

MIXER & POSTER SESSION

4:50 PM - 6:55 PM

TOPIC 2

MEASURING PROGRESS AND GAPS IN WATERSHED HEALTH

Posters that highlight efforts assessing regional resilience and watershed health and identify management and investment needs. Posters that highlight efforts assessing regional resilience and watershed health and identify management and investment needs.

TOPIC 2: MEASURING PROGRESS & GAPS IN WATERSHED HEALTH

Los Angeles River Watershed Report Card: Utilizing Regulatory Monitoring Data to Assess Watershed Health

Authors: Katherine Pease¹ and Amanda Wagner² - Heal the Bay¹ and UCLA Institute for Environment and Sustainability²

Water quality in the Los Angeles River Watershed is a major concern due to its location in a highly urbanized Los Angeles. Runoff, stormwater, and industrial complexes all have negative impacts on the waters of the L.A. River Watershed. Through the municipal separate storm sewer system (MS4) permit, required by the Clean Water Act, cities must sample certain areas along the L.A. River and its tributaries and submit the results to the Los Angeles Regional Water Quality Control Board. Cities test for a variety of parameters such as nutrients, metals, organics, and general water parameters like pH and temperature based on their Coordinated Integrated Monitoring Program (CIMPS).

We analyzed the MS4 data obtained from the Los Angeles Regional Water Quality Control Board from the time period July 1st 2016 to June 20th 2017, focusing on receiving water sites. We used the Canadian Council of Ministers of the Environment (CCME) model and percent exceedance to “grade” the health of the L.A. River Watershed. The L.A. River Watershed serves as valuable habitat for wildlife and includes areas where humans recreate so we analyzed the data and created grades differently for human health and ecological health. We used the CCME model for ecological health and used percent exceedance for human health due to the number of parameters in each category. For ecological health we measured lead, copper, zinc, selenium, cadmium, ammonia, nitrate, nitrite, pH, and dissolved oxygen. For human health we used *E.coli* as our indicator. Additionally, water quality can change dramatically during wet and dry weather due to runoff into waterways, so we analyzed the data and created grades separately based on weather as well. Finally we created user friendly maps to display our results.

Our results showed that the human health grades were very low throughout the entire watershed in both dry and wet weather monitoring, indicating high levels of bacterial pollution. The ecological health indicators, were average during dry weather (mostly ranging from A to C), but substantially worse during wet weather (with a significant number of failing grades). The results of our analysis are not surprising given the water quality challenges in the area. Given these results we hope to encourage cities to continue enacting policies and creating projects that work towards the goal of a healthy watershed with good water quality that supports all beneficial uses.

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Invasive fish community of the lower Los Angeles River: prospects for restoration in the age of revitalization

Andres Aguilar (CSULA), Rosi Dagit (RCDSMM), Sabrina Drill (UCCE), Jennifer Mongolo (Streamscape Environment LLC) - Cal State LA

The Los Angeles River drains 870 mi² in one of the world's largest metropolitan areas. The lower 31 miles run through some of the poorest parts of the city in terms of biodiversity, economics, and access to nature. Previous and current work has only recovered introduced/invasive species in the 'Glendale Narrows' portion of the Los Angeles River. The current community in this stretch of the river is comprised of warm water species, which coincides with recent temperature studies that indicate conditions in this region would not be hospitable to local native species. These observations pose an immense hurdle to efforts boasting the return of native species to the region, these include both ecological and community development aspects, with tension between the two. Our work exemplifies the challenges to including habitat recovery in efforts to "revitalize" the river and that more practical scenarios may need to be coupled with proposed revitalization efforts.

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2018 City of Los Angeles Biodiversity Report: Measurement of the Singapore Index of Cities Biodiversity and Next Steps

Isaac Brown, Peggy Nguyen, Mas Dojiri, Michelle Barton, Melinda Bartlett, Doug Walters, Deborah Deets - Los Angeles Sanitation & Environment

The City of Los Angeles lies within the California Floristic Province, which is a globally recognized hotspot for native biodiversity across many groups of organisms. This designation also means that biodiversity is threatened, and innovative strategies are needed to ensure its resilience. The survival and well-being of the City's residents depend on ecosystem services provided by biodiversity, including air pollution reduction, strong and rapid mitigation of and adaptation to climate change, mental health and educational opportunities, water cleansing, and aesthetic benefits. These services are built directly from an integrated ecosystem of natural biodiversity and sustainable urban landscapes and watersheds.

In line with the Mayor's goal of a "no net loss" biodiversity strategy identified in the City's 2015 Sustainability pLAN, Councilmember Paul Koretz of the 5th Council District introduced the Los Angeles Biodiversity Motion. On May 10, 2017, the Los Angeles City Council adopted the amended motion (Motion 25A, Council File No. 15-0499) unanimously, and directed the Bureau of Sanitation (LASAN) to oversee efforts to evaluate biodiversity in the City and develop an index to measure no net loss going forward. With the support of a Stakeholder Group, an Expert Council, and an Interdepartmental Biodiversity Team, LASAN embarked on a measurement of the Singapore Index on Cities' Biodiversity (Singapore Index) as the first step in implementing the Motion. Los Angeles is the first city in the U.S. to perform this measurement, joining Helsinki, Montreal, Lisbon, and other global cities.

This poster will highlight the results of the Singapore Index measurement and progress on next steps toward implementing the Biodiversity Motion's three main objectives: 1) developing a customized index to measure protection, enhancement, and mitigation of impacts to biodiversity; 2) developing policies and projects to enhance biodiversity, including improving access for communities that lack access and contributing toward broader ecosystem functions and sustainability; and 3) developing options for community outreach and engagement. These steps are envisioned to support the development and implementation of a comprehensive strategy for the City over the coming years that aims to maximize the benefits of biodiversity for the public and the nature we jointly steward.

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Assessing Microbial Water Quality Of The Los Angeles River Recreation Zones

V. Cabrera^{1,2}, N. Chabarría^{1,2}, S. Esfandyari^{1,2}, D. Garduño^{1,2}, K.M. Pease¹ - ¹ Heal the Bay, Santa Monica, CA 90401. ² Los Angeles Trade Technical College, Los Angeles, CA 90015.

The Los Angeles River is an increasingly popular location for freshwater recreation. However, until recently, monitoring programs did not specifically target the recreation zones and limited public data were available on the water quality. The Los Angeles River is listed as impaired for bacteria on California's 303(d) list of Impaired Water Bodies, indicating that fecal indicator bacteria (FIB) levels are high and that designated beneficial uses, such as water contact recreation (REC1), are not being met. Recreational waters polluted with FIB can lead to illnesses and are a potential public health concern. Heal the Bay initiated a study in 2015 to assess the water quality of the two designated recreation zones in the Los Angeles River. We have monitored FIB levels at three to four receiving water sites from 2015 to 2018 during the summer months. In 2017, we also began monitoring storm drains in the Elysian Valley recreation zone to try to identify sources of bacterial pollution. Since 2017 we have partnered with Los Angeles Trade Technical College, hiring students to conduct all aspects of the monitoring program.

Bacteria levels vary by site and year but are generally high. We identified storm drains with consistent flow and high bacteria levels. The results indicate potential water quality concerns, which should be considered by management agencies to inform public health protection measures and prioritize areas for remediation. Outcomes of the program include a website and map where updated water quality information is displayed.

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Monitoring the Los Angeles River for Chemical and Biological Toxicants: Impacts on the Local Ecosystem and Public Health

Mahesh Pujari, Mas Dojiri, Farhana Mohamed, Kenneth Franklin, and Robert Savinelli - Los Angeles Sanitation

The Los Angeles River (LA River) is 51 miles long and flows from the western San Fernando Valley to Long Beach. Due to flood events at the beginning of the century, most of the LA River is channelized and lined with concrete. The LA River is the main conduit for transporting storm flow, urban runoff, and treated effluent to the LA River estuary and Pacific Ocean. The LA River is sustained by water from rain, natural springs, urban runoff, and discharge from three water reclamation plants. Over 98 million gallons of water are carried by the LA River to the sea each day. Portions of the river have earthen bottoms and natural springs resulting in a more natural condition, which supports habitat and recreational use. These sections of the LA River are used for fishing, hiking, bird watching, and kayaking by some of the City's four million residents. The LA River Revitalization Project provides a framework for restoring the ecological health of the river and includes recommendations that aim to expand the usable sections of the LA River and improve the overall quality of the river.

These posters highlight the results of the LA River Watershed Monitoring Program (LARWMP), which was developed by the Cities of Los Angeles and Burbank, along with the County of Los Angeles in cooperation with the Los Angeles Regional Water Quality Control Board, USEPA staff, as well as other local stakeholders. LARWMP conducts annual assessments to better understand the health of a dynamic and predominantly urban watershed. The goals of the program are to provide managers and the public with a more complete picture of conditions and trends in the LA River watershed along with improving the coordination and integration of monitoring efforts for both regulatory compliance and ambient water condition. A total of thirteen agencies have partnered to coordinate their efforts, beginning in 2007, to evaluate the water quality, toxicity, and biological/habitat condition in the LA River watershed in order to answer five important questions: What is the condition of streams in the watershed? Are conditions at areas of unique interest getting better or worse? Are receiving waters near discharges meeting water quality objectives? Is it safe to recreate? Are locally caught fish safe to eat? The consortium has allocated resources to collect freshwater, estuary seawater, estuary sediment, and fish tissue samples for the determination of levels of bacteria, organic pollutants, metals, invertebrates, and general chemical constituents. The City of Los Angeles is committed to maintaining a rigorous environmental monitoring program and to participating in programs that ensure the future improvement of the health of our watershed. The City's participation in LARWMP continues to be of great value to all Angelinos and will be part of our mission for years to come.

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Trout Unlimited – Fishing Days on the LA River

Robert Blankenship - Trout Unlimited - South Coast Chapter

Trout Unlimited has partnered with local businesses, government agencies and non-profit organizations over the last four years to provide fishing days and guidance of fishing skills on the natural bottom sections of the Los Angeles River. These local partners have included the Los Angeles River State Park, the ClockShop, Friends of the LA River (FoLAR), the Patagonia Corporation, and the Los Angeles Rod and Reel club. A grant from the California Department of Fish and Wildlife and the *Vamos a Pescar* Education Fund has allowed us to provide take-home fishing tackle and expert advice on fishing theory in English and Spanish on the LA River.

The soft bottom (or fishable) section of the 'LA' runs through an historically underserved, predominately Hispanic community in East Los Angeles. These communities are 'park poor' with little opportunity for outdoor recreation and even fewer chances to fish. The LA provides both. A number of warm water species inhabit the river: bass, tilapia, catfish, and carp. For many youngsters in the community the LA is the wildest place they will experience growing up, and we capitalized on its proximity to these underserved communities to continue to support fishing in these areas.

We believe the key to this program was providing, with our grant partners, a take-home fishing rod with some basic tackle. Owning a fishing rod encourages young and old alike to keep fishing and share the experience with friends, family, and other community members.

Another barrier to entry in the world of fishing can include licensing. Our project included a fishing license raffle where ten adults won a fishing license. California requires those 16 years of age and older to obtain a fishing license and reimbursing for that license will make this a cost-free introduction for many adults. Finally, we held one of the Beginning/Advanced fishing activity on July 7, 2018, which was one of California's 'free fishing days' and no license was required Statewide.

In an increasingly connected world fishing encourages young and old to imagine, explore, and discover things on their own. These experiences stimulate our innate curiosity of the world around us and foster a sense of stewardship and respect for the natural environment.

The grant funding we received allowed us to systematically and professionally coordinate outreach to, and by, the local community. We included local non-profit partners who are currently embedded in the community to publicize the effort and make it a success. We found that involving local residents in creating and publicizing the program yielded our desired outcome; residents who have a say in the development of a program have more of a stake in its success.

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Longitudinal Temperature Profile Of The Los Angeles River

Jennifer Mongolo¹, Nina Trusso¹, Rosi Dagit¹, Andres Aguilar², Sabrina Drill³ - ¹Resource Conservation District of the Santa Monica Mountains,
²Department of Biological Sciences California State University, ³University of California Cooperative Extension

A pilot study to develop a longitudinal temperature profile of the Los Angeles River deployed continuously recording temperature loggers in 13 sites throughout the main stem and tributaries between June and October 2016. The river was divided into six zones based on channel conditions (soft bottom, concrete); main stem sites were distributed throughout all zones; and tributary sites were located just above their confluence with the main stem. Locations were selected to reflect representative conditions of water depth and canopy cover. Water temperature was recorded at 30 minute intervals, generating maximum, mean and minimum monthly and seasonal temperatures at each site. Seasonal maximum temperatures ranged between 21-34°C, mean temperatures between 16-26°C and minimum temperatures between 13-25°C. No clear pattern of temperature from the headwaters to the ocean emerged, although diurnal differences between soft bottom and concrete channel reaches were observed. Overall, temperatures were too warm to support re-introduction of native fish species but currently support reproducing populations of several generalist non-native fish species dominated by tilapia and carp. Temperature mitigation throughout the river, but especially in the proposed restoration area will be needed if native fish species are to become re-established in the Los Angeles River. Albeit limited in scope, the present study establishes a baseline profile of summer/fall temperatures in the Los Angeles River, to which future conditions may be compared.

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Are Microplastic Measurements Comparable and Do They Reflect Reality?

Win Cowger, James Guilinger, Andrew B. Gray - University of California, Riverside, Department of Environmental Science

Accurately monitoring microplastic pollution in aquatic systems faces a number of challenges, from the technical details of sample collection and laboratory preparation, to the very metrics used to quantify abundance and character. Surface grab sampling is a common method of monitoring microplastics in rivers and streams. Utilizing previously published field data we investigated microplastic concentration profiles with hydrodynamic models. These models indicate that surface sampling can result in drastic over or under prediction of plastic abundance, depending on plastic type, size, and concentration. In the laboratory, density separation is a primary step for extraction of microplastics from various media, especially sediments and turbid waters. Average losses reported in spiked samples during density separation across laboratories range from 30-70%. We have found that even small changes in protocols can result in the difference between detection and non-detection in low concentration samples. Furthermore, count alone, the typical metric for measuring plastic concentration, does not provide the information needed for understanding the mass flux of microplastics and associated contaminants, and ultimately for effective plastic pollution management. We argue that morphometric information on microplastic particles is required for the estimation of useful metrics such as surface area, volume, and mass. Ultimately, standardization of monitoring, processing and measurement techniques will advance the comparability of results between laboratories, inform the assessment of environmental impacts, and develop effective management strategies.

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