

# THE Mokelumne Current



## Want to be a biologist? Here's an inside look

By Joseph Garcia and Nicolas Lugo  
HERITAGE ELEMENTARY SCHOOL

James Jones is a wildlife biologist for the East Bay Municipal Utility District.

**Q:** Where did you attend college? What was your major?

**A:** I attended college at Humboldt State University, and my major was wildlife management.

**Q:** Do you have to go to college to work as a wildlife biologist?

**A:** Yes, you do have to go to college.

**Q:** What was your favorite subject in school and why?

**A:** My favorite subject was ornithology, which is the study of birds.

**Q:** Will you describe what a wildlife biologist does?

**A:** We study wildlife and their habitats.

**Q:** What are some advantages and disadvantages to your job?

**A:** One disadvantage is low pay. Two advantages are that I get to work outside and do what I love.

**Q:** What do you recommend for people to do if they want to become a wildlife biologist?

PLEASE SEE JONES, PAGE 7

## Kes Benn shares his experiences working with fish

By Bryan Aguilar and Ariel Mojica  
HERITAGE ELEMENTARY SCHOOL

Kes Benn is a fish biologist for the U.S. Fish and Wildlife Service.

**Q:** Where did you grow up?

**A:** I grew up in Davis.

**Q:** Which colleges did you attend?

**A:** I attended these colleges: Feather River Junior College, UC Davis, Humboldt State, and University of Auckland.

**Q:** What classes did you take to prepare you for your job?

**A:** I took several classes. Some are fish biology, fish ecology, biology, fish hatchery and physics.

**Q:** What inspired you to get a college degree and apply for your job?

**A:** I had some great inspirations. One inspiration is my dad, because we frequently went fishing together. Also, I never wanted to sit around and look at a computer for the day. Nature inspired me to go outside.

**Q:** What is your job? When did you get the job you have today?

**A:** I have worked as a fish biologist for the U.S. Fish and Wildlife Service since 2010.

**Q:** What do you enjoy about your job?

PLEASE SEE BENN, PAGE 7

## Storm Drain Detectives look back

By Hayley Hower and Dylan O'Ryan  
LODI HIGH SCHOOL

As we both graduate from high school, we wrote this article from our two points of view about our time in Storm Drain Detectives. We are pursuing degrees in similar fields, where our interest has been sparked by our time together within the program.

We were introduced to Storm Drain Detectives by our pre-AP biology class with Mrs. Melissa Turner as sophomores — at the time to fulfill a grade requirement. So this is a combined experience of our endeavors to make a difference in our water quality by creating bigger and more efficient projects through our

own means.

Storm Drain Detectives is a program that creates a positive learning environment for young individuals to take an active role in the understanding and care of our community's watershed.

The data collected from various test sites on Mokelumne River shows a direct correlation of how our city is impacting our water year-round. The city's runoff, water that flows off of our property and our

PLEASE SEE DETECTIVES, PAGE 7

COURTESY PHOTOGRAPH

Dylan O'Ryan, left, and Hayley Hower get a tour of the Lodi Energy Center for the 2017 edition of the Mokelumne Current.



## Our voyage of learning and fun on the San Francisco Bay

By Jesus Vera Hernandez  
NEEDHAM ELEMENTARY SCHOOL

Have you ever gone on a trip that felt out of this world? On Nov. 8, 2017, our class went on a study trip to the San Francisco Bay. We went aboard a real discovery boat called the Robert G. Brownlee.

Days before, we worked hard in our class to learn about the water cycle, our watershed and the bay. Still, we had no idea what we would learn on this trip!

On the day of the trip, we left Needham School around 9 a.m. A school bus came to pick us up and students from Heritage School were already on the bus. The bus ride felt long because I had never gone to San Francisco. My friend Pedro and I tried to keep busy. We talked mostly about being on a boat. Both of us had never been on a real, live boat before. Honestly, we were a little nervous.

About three hours later, we finally got to San Francisco. It was the first time that my friends and I had ever been to San Francisco. We were blown away by the skyscrapers and the amazing water. Everyone started yelling and taking pictures. I could not believe how cold it was, though.

When we got off the bus, we saw people jogging on the street. I could smell food and the fishy sea in the air. I could hear the seagulls around us screaming like angry people. We walked to Pier 19 to catch the boat. We waited for a while, so we ate our "garbage-free" lunch. In case you're wondering, "garbage-free" lunch is when you pack a lunch with the minimum amount of trash. We tried to see who had the least garbage left, but we all had some left because we didn't dare to eat the orange peels or bags.

Soon we saw the impressive vessel swaying on the water. It was interesting to see how the crew had to align the boat to the dock so all of us could embark. It actually took them a while.

It was time to board! My teacher told us that for the next four hours we would be working like marine biologists. A crew member gave us an orientation about safety. I was glad because he told us where to find the life jackets and we all had to put one on. Our guide even had to teach us what to do in case someone fell off the boat. If this happens we were supposed to scream, "Man (or lady) overboard!" as loud as we could! Everyone laughed, but I was glad to know!

Finally, it was time to get to work like scientists. We went outside to the open deck of the boat and saw the amazing bay. At first, it was hard to stop from bouncing up and down so much. We quickly got used to it though. Our class was split into groups and we all got to work on different stations. After finishing our work in the stations, it was time to get back to land! Our class took some time to



COURTESY PHOTOGRAPHS

Left: Students haul up a net aboard the research vessel Robert G. Brownlee at the Marine Science Institute. Above: Students examine a fish at the research ship's ichthyology station. Below: The Needham School fifth-graders pose for a photo on the pier in front of the Robert G. Brownlee. MSI takes students on research excursions aboard the ship, where they learn about how to measure water quality in the San Francisco Bay, study fish and plankton, and more.



enjoy the beautiful sun set across the bay. My friends and I were tired and hungry from working so hard. We were also very happy that we learned a lot and we didn't get seasick. It was amazing all the work we did on the Brownlee. Like I said we had no idea!

On the way back to Lodi, most of us were tired and sleeping on the bus. Some of us could still feel like we were on the water bouncing up and down! Our class agrees this was the most adventurous trip we had ever gone to so far. The next day we had fun looking at the pictures and writing notes about all the learning we did!

### Hydrology Station

By Aayshah Bibi and Yeslene Varela

Our first station was the hydrology station where we learned that the San Francisco Bay is made up of fresh and saltwater, which is called brackish water. Our group used a cylinder to bring out a sample of water from

the bay. We put water in a graduated cylinder to test its temperature, salinity, and density of both surface and deep water. We were surprised to learn that the bay is only about 12 feet deep! (About the depth of a large pool!) When we tested the water we found that the surface water had more salt than the deep water. We discussed that the bay is an estuary that fills up with salt water from the ocean and fresh water from rivers that flow into it.

PLEASE SEE MSI TRIP, PAGE 5



Plants, animals in the watershed  
Students share facts about their favorite plants and animals that make their home in the Mokelumne River watershed.

3 & 8



Local agriculture relies on the river  
Cherries, tomatoes, grapes, asparagus and other crops rely on the local environment, including the region around the river.

3, 6 & 8



How recycling helps watershed  
A Cal-Waste educator shares how the company — and recycling in general — can help to protect the local environment.

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## CAREER SPOTLIGHT

# Imagine yourself as a marine biologist

**By Mirian Flores Torres**  
NEEDHAM ELEMENTARY SCHOOL

Can you imagine yourself traveling to beautiful places like the San Francisco Bay or the Hawaiian islands, scuba diving, working with animals, and getting paid?

If you enjoy learning about marine animals and their habitats, then this is a job for you. Some animals you could learn about are

whales, seals, walruses, and so many fish. Maybe you could even discover an animal on your own. You could also make many friends, because, of course, you need a team to help you.

First of all, marine biologists do tons of research. They study not only animals, but also pollution. They find out how pollution affects the animals and plants that live in the ocean and bay.

They also travel around the world to explore different animals and habitats.

Another thing they do is inform people of what they discover. For example, they can give speeches to people or write about it in some articles or newspapers.

Now, you may be wondering what most people think about when choosing a career, which is money.

Marine biologists earn lots of money. When they first start they earn about \$44,311 every year. As time goes by, their salary increases and can reach about \$190,000 a year.

Finally, after reading this article, I hope that you too might consider becoming a marine biologist. It would be a great career if you love learning about animals and working near water. You would be working doing what you love to do, like

swimming, scuba diving, and studying animals.

If you are interested in becoming a marine biologist, you might want to go to these universities: UC Davis, Sac State, UC Santa Cruz or UC San Francisco.

Many marine animals around the world need our help and support, so consider becoming a marine biologist. You will not regret it and your family will be very proud of you!



PHOTOS BY SAIRA MENDEZ/HERITAGE ELEMENTARY SCHOOL

**Left:** Joseph Garcia and Nicolas Lugo interview James Jones, a wildlife biologist for the East Bay Municipal Utility District. **Right:** Bryan Aguilar and Ariel Mojica speak with Kes Benn, a fish biologist for the U.S. Fish and Wildlife Service.

## JONES

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**A:** I recommend to go to college and study environmental science.

**Q:** What does the East Bay Municipal Utility District do?

**A:** The East Bay Municipal Utility District delivers water to the water company in the valley.

**Q:** If you were not a wildlife biologist, what would you be doing?

**A:** If I wasn't a wildlife biologist, I would be a firefighter.

**Q:** What is your favorite animal?

**A:** My favorite animal is aplomado falcon.

**Q:** What are some of your hobbies?

**A:** I like to backpack, hunt, fish and canoe.

## BENN

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**A:** I really enjoy fishing, and helping fish by studying and creating spawning beds.

**Q:** When was the first time you found a macroinvertebrate in the water?

**A:** The first time I found a macroinvertebrate is when I was about 8 years old, and he was digging through the rocks.

**Q:** How does the watershed impact the insects in the watershed?

**A:** Water in the watershed can wash away macroinvertebrates.

**Q:** Has there ever been an outbreak of harmful insects in the Mokelumne River watershed?

**A:** There has never been an outbreak of harmful insects in the Mokelumne River watershed, except for mosquitoes, in some places.

**Q:** What can people learn from macroinvertebrates?

**A:** People can learn the water's history by studying the macroinvertebrate activity in the water.

**Q:** Why is it important to help species that are native to the Mokelumne River watershed?

**A:** It is important to help the native species in the watershed, because we have done things to destroy their homes. We owe it to the animals to take care of them.

**Q:** Are there any insects or animals that have a negative impact on the Mokelumne River water-

shed?

**A:** Non-native insects and animals can have a negative impact on the Mokelumne River watershed.

**Q:** Is the Mokelumne River polluted?

**A:** Today, the Mokelumne River is not polluted.

**Q:** How can people help the Mokelumne River watershed?

**A:** People can help the watershed by volunteering in clubs that help keep the Mokelumne River clean.

**Q:** What should kids do if they are interested in studying fish and insects?

**A:** Kids should really just go out in nature and explore, and

## DETECTIVES

CONTINUED FROM PAGE 1

streets, goes directly into the storm drain, which leads straight to the watershed without filtration.

The Mokelumne River and Lodi Lake harbor many species of life. For example, the Sandhill cranes come to the area during the fall because of the mild climate, food supply and breeding grounds, which benefit this species. The healthiness of this watershed is crucial to the Sandhill cranes, and a decline in water quality will also cause a decline in the population or a change in their migration path.

Storm Drain Detectives, which we have both participated in for three years, has opened up many doors for both of us. Through our experiences, we have been a part of many science festivals and presentations that take place annually, such as the NorCal Science Fair and the Sandhill Crane Festival.

More recently, we placed second in a watershed stew-

### Hayley Hower

I have learned that I am motivated and passionate about the quality and health of our water. Even more importantly, I am investigating a worldwide concern and hypothesizing as to how to better the ecosystem for all current and future inhabitants of this planet.

My countless hours at Lodi Lake as a Storm Drain Detective has led me to my choice of study in environmental

sciences and to my future career interest of being a hydrologist. Water quality has been a large component of my high school career, leading me to branch into environmental science.

### Dylan O'Ryan

I have learned a lot about stormwater quality and the importance of keeping our waterways clean. I am going to attend San Francisco State University this upcoming fall with a major

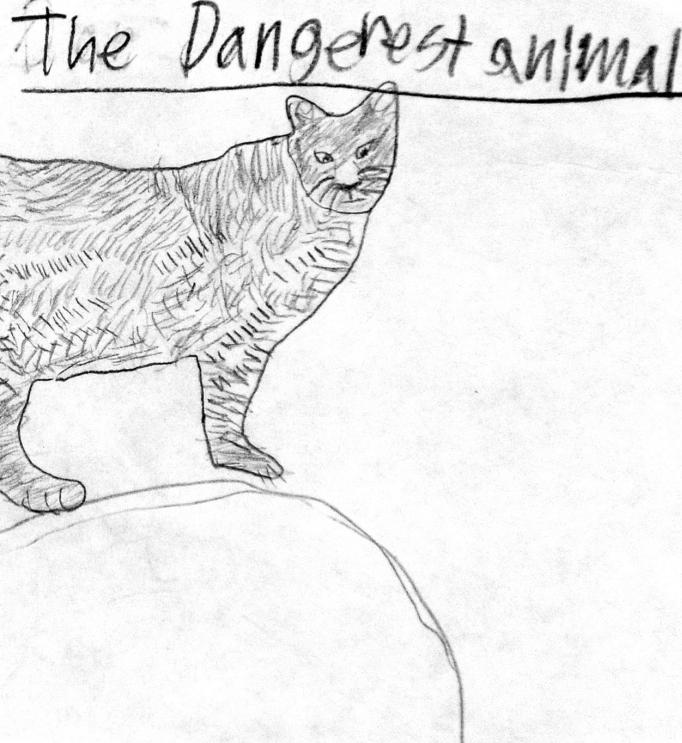
in chemistry and a emphasis in environmental sciences. With this interest I would like to teach community college while also working with youths in teaching about water quality.

Storm Drain Detectives has given me an untold amount of experience in water quality, which has sparked a huge interest in our environment. I look forward to gaining more experience and knowledge on how to better our environment.

our community clean.

We obtained the necessary techniques required to teach younger students throughout these three years by being in this outreach program. Teaching has also given us the gift of patience and compassion in discerning the varying requirements and abilities of different students.

In return, this experience has directly impacted our own knowledge and appreciation of how our local communities rely on individuals, such as us detectives, to inform them regarding the quality of our most essential human resource.



JULIAN AVILA/REESE ELEMENTARY SCHOOL



MARITAZA MARTINEZ/HERITAGE ELEMENTARY SCHOOL

## Storm Drain Detectives get Lodians involved in keeping water clean

**By Rubie Dhillon**  
TOKAY HIGH SCHOOL

We often take the availability of clean water for granted, not considering the significance of the steps that go into ensuring the safety of our water.

Lodi's Storm Drain Detectives are a group of teachers, students and other community members who gather each week at Lodi Lake and the Mokelumne River to test different aspects of water quality, including pH and dissolved oxygen levels. The detectives collect and record data to analyze the impacts of storm drain runoff on local waterways.

But why is the quality of our water so important? And how do the Storm Drain Detectives help keep it clean?

When it rains, the runoff gathers in storm drains, where it flows directly into major local bodies of water. However, along with the water, unfiltered toxic waste is also carried along with the runoff, resulting in potentially detrimental consequences on our lives, in addition to the well-being of the environment.

"Since the Mokelumne River provides 40 percent of Lodi's drinking water, the Storm Drain Detectives program helps ensure a safe and clean water supply," said Kathy Grant, the City of Lodi's watershed education coordinator and one of the leaders of the Storm Drain Detectives program.

Not only does the work of the detectives immensely impact Lodi's human residents, Grant said, but it also influences the local environment.

"(It ensures) a healthy ecosystem for the plants and animals that also depend on the Mokelumne River for life," she said.

The Storm Drain Detectives program provides students and other community members with the opportunity to become a part of the process of monitoring local water.

"Having the opportunity to participate in a program like this not only provided for an enriching educational experience, but also showed me how fortunate we are to be able to have a program like this that allows us to understand what is in the water at a molecular level," said Simaron Dhillon, a Tokay High graduate who participated in the Storm Drain Detectives program for three years.

The program significantly influences students' understanding of local water quality, and teaches participants how to work as a team and be more patient with their instructors, said Matthew Hashimoto, a Tokay High senior who has been a Storm Drain Detective for more than four years.

"I've really enjoyed my years in the program, and I feel that it will be an invaluable experience in the future," he said.