



Celebrating 20 years of Storm Drain Detectives

Editor's note: Established in 2000, the Storm Drain Detectives are a group of teachers, students, community members and City of Lodi, Public Works staff who monitor Lodi Lake and the Mokolumne River monthly at several different sites where stormwater enters the river. As the program celebrates 20 years, students reflect on what they've learned and what Storm Drain Detectives means to them.

Our water is important!

By Jasmine Mayo
LODI HIGH SCHOOL

Have you ever wondered how runoff from the streets affects the Mokolumne River? Well that's where Storm Drain Detectives come in. SDD is a program that has been sponsored by the City of Lodi for 20 years, helping students learn how the runoff affects the river.

Every two weeks, Storm Drain Detectives meet at the Discovery Center at Lodi Lake to test the Mokolumne River and Lodi Lake at five different sites, conducting six different water quality tests. The students first calibrate their equipment, then form teams of six. Then each team goes to one of the five sites.

Once at the site, students grab a bucket of water, then begin the testing. Mokolumne River water is tested for dissolved oxygen, water temperature, electrical conductivity, pH, turbidity, and nitrates. We also make visual observations around the site, looking for trash, recording the weather, and noticing anything that can change water quality.

Dissolved oxygen is the amount of oxygen in the water, which is important because organisms need oxygen to live. The data is collected by a CheMet kit and a D.O. meter, which dangles in the water for data. Temperature is measured by the D.O. meter and a thermometer probe. An electrical conductivity, or E.C., probe measures the salt in the water. We measure pH with two pieces of equipment, a pH strip and a probe, which helps us learn how

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Anna Weigel, an AP Environmental Science student at Lodi High School, wanted to celebrate the 20th anniversary of the Storm Drain Detectives program. So she came up with a sweet idea: a birthday cake. After she took photos of the cake, she and her family took the celebration a step further and ate their fill of the sugary treat.

COURTESY PHOTOGRAPHS

Tokay High students help local ecosystem by raising salmon

Classroom aquarium gives inside look at salmon's life cycle

By Kali Anema
TOKAY HIGH SCHOOL

At first glance, the rectangular glass box sitting in my environmental science class at Tokay High School seemed to hold little significance. However, students soon discovered that it held an essential role in securing the future of our local ecosystem.

The aquarium, lined with fine gravel and equipped with chillers to keep the water at a cool 55 degrees fahrenheit, annually serves as a temporary home for 40 salmon eggs.

In January, after the eggs were reared by the Mokolumne Fish hatchery for 30 days, students excitedly received a first-hand glimpse of this federally protected species. Looking through the walls of the tank, my classmates and I eagerly watched the eggs hatch into plump, bottom dwelling alevins. Under the direction of our teacher, Sandra Starr, we calculated the date of their hatching based on the temperature of the water, and became familiar with the life cycle of a salmon.

Throughout the development of the salmon fry, we not only learned about the shockingly low survival rate of young salmon, but also their irreplaceable role in California ecosystem. In fact, for every 5,000 salmon hatched in the wild, only 5 will survive the journey out to the ocean and return to their hatching grounds to reproduce. Known as a keystone species, these fish provide essential sustenance for carnivores, keep soils rich with nutrients, and support thousands of jobs and local economies.

After approximately 2 months, the alevins developed into fast swimming fry, seemingly eager to be released into their natural habitat. Buses full of high schoolers departed to the Mokolumne Fish Hatchery to bid farewell to the temporary classroom residents. After witnessing the fry begin to explore the Mokolumne River for the first time, I think we could all agree that this salmon project was so much better than simply reading about it in a textbook.

Thanks to this experience, I hope that others will realize the unique opportunity Lodi residents have to see this iconic species in the surrounding local rivers. Due to constant destruction of their habitats, salmon need our help, and with the protection of salmon we in turn help our forests, rivers, food security, and economies.

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Heritage students get to test the waters at San Joaquin River

By Dylan O'Ryan
SAN JOAQUIN DELTA COLLEGE

On a blustery day in October of last year, Heritage fifth grade Storm Drain Detective students; Janine Jacinto, their teacher; Kristine Stepping, the Program Manager for Outdoor Education for the San Joaquin County Office of Education (SJCCE); and myself, a Storm Drain Detectives leader who has been a part of SDD for about four years, set out to test water quality at Durham Ferry.

We all met at the Durham Ferry Outdoor Education Center, which is a "center for STEM and environmental exploration, owned and operated by SJCCE," as stated on the SJCCE website. We set off on a 0.75-mile hike to a part of the San Joaquin River, which

eventually flows into the Pacific Ocean by way of the Delta.

A select few of Jacinto's fifth-grade class usually tests at Lodi Lake, which is part of the Lower Mokolumne River Watershed. However, the students were able to test at a new river system at Durham Ferry. This unique experience showed the students that more water sources are essential to test for water quality.

An important distinction between the Lower Mokolumne River Watershed and San Joaquin River is that they have different stream bed sizes. The San Joaquin River near Durham Ferry has a significantly wider stream bed, which can contribute to lower water levels, as noted on our testing day. This distinction created some issues in testing,



where we were unable to test Dissolved Oxygen (DO) using the meter at Durham Ferry due to the shallowness.

It is important to note that both river systems' water quality is graded by the same scale, which is published by the San Joaquin Basin Plan; therefore, we can compare values of water quality as a distinction from the water sources.

The water quality parameters tested at both locations were similar in data we would expect; however, Electrical

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EBMUD biologists share fins and outs of the job with students

By Leonardo Salazar, Max Hernandez, Yaneisy Roman Ortiz, Eduardo Lopez, Paul Roman Ortiz and Jaylene Guerrero
HERITAGE ELEMENTARY SCHOOL

Students at Heritage Elementary School used Zoom, a distance learning software, to interview Ed Ribble and Alan Webster, biologists who work for the East Bay Municipal Utility District.

Q: How is COVID-19 affecting the wildlife?

Ed: COVID-19 is actually having the opposite effect on wildlife compared to the effect on humans. There is less pressure from people on the wildlife, and more room for the wildlife to roam.

Q: How has COVID-19 affected how you do your job?

Ed and Alan: As EBMUD employees we are following their strict protocol, including wearing masks, and working from home when possible.



KATHY GRANT/COURTESY PHOTOGRAPH

A small boat is ready to carry East Bay Municipal Utility District biologists Ed Ribble and Alan Webster to a screwtrap, which captures fish for monitoring.

Q: What is one specific machine that is used to observe the salmon?

Ed: There are cameras on either a fish ladder or a weir to count the returning salmon. Another machine that is used is a rotary screw trap that cap-

tures the salmonids and other fish that are heading downstream.

Q: What is your career or job title?

Alan: Fisheries and wildlife technician.
Ed: Fisheries and wildlife bi-

ologist II.

Q: Where did you attend college?

Ed: Humboldt State.
Alan: UC Davis.

Q: What degree did you receive?

Ed: Fisheries biology.
Alan: Wildlife, fish and conservation biology.

Q: In what way do you work with the watershed and the Mokolumne River?

Ed: We are part of a six-person crew that monitors the salmon run. We also do habitat enhancement projects, such as moving gravel to create reefs.

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RIBBLE



WEBSTER



Watershed's birds fly high

Students celebrate the birds who live in the local watershed in art, along with the Sandhill cranes that migrate to the area each winter. **3**



'Toy Story 4' sets a trend

Inspired by the character of Forky and a teacher's challenge, students create their own "quarantine buddies" using recycled items. **5**



Marine science adventure time!

Students share their trips aboard the Marine Science Institute's research vessel in San Francisco Bay. **7**