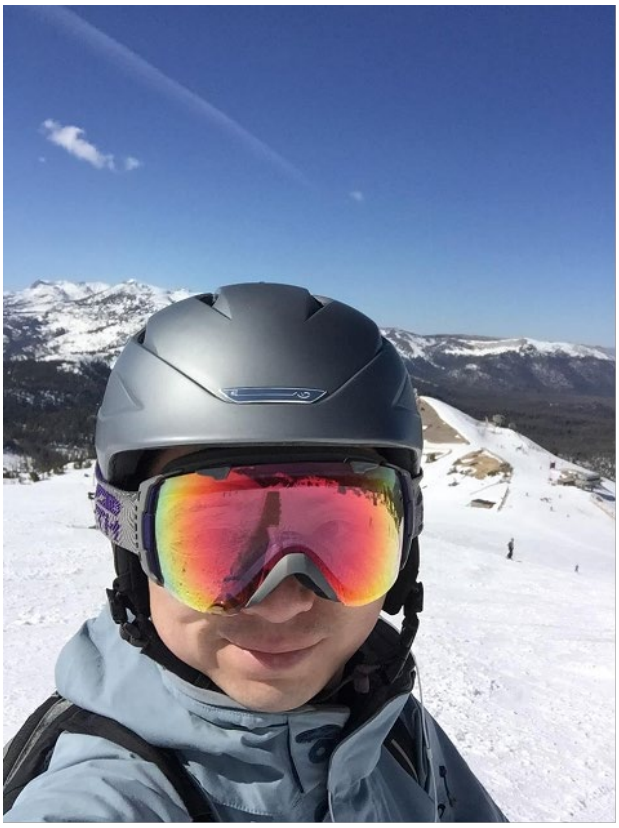
Outside of our upcoming events, I want to highlight several aspects of the current newsletter. Namely, we are excited to have a feature article by the Santa Barbara Channelkeeper organization to bring a glimpse into the work of a local non-profit. Their group and other non-profits in the area have had a huge role in guiding monitoring and protection practices in southern California and we look forward to welcoming more individuals into the Chapter. I would also like to extend congratulations to this years' Student Research Award and Travel Award recipients. We had a great applicant pool covering a wide array of ambitious projects from both undergraduate and graduate student researchers. Ultimately the Student Research Award review committee was able to come to a consensus for the graduate award to Jade Johnson from SDSU and undergraduate award to Leslie Caceres from UCR. Take a look at the student corner in this newsletter to hear more about Jade's work. In addition, I would like to congratulate Aaron Angel, our graduate winner, and Raul Flamenco, our undergraduate winner for the Student Travel Award. Both are from Cal Poly Pomona and wrote excellent applications.

It is going to be a great year and we look forward to working with the entire membership as we move through 2019-2020. If you have questions or want to be more involved, please make sure to contact me or any one of the Officers or Board Members.

MEET THE BOARD

Jun Zhu

Los Angeles Regional Water Quality Control Board, California Environmental Protection Agency

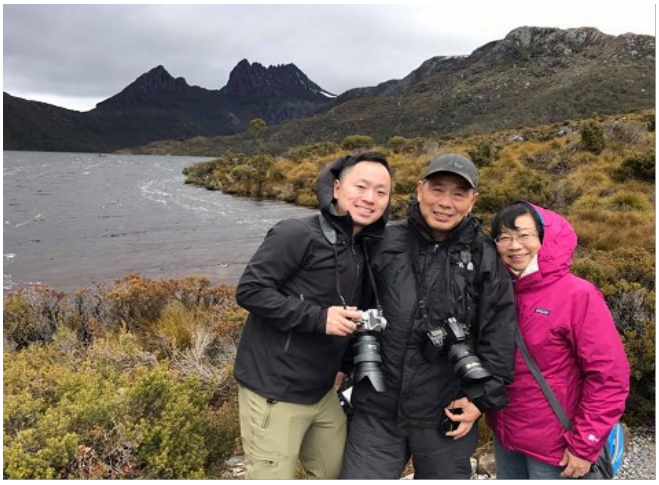


Jun at the top of Sierra, Mammoth Mountains

My name is Jun Zhu and I am with the Los Angeles Regional Water Quality Control Board, California Environmental Protection Agency. I attended my first SoCal SETAC Annual Meeting at the Loyola Marymount University in 2018 where I was exposed to novel research topics, cutting-edge research technologies, and inspiring presentations. It is also where I met great colleagues from SoCal SETAC that encouraged me to join the Board, which I had the pleasure of serving on since then.

I completed my Ph.D. in Environmental Science in 2010 from the University of Massachusetts Boston and I went on with a two-year postdoctoral fellowship at University of California Santa Barbara. I had every intention of going into academia teaching and doing research. But I realized that direct, real-life problems is something I would rather be working on. The public may not know too much about academic research, but everybody wants clean water. Protecting water quality is tangible and important to people. In July 2013, I joined the Los Angeles Regional Water Quality Control Board as an Environmental Scientist and was the lead staff for developing the 2016 Impaired Water Body List for the Los Angeles region. In December 2017, I was promoted to Senior Environmental Scientist. In this new role, I served as the coordinator for the statewide Surface Water Ambient Monitoring Program (SWAMP) for the Los Angeles region. I also served as the lead permit writer for dredging projects in the region. In addition, I was appointed to the Commission's Technical Advisory Group (CTAG) for the Southern California Coastal Water Research Project (SCCWRP) and participated in the 2018 cycle of the Southern California Bight Regional Monitoring Program (Bight '18). In March 2019, I was promoted to Supervisor and served as the chief of our TMDL and Nonpoint Source Unit.

Work has kept me busy. But, when I am not working, I love traveling and seeing different parts of the world. In recent years, I have left footprints in Italy, Vatican, France, Luxembourg, Monaco, UK, Iceland, Norway, Sweden, Denmark, Switzerland, Australia, New Zealand and Japan.



Jun with his parents at Cradle Mountain, Tasmania, Australia

Come hangout with SoCal SETAC at North America SETAC in Toronto!

Time: Tuesday, Nov 5th at 7 pm

Location: Amsterdam Brewhouse
245 Queens Quay West, South Bldg
Toronto, ON, M5J 2K9

STUDENT CORNER

Meet the Board, Nicol Parker

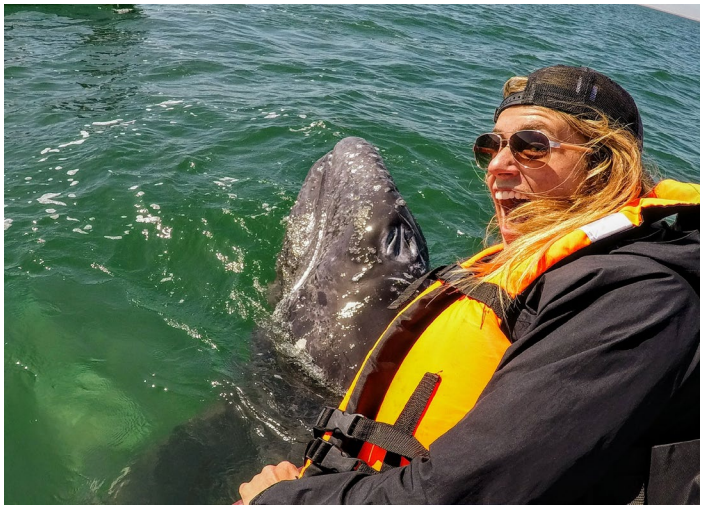
Nicol, scoping out the surf in Malibu

Hi SoCal SETAC members! My name is Nicol Parker, and I am the Student representative for our Chapter board. This is my second year as a student representative, and since joining, I have been continually humbled by our chapter's contribution to creating a community around environmental toxicology and chemistry. I was first introduced to SoCal SETAC through a fascinating presentation on bioassay monitoring efforts of the Southern Coastal California Water Research Program, given by former SoCal SETAC president Keith Maruya. Owing to my desire to become more involved with the risk assessment community, I sought the opportunity to join the chapter's board.

My environmental scientist roots can be attributed to my childhood in rural Michigan, where I didn't have much to do but to learn how to love the midwestern forests and lakes, as well as join local sports leagues. These activities cultivated my interests in outdoor exploration and movement. Ultimately, I employed my love of the outdoors in my undergraduate education, where I attended Adrian College to pursue a degree in biology and played three NCAA Division III sports, basketball, volleyball, and lacrosse. While pursuing my degree in biology, I was required to take chemistry courses and became hooked on the answers the field provided. Thus, I ultimately attained a bachelor's in biology and chemistry from Adrian College.

Following my education at Adrian, I found meaningful work at an engineering firm in Michigan's capital city. For two years I worked with the firm and served as the Water Analyst, which entailed designing and executing stormwater contaminant monitoring plans. To collect the data, I was able to leverage the funding availability for infrastructure projects to install flow triggered automated samplers which allowed for high resolution monitoring data. Using this data, we were able to design effective low impact design projects. While at the firm, I also monitored our efforts to deploy microbes and aeration to improve lake substrate quality in low oxygen systems that suffered from excessive nutrient loads.

My work with the engineering firm raised many questions about mechanisms for pro-active chemical management. To learn how to improve chemical risk mitigation efforts and gain more technical skillsets, I decided to apply to the PhD program at the Bren School of Environmental Science and Management, at the University of California, Santa Barbara. My research as a PhD student entails modelling the fate and transport of contaminants, with an emphasis on application during the chemical approval process. In my initial 1.5 years I worked to evaluate the risk of nanomaterials. In my current research, I focus on models that can improve pesticide ecotoxicological risk screening and application regimes.



Nicol at Scammon's Lagoon, Guerrero Negro, Baja California, Mexico

SoCal SETAC Student Awards – Jade Johnson Interview

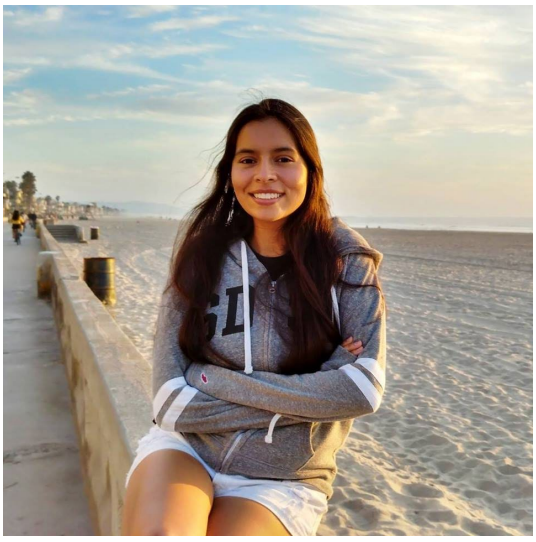
Nicol Parker and Nick Hayman

We received another round of impressive research proposals for the annual 2019 SoCal SETAC Student Research Grant application for both undergraduates and graduate students. We were impressed with the quality of the applications and are thankful for all the excellent students and advisors in the SoCal SETAC community.

After careful consideration the review panel of three environmental toxicologists and chemists selected Jade Johnson (San Diego State University) for the graduate award for her proposal titled "Evaluation of Decentralized Wastewater Treatment System on Contaminants of Emerging Concerns via Non-Targeted Analytical Approach". Similarly, the panel awarded Leslie Caceres (UC Riverside) the undergraduate award for her proposal titled "Evaluation of site-specific apoptosis in the brains of juvenile rainbow trout (*Oncorhynchus mykiss*) exposed to bifenthrin".

Finally, we awarded two travel grants to the North America SETAC meeting this year in Toronto, Canada. We awarded the undergraduate travel grant to Raul Flamenco (Cal Poly Ponoma) and the graduate travel grant to Aaron Angel (Cal Poly Ponoma). Congratulations!

As part of their award, these incredible student researchers were interviewed by our student Board Member Nicol Parker. Please find Jade Johnson's interview below and look forward to others in future newsletters!



Jade Johnson, winner of the graduate SoCal SETAC SRG award

Research Interests

I'm interested in advancing the feasibility and efficacy of decentralized wastewater treatment plants, especially for non-potable or potable reuse purposes. Specifically, I would like to study the presence, transformation, and toxicity of contaminants of emerging concern (CECs) in wastewater treatment systems.

SoCal SETAC Funding Application to Research

Standards are required for confirmation of a contaminant's presence after the non-targeted analysis. In my research group's past experience, hundreds of chemicals were found in wastewater treatment plants, and we select chemicals from the non-target analysis to validate. We expect to purchase 20-50 chemical standards, and the SoCal SETAC Student Research Award will contribute to the purchase of standards, as well as supplies for our GCxGC/TOF-MS instrumentation (e.g. compressed gases, liquid nitrogen, organic solvents, and other instrument consumables).

Future Research Interests

I am still learning a lot about centralized and decentralized wastewater treatment systems and would like to continue working with these types of systems and to pursue research that assesses their efficacy and efficiency for removal of CECs. I would also like to learn more about CECs, their transformation products, accumulation, and risk to the environment.

Previous Research

Last year I assisted graduate student Margaret Stack on the sample preparation and method development for the trace analysis of halogenated organic compounds in Condor plasma samples. I also completed two NSF sponsored summer Research Experiences for Undergraduates at the University of Montana, where I synthesized materials that adsorb metals such as arsenic, uranium, and copper, as well as analyzed water samples from Navajo Nation territory for trace metals.

Academic Background

San Diego State University B.S. Chemistry with minors in math and sustainability

San Diego State University (M.S. in progress) Environmental Health

How did you become interested in your research?

I have been passionate about water quality research since my NSF sponsored Summer Research Experience for Undergraduates, where I detected arsenic in well water samples

Jade Johnson Interview (Continued)

I collected from Navajo Nation territory that exceeded EPA maximum contamination limits. My whole life I had taken for granted that our water is safe and secure. When I learned communities within the Navajo Nation territory had elevated arsenic in their water, I decided to pursue water quality research. After that summer in 2017, I reached out to the faculty at SDSU's School of Public Health and found myself working with Dr. Eunha Hoh. Through working on several of her projects, I learned more about organic contaminants and the rising concern about their potential toxic impact on the environment and human health. This field is relatively new and the exploratory aspect of the non-targeted analysis in search for these contaminants of emerging concern fascinated me. When she informed me that she needed a master's student for the non-targeted analysis of CECs, I applied to the M.S. Environmental Health program and began pursuing my current area of research.

Hobbies/Activities Outside of Research

In my down time, I try to spend time with my loved ones. I also like to watch Netflix series, read books for fun, or engage in creative outlets like drawing and writing.

WELCOME NEW SETAC BOARD MEMBERS

Varenka Lorenzi, CSU Long Beach

Ashley Parks, SCCWRP

Amanda Russell, CSU Long Beach

Kate Buckley, wood. E&I

Stay tuned for more information about the SoCal SETAC Annual Meeting at Crown Plaza Ventura Beach. April 2020.

CALENDAR OF EVENTS

November, 2019

November 3-7
SETAC North America 40th Annual Meeting | *Toronto, ON, CA*

January, 2020

January 27-29
P3S 2020 Conference | Long Beach, CA

March, 2020

March 9-11
9th SETAC Young Environmental Scientist (YES) Meeting | *Waco, TX*

March 15-17
2020 WateReuse California Annual Conference | *San Francisco, CA*

March 22-26
ACS Annual Meeting & Expo | *Philadelphia, PA*

March 31-April 3
CWEA Annual Conference 2020 | *Reno, NV*

May, 2020

May 8
Southern California Academy of Sciences 2020 Annual Meeting | *Fullerton, CA*

May 26-30
SETAC NA Focused Topic Meeting: Nontarget Analysis for Environmental Risk Assessment| *Durham, NC*

June, 2020

June 10-13
Association for Environmental Studies and Sciences Conference 2020 | *New York, NY*

SETAC North America 39th Annual Meeting List of SoCal SETAC Presentations

***student presenters**

Monday November 4, 2019		**POSTER**			
Session Time	Room	Presenter	Affiliation	ID #	Presentation Title
Poster Display 8:00am–6:30pm Poster Social 5:00pm–6:30 pm	*Assessing Contaminant Effects in Ecosystems with Multiple Stressors*				
	Exhibit Hall	Ashley Parks	Southern California Coastal Water Res.	MP021	Impacts and interaction effects of sediment contamination and ocean acidification on *Eohaustorius estuarius*
		Amanda Russell	CSU Long Beach	MP021	Utilizing Transcriptomics to Evaluate Environmental Determinants of Oyster Health at an Implanted Bed in Newport Bay, CA
	Environmental Risk				
	Exhibit Hall	Raul Flamenco	Cal Poly Ponoma	MP301	A Meta-Analysis of Perfluorooctane Sulfonate (PFOS) Concentrations in Birds Around the World
Tuesday November 5, 2018		**POSTER**			
Session Time	Room	Presenter	Affiliation	ID #	Presentation Title
Poster Display 8:00am–6:30pm *Poster Social 5:00pm–6:30 pm*	*Advances in Contaminant Bioaccumulation*				
	Exhibit Hall	Ashley Parks	Southern California Coastal Water Res.	TP064	Influence of Dissolved Organochlorines on Bioaccumulation in San Diego Bay, California
	Microplastics in the Environmen: Transport, Fate, and Ecological Effects				
	Exhibit Hall	Nick Hayman	Naval Information Warfare Center Pacific	TP138	PCB-spiked microplastics act as a vector for PCB bioaccumulation in two marine polychaetes

Wednesday November 6, 2019		**POSTER**			
Session Time	Room	Presenter	Affiliation	ID #	Presentation Title
Poster Display 8:00am–6:30pm Poster Social 5:00pm–6:30 pm	*Fate and Effects of Chemical from Stormwater Runoff*				
	Exhibit Hall	Kate Buckley	Wood E&I	WP053	A Novel Pulsed Study Approach to Storm and Receiving Water Monitoring at the Scripps Institution of Oceonography in San Diego, CA
	Exhibit Hall	Chris Stransky	Wood E&I	WP056	Evolution of a NPDES Permit - Novel Implementation Strategies for Storm Water Compliance Monitoring at the Scripps Insitution of Oceanography in San Diego, CA
	Advances in Passive Sampling Across Environmental Compartments				
	Exhibit Hall	Nick Hayman	Naval Information Warfare Center Pacific	WP164	Using Integrative Passive Sampling Devices to Obtain More Meaningful and Cost-Effective Data on Metal-Associated Impacts from Stormwater Runoff
	Engineering, Remediation, and Restoration				
	Exhibit Hall	Gunther Rosen	Naval Information Warfare Center Pacific	WP195	In Situ Evaluation of Using Clean Dredged Material as an Alternative to Clean Sand for Enhanced Monitored Natural Recovery
	Terrestrial Toxciology, Ecology, and Stress Response				
	Exhibit Hall	Aaron Angel	Cal Poly Ponoma	WP280	Oxidative Stress Response of Seaside Sparrow (*Ammospiza martima*) following Deepwater Horizon Oil Spill

PLATFORM					
Session Time	Room	Presenter	Affiliation	ID #	Presentation Title
	Advances in Passive Sampling Across Environmental Compartments - Part 1				
8:20 AM	716A	Rachel Adams	Layola Maramount University	446	Legacy Contaminant Concentrations in Porewaters and Well Waters Measured Using Novel Passive Sampling Methods on a Remote Northwestern Hawaiian Island
Thursday November 7, 2019			**POSTER**		
Session Time	Room	Presenter	Affiliation	ID #	Presentation Title
Poster Display 8:00am–6:30pm Poster Social 5:00pm–6:30 pm	*Aquatic Toxicology, Ecology, and Stress Response*				
	Exhibit Hall	Katie Kowal	Naval Information Warfare Center Pacific	RP117	Derivations Studies for an Environmentally Relevant Approach for Stormwater Testing Compliance Monitoring
		Molly Colvin	Naval Information Warfare Center Pacific	RP118	Validation of Pulsed Exposure Toxicity Methods at San Diego Regional Naval Bases

SOCAL SETAC OFFICERS AND BOARD MEMBERS

SoCal SETAC 2019–2020 Officers

Past President	**Chris Stransky,** Wood Environment & Infrastructure chris.stransky@woodplc.com
President	**Erika Holland,** California State University, Long Beach erika.holland@csulb.edu
Vice President	**Nicholas Hayman,** Naval Information Warfare Center Pacific (NIWC Pacific) nicholas.hayman@spawar.navy.mil
Treasurer	**Joe Freas,** Aquatic Bioassay and Consulting Laboratories Inc. Joe@aquaticbioassay.com
Co-Secretary	**Misty Mercier,** Physis Environmental Laboratorios, Inc. mistymercier@physislabs.com
Co-Secretary	**Alvina Mehinto,** Southern California Coastal Water Research Project alvinam@sccwrp.org
Webmaster	**Violet Renick,** Orange County Sanitation District VRenick@OCSD.COM

SoCal SETAC 2019–2020 Board Members

Board Member (2018–2020) Public	**Jun Zhu,** Los Angeles Regional Water Board jun.zhu@waterboards.ca.gov
Board Member (2018–2020) Academic	**Mary Woo,** California State University Channel Islands mary.woo@csuci.edu
Board Member (2018–2020) Private	**Karin Wisenbaker,** Aquatic Bioassay and Consulting Laboratories Inc. karin@aquaticbioassay.com
Board Member (2018–2020) Student	**Nicol Parker,** University of California Santa Barbara nparker@bren.ucsb.edu
Board Member (2019–2021) Public	**Ashley Parks,** Southern California Coastal Water Research Project ashleyp@sccwrp.org
Board Member (2019–2021) Academic	**Varenka Lorenzi,** California State University Long Beach Varenka.Lorenzi@csulb.edu
Board Member (2019–2021) Private	**Kate Buckley,** wood. Environment and Infrastructure kate.buckley@woodplc.com
Board Member (2019–2021) Academic	**Amanda Russell,** California State University Long Beach arussell3483@gmail.com