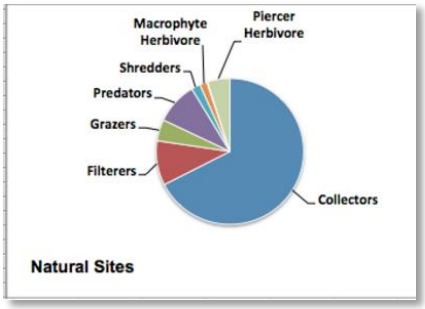
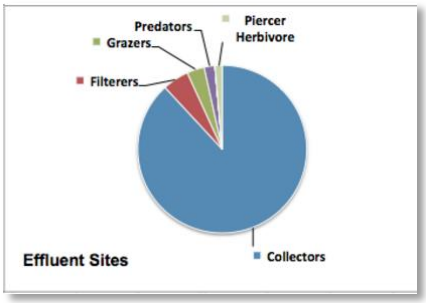
Los Angeles River Watershed Monitoring Program

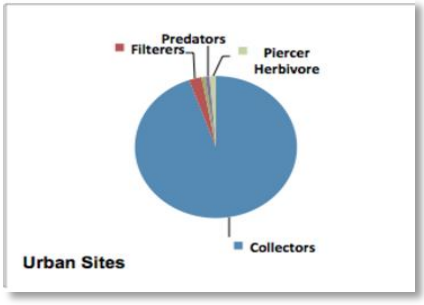
In 2007, local, state, and federal stakeholders formed the Los Angeles River Watershed Monitoring Program (LARWMP) to provide managers and the public with a more complete picture of conditions and trends in the Los Angeles River Watershed. This continuous monitoring effort has provided information to inform better decisions, stronger planning efforts, and better-informed outreach and education about the health of the river, including how to use it safely. The monitoring data helps us understand how the river is responding to a complex web of pressures ranging from pollution, human alteration, drought, and climate change. Every year, for the past 10 years, teams of LARWMP scientists have collected the data that has informed our understanding of the health of the Los Angeles River Watershed.

Q 1: What is the condition of streams in the LA River watershed?

As part of the LARWMP program, we monitor random sites that are representative of urban tributaries, the effluent-dominated main stem, and natural portions of the watershed. We use multiple measurements and indicators to evaluate the condition of streams, including water chemistry, physical habitat assessments, and biological community assessments, as measured by the Southern California Algal Indicator of Biological Integrity (So Ca Algal IBI) and the California Stream Condition Index (CSCI).







A sign of poor stream condition is indicated when feeding groups are absent from a site.

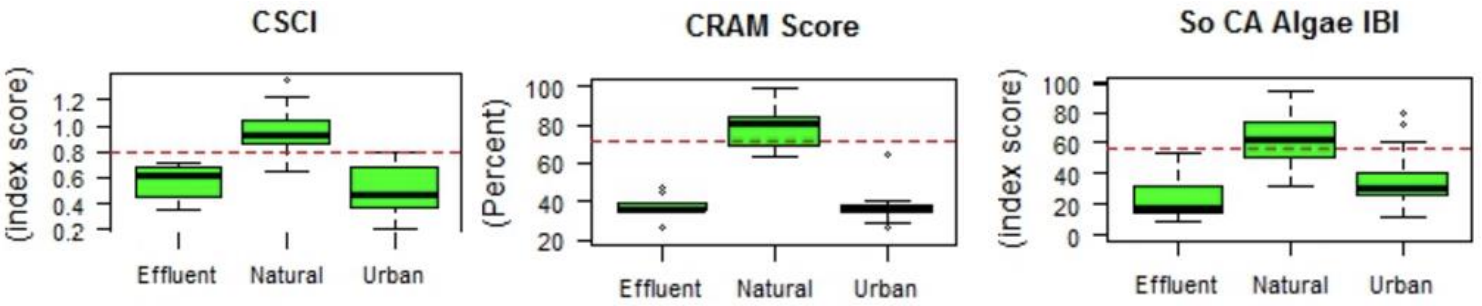
Watershed Observations: *BMI at sites located in the more natural upper watershed have more feeding groups than urban and effluent-dominated sites.*

To access our annual report visit: www.watershedhealth.org/larwmp

HOW DO WE DETERMINE STREAM HEALTH?

One of the ways the LARWMP determines the health of our river and streams is by taking a closer look at the animals that live there. Benthic macroinvertebrates (BMI) are bottom dwelling organisms, like aquatic insects and snails. BMIs reflect different tolerances to stress, like pollution and changes to physical habitat. Since organisms respond to stress in ways we can predict, they can be an early warning of degrading stream health. By gathering information about the BMI that are observed at a site, like the number of species and their feeding strategies, we can learn more about the health of a stream. Information about BMI is compiled and packaged into a California Stream Condition Index (CSCI) score. Scores help us understand site condition, by allowing us to compare our scores to those of more pristine sites

This benthic macroinvertebrate is a stonefly. Stoneflies are one of the most pollution sensitive groups and their presence signals that a site is in good condition. ***(Photo by Missouri Department of Conservation staff)***



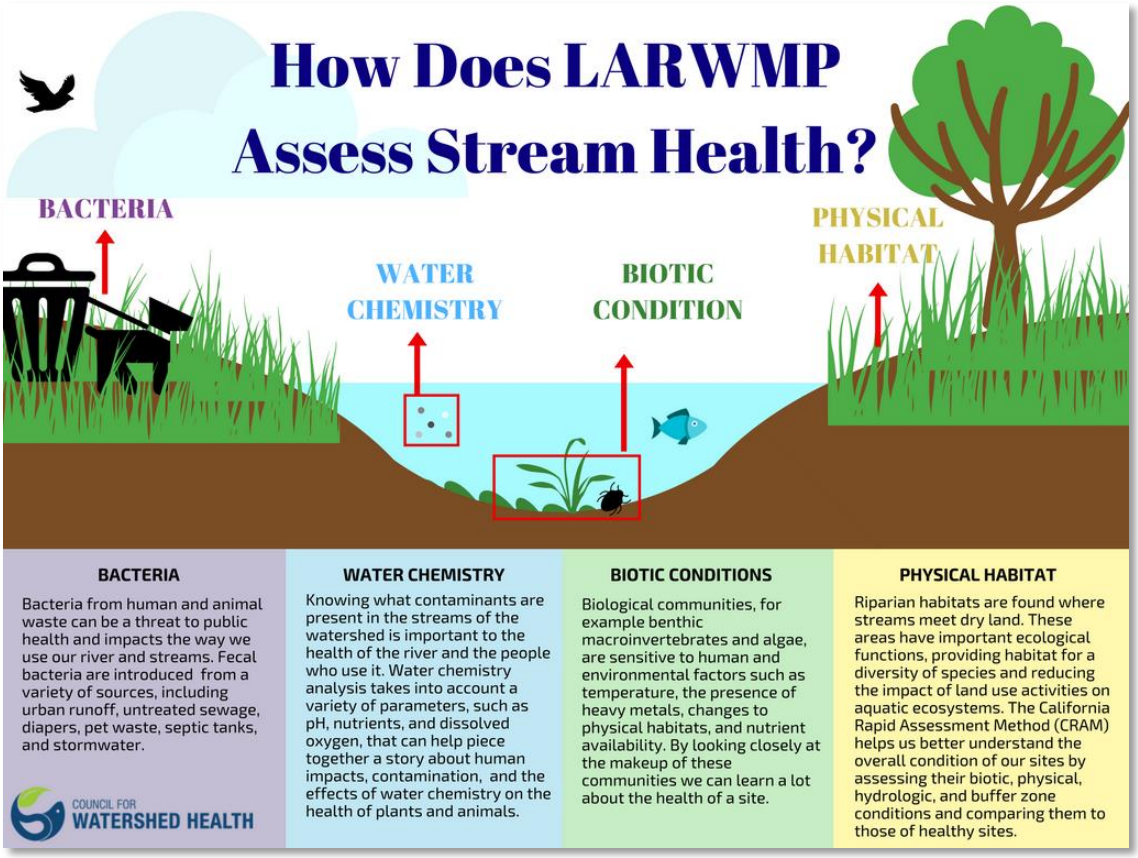
Watershed Observation: We see better riparian physical habitat (CRAM) and biological assessment scores (CSCI and Algal IBI) at sites in natural regions compared to effluent-dominated and urban regions.

Sites in the upper more natural regions of the watershed are in better environmental condition. The majority of sites (60% to 70%) across the watershed are not in good health, according to biological assessments (CSCI and algal IBI) and riparian physical habitat assessments (CRAM). Some of the most important factors that are influencing the health of biological communities, specifically algal and BMI communities are water chemistry and physical habitat. The physical habitat measures describing stream bottom habitat complexity, percent cobble and gravel and percent concrete and asphalt, for example, had the largest influence on CSCI scores.

Q2. Are conditions at areas of unique interest getting better or worse?

In order to better understand how conditions in the watershed are changing over time, and when protection or restoration is needed, we annually monitor "high-value" sites. High-value sites include confluence points, riparian areas, major tributaries, and the L.A. River estuary.

Monitoring effort at confluence sites showed that nutrient levels were elevated in many of the major tributaries from 2009-2015; these include the Arroyo Seco, Compton Creek, and Tujunga Creek sites. All confluence sites, the majority of which are concrete-lined, were in poor biological health.



Some riparian sites in the lower watershed, where physical habitat conditions are often poor, improved in recent assessments. These included the Haines Creek Pools and Stream and the Arroyo Seco USGS Gage site. These sites are downstream of recent fires, were scoured and flooded post fire, and Haines Creek site may overlap with restoration activities taking place along the Tujunga Basin.

The condition of riparian habitat at sites that were burned in the 2009 station fire improved in the years following the fire. In 2015, however, site scores dipped near the reference threshold, which may be due to the impacts of a prolonged drought.

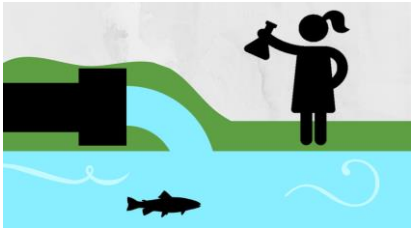
Sentinel sites, marking the confluence points of major urban tributaries of the L.A. River, had consistently high levels of fecal bacteria, with the exception of a site downstream of a publically owned treatment works. High levels of fecal bacteria at sentinel sites continue to highlight the difficulty of reducing bacterial concentrations within the lower tributaries and mainstem of the L.A. River watershed.

FIRE ECOLOGY

Fire is an important force shaping the biological communities of Southern California--a disturbance many native plants are adapted to. However, human activities have led to more frequent and intense fires that alter landscapes and allow invasive species to take root. The impact of fires in the riparian zone is much less understood than their impact on upland habitat. To better understand how sites respond to and recover from fire, sites that were burned during the 2009 station fire were added to the LARWMP program.

Q3. Are permitted discharges meeting WQOs in receiving waters?

One of the main reasons the LARWMP was initiated was the idea that compliance monitoring activities conducted by Publically Owned Treatment Works (POTWs), as a requirement of their discharge permits, should not be the only kind of monitoring occurring in the LA River Watershed, more comprehensive and coordinated monitoring was needed. To date, LARWMP continues its efforts to assess the potential impacts of wastewater treatment discharges on the Los Angeles River and its tributaries. The program analyzes water quality data from a point upstream of water reclamation plant discharge and a point downstream of the discharge and compares contaminant levels at these locations to Water Quality Objectives.

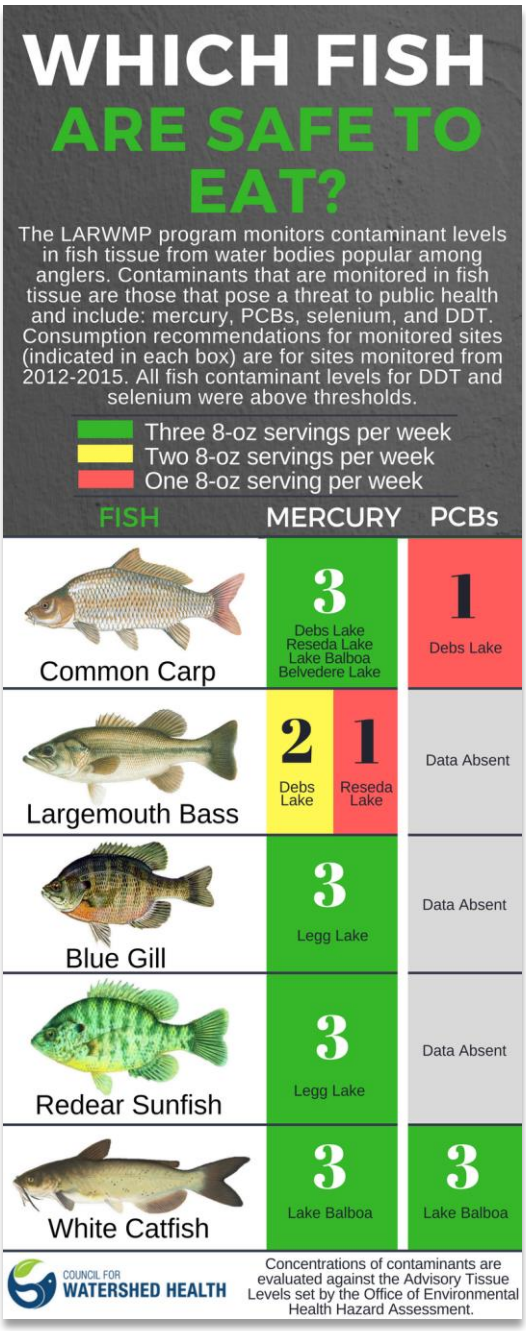


Concentrations of contaminants downstream of water reclamation plants are often lower than contaminants found upstream, likely due to contaminants being diluted by treated effluent. The contaminants that are higher downstream of all POTWs are trihalomethanes, they are a byproduct of disinfection, and are below water quality objectives.

Q4. Is it safe to swim?

Thousands of visitors swim at unregulated sites within the Los Angeles River Watershed each summer. Contamination from animal and human waste can introduce bacteria and other microscopic organisms that make us sick. The Los Angeles River Watershed Monitoring Program (LARWMP) monitors bacteria levels at unregulated swim sites from Memorial Day to Labor Day to help build a better understanding of the water quality and public health risks at each site. LARWMP monitors *E. coli*, a type of bacteria that indicates the presence of fecal waste at a site.

During the 2015 monitoring season, the majority of swim sites regularly met *E. coli* single-sample standards for water contact recreation, ranging from 0% at Hermit Falls to 38% at Eaton Canyon. The exception was the Hansen Dam Recreation Area, which had persistently elevated *E. coli* concentrations (91-100% of samples exceeded standards). In previous years, we observed a pattern of higher bacteria levels when more people were present at a site (holidays and weekends). That pattern was not observed in 2015.



Q5. Are locally caught fish safe to eat?

The goal of this monitoring effort is to better understand the health risks of eating fish from the L.A. River Watershed. Fish can accumulate harmful levels of contaminants in their bodies, posing a threat to the people who consume them. The LARWMP assesses the levels of harmful chemicals in fish tissue from fish caught at sites popular among the angler community. During the 2015 monitoring season, the LARWMP found that common carp and largemouth bass at Debs Lake and Reseda Lake were safe to eat. The recommended frequency of consumption and serving size, however, varies by site and species, based on the fish tissue contaminant levels for mercury and PCBs. DDT and selenium levels have not been of concern (i.e., above Office of Environmental Health Hazard Assessment advisory tissue-level thresholds) at any site from 2012 through 2015.

SPECIAL THANKS

The Los Angeles River Watershed Monitoring Program (LARWMP) was funded and conducted by a number of public agencies and private nonprofit entities working in the watershed. These participants contributed staff time, laboratory analyses, and funding in a collaborative effort that included representatives from regulated, regulatory, environmental, and research organizations. A majority of the funding was provided by the Cities of Los Angeles and Burbank and the Los Angeles County Department of Public Works.

Agencies and Organizations

City of Burbank
City of Los Angeles
Los Angeles County Flood Control District
Los Angeles Regional Water Quality Control Board
Council for Watershed Health
Southern California Coastal Water Research Project
U.S. Environmental Protection Agency (USEPA)
U.S. Forest Service

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