



## 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 look-

ing 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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# WILD ABOUT WATER

## Coastal Cleanup and Earth Day: Keeping Lodi Lake trash-free

### Love Lodi 2018

By Delaney Rios  
REESE ELEMENTARY SCHOOL

Love Lodi is a community project to help clean up Lodi. I took part in the project to clean up Lodi Lake. I did this with my Girl Scouts.

At 8 a.m., my mom and I walked to Lodi Lake. At 9 we were assigned a leader. We all got gloves, a grabber to pick up trash and a bucket.

• 9:15 a.m.: We took a group photo and walked to the nature trail by the lake.

• 9:15 to 11 a.m.: I walked along the nature trail and shore picking up trash.

• 11 a.m. to noon: The group sorted the trash onto tarps for recycling.

All the things we found were lotion, beer bottles, beer caps, clothes, candy wrappers and more. In conclusion, you should not throw any of your trash out by the lake because it is bad for the animals.



COURTESY PHOTOGRAPHS

### Sights in the Lodi Lake Nature Area

By Rozilynn Lawhon  
REESE ELEMENTARY SCHOOL

In honor of Earth Day, I picked up trash at the Lodi Lake nature trail. I found a lot of different kinds of trash left behind by people. There were bags, cans, plastic and more.

Do we really want the environment that we live in to be like this? No! Trash can cause pollution, which can create bad air quality. The plants and trees that we are destroying can help fix that by naturally cleaning the air. I don't know about you, but do you really like to breathe bad, polluted air? I know I don't want to.

Trash can also hurt or kill animals. Animals may get hurt, get sick or die by eating trash on accident or eating something that has already eaten trash. If this happens, some species could even disappear.

We don't want that to happen. The animals are a part of the ecosystem. If they disappear, parts of the ecosystem

will also. We need to be careful of what we do and what its effects will be on the environment.

When I was walking down the trail, I caught sight of burnt trees and branches on the ground in one area. I thought, "I wonder if people did that?"

It is always important to be responsible in the wilderness. Only camp where you are supposed to, and only light fires in places where it is allowed. This burned area was probably home to many animals, and we may have burned their homes down.

If you are a person who wants a clean environment, get out there and help! Different ways that you can help: Pick up trash in your local parks and wilderness areas; ride your bike instead of riding in a car to help air quality; and definitely put trash where it belongs, in the trash cans and recycle bins!

We have a beautiful environment. Let's keep it that way, together!

### Picking up trash is important

By Carly Fenton  
REESE ELEMENTARY SCHOOL

Do you know why it's important to pick up trash?

Today I went to Lodi Lake to pick up garbage. I learned that we share this area with a lot of wildlife, and they need a safe and healthy home.

When I was out picking up trash, I found half a bag of garbage.

I plan to do this often to help keep this watershed thriving for the wildlife and the public.



COURTESY PHOTOGRAPH

### Spending Earth Day at Lodi Lake

By Jax Bennett  
REESE ELEMENTARY SCHOOL

On April 22, I went to the Lodi Lake Nature Area to clean up and take pictures with my family. I found a lot of trash near the nature trail. I found a lot of cigarette butts, plastic water bottles, beer bottles, cans and plastic bags. My family helped me to pick up the trash and sort it out.

I found most of the garbage by the water; and some on the nature trail. In some spots it looked like people had a party, and left their trash behind. People should be able to enjoy a nice picnic, but they need to

be responsible for picking up their trash. There are multiple spots to put your trash, but people don't take the time to do it.

This area of our watershed has animals that live there, but the garbage people leave behind could ruin their home. Garbage could fill up in a squirrel's den, or they could get cut open by sharp objects. Fish eggs could get cracked open from people throwing garbage into the water, or fish could die if the water becomes too filled with trash.

After collecting all the trash, we sorted through garbage and recycled items.

### By the Numbers: Coastal Cleanup

By Mateah Saragoza  
REESE ELEMENTARY SCHOOL

Many strange things were found on this day in 2016, when Lodi came together and cleaned up the Lodi Lake.

- 2,908 cigarette butts
- 641 food wrappers
- 442 plastic bottle caps
- Flat screen TV

#### Interesting finds

- Popped inflatable rafts

- Food cans
- Old clothing
- Pipes
- Mattresses
- Easter eggs
- Fossil
- Fake apple

Some volunteers found a lottery ticket for \$20!

Also, one year a Gucci purse was found that contained a female crayfish with a clutch of eggs under her tail.

# An interview with local water attorney Jennifer Spaletta

By Emmy Spaletta  
REESE ELEMENTARY SCHOOL

**Q:** What is your name?

**A:** Jennifer Spaletta, or "Mommy" to you.

**Q:** What do you do for a living?

**A:** I am a water lawyer. I work for landowners and local public agencies.

**Q:** Does your job include the Mokelumne River?

**A:** Yes! It is one of the favorite parts of my job. I work on agreements between different water users on the river and help a local water district plan projects to use the river water to help our community. I get to learn a lot about how the river

works, its history and the amazing environment it supports.

**Q:** Where did you go to college?

**A:** I went to college at Cal Poly, San Luis Obispo and studied ag business policy and water science. After Cal Poly I went to UC Davis for a master's degree in agricultural and resource economics and a law degree.

**Q:** What did you do after college?

**A:** After college I got a job as a lawyer at a firm in Stockton. I worked there for about 14 years and then started my own law firm here in Lodi in 2013.

**Q:** What is your job like on a normal day?

**A:** Every day is different. I spend about half of my time doing research about the law and the facts involved in my clients' projects, and thinking about the best way to solve problems. I spend the other half of the time in meetings with clients or other interested parties explaining issues or negotiating agreements. Sometimes I go to court to argue cases for my clients.

Most of these cases involve who has a right to use the water available in different rivers and how this use impacts the environment.

**Q:** What are the struggles of being a water attorney?

**A:** Stress, frustration and too much time in an office. Water is scarce in California and

water laws are always changing. It takes a long time, and getting a lot of people to agree, to find solutions to water problems. Then, it takes even longer to implement them.

The stakes are sometimes very high. Communities can't exist without water.

**Q:** Why did you choose this type of work?

**A:** I love my clients and I love the subject matter. It is very rewarding to work on issues that are important to our local environment and economy.

I also love the "field trips" — when I get to go out on the river or to a farmer's field to learn about a case or a new project.

**Q:** Why did you choose to work in Lodi instead of a big city?

**A:** I have no interest in parking garages or wall-to-wall concrete. I grew up in a very small town, so Lodi is a big city to me.

With technology today, I can do interesting work for clients all over California and still have my office in Downtown Lodi ... where I can keep an eye on you!

I think that after interviewing Jennifer Spaletta — also known as "Mom" — I have learned that a small-town girl can grow up to be anything she wants to be and that if you work hard you can accomplish most anything.

I also learned that being a water attorney doesn't mean that you talk on the phone all day and do paperwork. Being a water attorney takes a lot of hard work and effort that you have to show every day.

### Our Estuary

By Jessica Carbajal Quezada  
NEEDHAM ELEMENTARY SCHOOL

From the Sierra Nevada Mountains

Rivers of freshwater,  
Flow from snowpack as runoff.  
Flowing waters  
Into the Mokelumne,  
and Sacramento River,  
To lakes and ponds everywhere.

Rivers of fresh water  
Flowing into the San Francisco Bay.

Where freshwater and saltwater

Mix together to make brackish water,  
To form a beautiful estuary.

An amazing ecosystem,  
Where plants, fish, birds, mammals, and plankton  
Live happy together.

There in the bay where  
Rivers of fresh water flow,  
To mix with the salt water,  
Beautiful estuary waves away.  
Rivers and ocean finally meet!

## Instructor Barbara Transon shares the science of studying macroinvertebrates

By Mrs. Jacinto's Class  
HERITAGE ELEMENTARY SCHOOL

Barbara Transon is a GATE instructional coach for Lodi Unified School District.

**Q:** How many years have you been making leaf packs?

**A:** I have been making leaf packs for two years.

**Q:** Who taught you about making leaf packs?

**A:** I learned about leaf packs from an organization that studies the health of fresh water streams and rivers, called the Stroud Water Research Center. They came to California to teach teachers about leaf packs.

**Q:** Who came up with the idea of leaf packs?

**A:** The Stroud Water Research Center pioneered the use of leaf packs to study the health of streams and rivers around 1970. Today, citizen scientists all over the world are using this simple method to test the health of their local watersheds.

**Q:** Do you enjoy making leaf packs?

**A:** I really enjoy watching the students figure out what 15 grams of dry leaves look like. It sounds like more than it is!

Placing leaf packs in a stream replicates the natural process of leaves forming packs in streams. Where there are leaves decaying, there will be bugs. Simply genius!

**Q:** When you dropped leaf packs in a river for the first time, what did you expect?



**A:** Because a lot of students were counting on macroinvertebrates being found, as the teacher I was just hoping the leaf packs would work! I was hoping that none of the leaf packs

we placed would be disturbed by people.

As it turned out, we found seven out of eight bags ... one had been chewed open by a critter.

**Q:** What got you interested in macroinvertebrates?

**A:** I'm interested in a healthy ecosystem. I was interested in looking at the interaction between the hydrosphere system and the

PLEASE SEE TRANSON, PAGE 4

The students of Heritage, Needham, Reese, Lockeford Elementary, Tokay and Lodi High would like to thank the following sponsors for their support:



See more student work at the Lodi EEI blog, [lodieei.wordpress.com](http://lodieei.wordpress.com).



# AMAZING PLANTS AND ANIMALS

## Tomatoes, cherries and grapes, oh my: How agriculture fits in the Mokelumne River watershed

By Molly Thurlow  
REESE ELEMENTARY SCHOOL

In the Mokelumne River watershed, there are many different kinds of agriculture such as tomatoes, walnuts, cherries, asparagus and grapes. All of these crops can be found in Lodi and many other places in our watershed. You can learn about some of these crops at the San Joaquin County Historical Museum.

One reason that a lot of crops are planted near Lodi is because it had great soil — the richest soil in the world! The local area also makes a lot of money, and has a billion-dollar industry. We feed a lot of the world.

Tomatoes are a very popular crop in Lodi. We grow about 47 different varieties of tomatoes. Tomatoes are in American history as well; they date back to the 1500s. South America grew them but did not eat them, because they thought that tomatoes were poisonous. They picked them because they were pretty.

When the Pilgrims came over to Plymouth Rock they brought tomatoes. The third president, Thomas Jefferson, planted tomatoes in his garden when he was president. There are over 3,000 different varieties of tomatoes.

Finally, since tomatoes are a fruit and ripen when picked, most tomatoes you buy in the store are picked green.

Another big crop in the Mokelumne watershed is walnuts. It provides 99 percent of the world's walnuts. Walnuts are also a good food that you could just have sitting around, because they do not spoil. You can do many things with them, such as grind them up or make walnut oil and walnut milk.

In Lodi, the black walnut roots are stronger, but the English walnuts are tastier. To fix this problem, they use black walnut roots, and an English walnut top.

Cherries are another crop found along the Mokelumne. When the English came to America in 1607, they brought cherries, and cherries came to San Joaquin County in the

1800s. There are about 1,000 different varieties of cherries, and you have to pick them by hand.

When sorting the cherries into different varieties, you use a cherry sizer. You usually pick cherries around March or April, and they are usually the last fruit to bloom. After they are picked and sized, they are put into chlorine water until they are packaged and shipped to wherever they are being a sold.

In addition to these other crops there is asparagus. It is a wild plant and came to America over 2,000 years ago. One prince somewhere loved asparagus so much that he fed it to his soldiers.

After the Gold Rush many people stayed in California to grow and pick asparagus. There are many different varieties, shapes and colors. One asparagus plant can last about 15 years.

Since you have to hand-pick asparagus, it is very time consuming and if the place you cut it is wrong you have to throw it out. This task is very hard labor.

Finally, grapes are a huge part of the Mokelumne watershed, especially in Lodi. Lodi grape growers grow many different varieties of grape. There are 18 different varieties grown in Lodi. Grapes came to Lodi in the 1890s, when they were transporting watermelon and they decided that grapes were a better fit.

To grow grapes you must trellis or arbor the grapes so that they grow upward. When you do this, it also makes it less likely for the grape plant to get diseased.

There are many different types of agriculture in the Mokelumne watershed and these are just some of the many crops grown. I found it interesting that we provide so many different varieties of different crops for all over the world. I also found out that we have a lot of different varieties of agriculture. I always knew about the grapes, but not the other varieties of other fruits and vegetables in our watershed.

## Where has all the asparagus gone?

By Nathaly Yepes  
HERITAGE ELEMENTARY SCHOOL

Why isn't much asparagus grown in San Joaquin County anymore?

Many people like asparagus, and in the past quite a bit of asparagus was grown in San Joaquin County. Asparagus needs a warm climate to grow, so this is the perfect area. What happened?

It became too hard to grow and harvest asparagus in this area. It can take two to three years for asparagus to be ready to harvest. If it is not picked within five to seven days, the fully grown spears can go bad.

Asparagus can also have problems with bugs like cutworms, beetles and slugs.

Also, workers must make several trips through a field to get all of the spears when they're ready. There is no machinery in the asparagus industry to help the workers do their jobs more quickly. The asparagus industry

has not had any innovations to make it easier and cheaper to pick.

Because of these issues, most of the asparagus we eat now is grown in other countries.

Here are some additional facts about asparagus:

- Asparagus takes 12 to 14 weeks to grow out of a seed. But once that happens, the bed will produce an abundant crop of spears spring after spring for the spears spring after spring for at least the next 20 to 30 years.

- Asparagus has to be planted in the early spring.

- Asparagus has a large root system.

- Asparagus has stems that can reach 39 to 59 inches high. Spears can grow several inches per day over a period of 6 to 7 weeks.

- Harvest of the fully grown spears takes place each day or every four to five days depending on the temperatures. Higher temperatures accelerate growth of the asparagus.

## Creative Corner: Milo's musky, ratty life

By Christina Ochoa  
HERITAGE ELEMENTARY SCHOOL

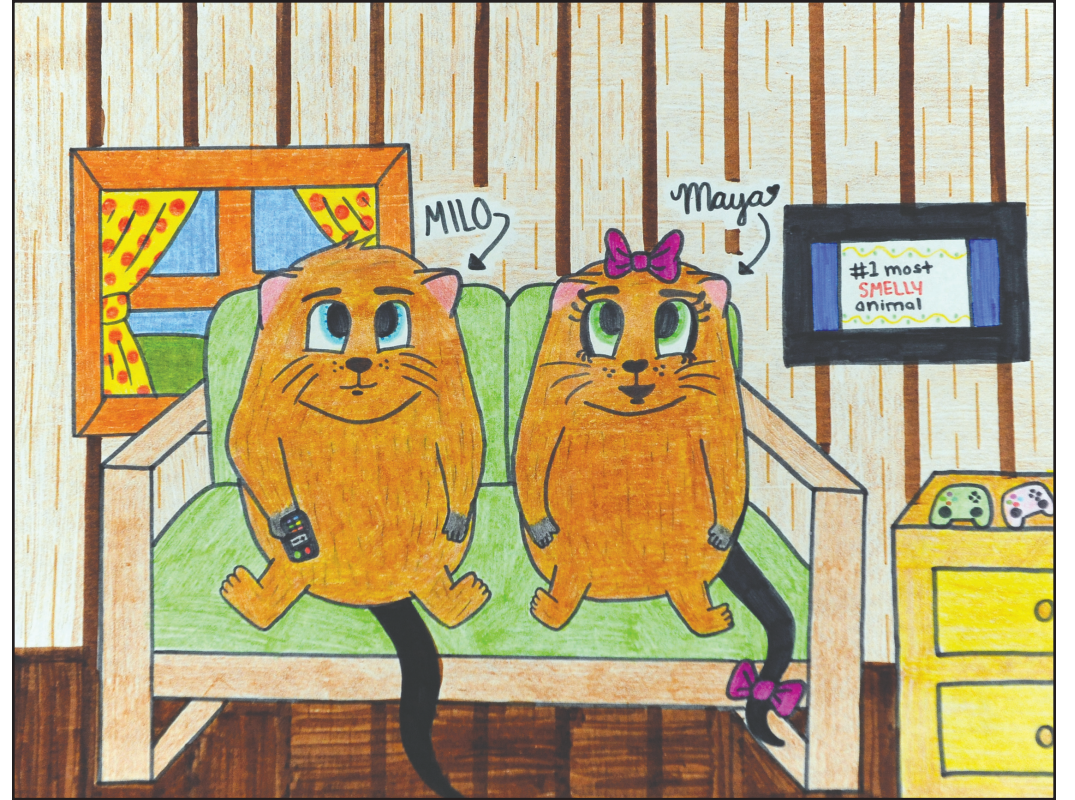
Hi, I'm Milo! I'm a muskrat. You may take one look at me and say, "Hey, look at that funny lookin' beaver!" Well, I'm not a beaver ... or a rat. I'm a muskrat, so don't mistake me for one of those other ones!

Anyway, here's a story about my musky, ratty life.

So many animals get their names for specific reasons. For example: the cheetah. All they do is cheat, cheat, cheat! That's a heads up ... don't play with them.

You're probably wondering how I got my name. You're not gonna believe it! The humans say I have a musky smell, and that I resemble a rat! No way. I'd rather be a beaver. And I do not stink!

All my neighbor muskrats say that the humans were right, and that I have a musky smell. Well, the same goes to them and their little litters. You know, I found out the female muskrats have up to five litters a year! Not me,



though. For one, I'm a boy, and two, I'm a loner. Well, except for Maya. She's my friend next door. And she doesn't think I smell musky. Now, you may think I com-

plain too much, but have you ever lived in a marsh? No? That's what I thought. Every day I expect to smell fresh air. But no. It's just the same old musky air, every day.

Anyway, I'm'ma go now. Maya and I are going to watch our favorite show: "Rat Tails." Bye!

*'Til next time,  
Milo*

## Lampreys aren't scary until they open their mouths

By Armando Nunez  
HERITAGE ELEMENTARY SCHOOL

At first glance, they don't look anything like a threat ... until you see their mouths! Lampreys have circular mouths with 11 to 12 rows of teeth. They also have circular and visible gills on both sides of their head.

This parasite has a unique way to get food. First, they need a fish — any fish. Next, they use their suction cup-like mouths and stick on the fish. Finally, the lamprey eats away parts of the fish. Unfortunately for the fish, it usu-

ally dies from too much blood loss.

One time, lampreys killed a celebrity, King Henry I of England. He ate too much of the rich lamprey meat at a banquet and actually died.

While lampreys may be mischievous, people shouldn't kill them. People should just stand their ground or not get near them. (And not eat lots and lots of them!) Instead, we should build them a preserve to keep them safe in this world that we live in.

Enough with the mushy stuff. Now it is time for some more lamprey facts. First off, the word "lampetra," a

Latin word, means "stone licker." The "stone" refers to scales, but the "lick" is actually a bite.

After lampreys spawn, they die shortly. Speaking of spawning, lampreys have actually spawned 100,000 lamprey eggs!

Lampreys can be 5 to 40 inches long. Their scientific name is "Petromyzon marinus."

Lampreys are awesome little parasites, with a unique way to get their grub. Lampreys aren't harmful to humans and should be respected like any other animal.



FIZZA BATOOL/HERITAGE ELEMENTARY SCHOOL



YULIANA CORTES/HERITAGE ELEMENTARY SCHOOL

## How trash harms owls in the Mokelumne River watershed

By Preston Plath  
REESE ELEMENTARY SCHOOL

Owls in the Mokelumne River watershed are affected by the people that explore it because they can often be killed by people who litter, pollute (dump oils etc.), and leave their cigarette butts on the ground. These can affect the birds because they can pick them up, eat them, or feed them to their young.

Many people don't realize that this

does the same thing to the water in the river. If people do this it will eventually get into the water. This can happen because when you dump down sewer drains they just dump the stuff out in canals. Then the canals fill up with water and the water travels to the river/watershed, then the water is slowly waiting to get to the river as it is traveling.

What can happen to owls is that they end up dying. Then they decompose to different oils such as petroleum, one of

the most common.

If you have ever seen what a dead owl looks like you probably thought, "Ew, don't touch that," but what people don't realize is that by saving an animal, they can help save our water system, one animal at a time.

People do Coastal Cleanup and Earth Day activities to save water systems and other sources of water that can impact everything and all the things in the world.

## How lake recreation can affect wildlife on the Mokelumne River

By Joey Dockery  
REESE ELEMENTARY SCHOOL

The Mokelumne River has many recreational uses. One of these is boating. People use boats to ski, kayak and fish. Some people use the Mokelumne for hiking. Other people also just like to float down the river.

Even though it is a highly used place for recreational uses, it also serves a great home to wildlife. The wild life there are deer, ducks, fish and other small animals. These animals depend on the Mokelumne River to survive and have water and food to live.

I interviewed three people about their use of the Mokelumne and how it affects wildlife. The first one was Kara Latteri of Lodi. I asked her if she uses the Mokelumne River for recreation.

Her response was that she does paddleboarding, kayaking, fishing, swimming and more. She and her family usually go when it's warm about two or three times a week, but in the winter about two times a month.

"I love the river, it's such an awesome natural place right in our backyard," Kara said. "I don't think non-motorized vessels and good citizens negatively affect the wildlife, but irresponsible people ruin it for it others. I have seen people littering which hurts the ecosystem."

Another person I interviewed was Julio Magana.

"Yes, some people don't have any respect for the river, but for the most part most people are respectful," he said.

The last person I asked was Chuck Kroeger. He thought that there should be a speed limit for JetSkis.

"Yes, I think that recreational uses do affect the river and wildlife," he said. "For example, I think that JetSkis erode the concrete wall in Lodi Lake."

In conclusion, I'm not the only one who thinks that the Mokelumne River and Lodi Lake is a fun place to be with your family, but just make sure you pick up after yourself and don't do dangerous things that can hurt you or the wildlife.



PHOTOS BY JOEY DOCKERY/REESE ELEMENTARY

Above: Kara Latteri paddleboards with a friend. Below left: Julio Magana goes cycling. Below right: Chuck Kroeger fishes at Lodi Lake.





# WILD ABOUT WATER

## Learning about California's plans for the Delta

By Abigail Schlipp  
REESE ELEMENTARY SCHOOL

I decided to interview Carol Berkeley, who works for the California State Water Resources Control Board.

**Q:** What is your job title?

**A:** I am the administrative assistant; that is my job title.

**Q:** What does that role entail?

**A:** I help the chair of the California State Water Resources Control Board in everything that she needs. So, sometimes it's a matter of going and getting her breakfast. ...

A lot of times my job right now is listening to the hearing that we're in. I kind of listen to what testimony is happening and I take her into some testimony exhibits, anything that she needs.

Sometimes I plan travel for her. I've planned a trip to Israel, I've planned a trip to England. Sometimes it's a simple (trip) around the U.S. or California.

I also schedule her meetings, and book conference rooms, and ... if she's going to speak somewhere, I'll do research on what she's going to speak on and get documents ready for her to speak. So it's being somebody's right hand person.

**Q:** You have told me that you have hearings about "Save the Delta." What are the two opposing perspectives?

**A:** One of the perspectives is that the recreation in the Delta will be dwindled to nothing because it is a long-term project. ... They are projecting 11 years to do this project.

They are saying, No. 1, that the boating is going to suffer and people won't want to boat down the Delta because we will have to have all these barges out there. They won't be able to keep high speeds and reduce to 5 mph to go by the barges. They say that they will do it one time and then they will choose another waterway to go boating in.

Another perspective is that it will affect the salmon and the salmon hives and all these different ... fish, as well as different fowl and different birds that are found in the area. They are saying that all the disruption of the digging and the noise and the pounding will cause those birds and other things to go elsewhere.

Those are two perspectives. Another one, one of the biggest, is the farmers'. The farmers are worried that No. 1, the roads are going to be damaged severely. No. 2, is the levees, and the water sucking is going to cause the levees to have issues where their farms could be flooded.

And a result of less water coming through to them and it will be drawn upstream to the Delta, and their way of life will be changed.

**Q:** So, which one of these perspectives do you have hearings for most?

**A:** Well, it is continuous. It started with how it would affect the farmers. That was our first, and we literally did six months of hearings from about 45 different ... farming organizations that have come together.

Sometimes they are cities. Sometimes even as far away as the city of Folsom, which isn't even on the Delta, but there a lot of different cities that are around waterways like in Sacramento. You have a variety of cities that have come together and partnered together so they can get an attorney to represent them. ...

So we phased it so the first part was how it would affect the farms now we are in the section where it will recreationally affect the people and the wildlife. Each of those sections will be about six months long.

**Q:** How long do you expect to have hearings about the "Save the Delta" project?

**A:** From now we anticipate until the end of June. ... The Department of Water Resources and the Bureau of Reclamation are the two entities

that want to do the tunnels. There is talk about them changing it. Originally it was two tunnels and three intake valves, but now they are thinking of going back to one tunnel and two intake valves, which could potentially change the scope of it. They may have to go back and do some more environmental studies.

We have put a disclaimer in that if they fully change and decide, yes, they are going to do these phases. If we do one tunnel and someday down the road (decide it) will become two tunnels, (then) we will have to go back in to a part three of the hearings.

If that happens then we will go back in for another six months of hearings. If it doesn't happen and they determine that, yes, we have heard everybody and we can continue forward, then we will probably take about a month or two to write up all the opinions and the disclaimers and parameters of what they will be able to do and what they won't be able to do.

And if we determine yes, the tunnels will happen.

**Q:** What does your department do?

**A:** So our department is where we are in charge of issuing them the water change right, so that they can divert water. We are the department that says, "Yes, you can take water

out of the Delta, and you can build a tunnel, and you can send it over to the Bay Area."

They can't make a water plant change where natural water comes, or river water, or dam water, or any kind of that water comes from without our approval.

**Q:** What do you like most about your job?

**A:** It's very different. I learn a lot. It's very scientific, and we have a lot of scientists, a lot of geologists, a lot of hydrology stuff going. So there's a huge learning curve, and ... I am constantly learning.

**Q:** What kind of job opportunities might be available in your department? What are the qualifications for an entry level position in your department?

**A:** An entry level position would be more clerical. (A new hire) could type, they could set up meetings, they answer phones, they could help scheduling with some of the different people.

The next stage is kind of somebody who comes out of college with their degree, and as a scientist they can in and become an environmental scientist. They are much more than an entry level job.

### Facts about macroinvertebrates

By Nimrah Ahsan  
HERITAGE ELEMENTARY SCHOOL

Macroinvertebrates have no backbone, but if you think they are not important, well, you're wrong! Macroinvertebrates eat algae and other organic matter. You can see them without a magnifying glass.

Also, the types of macroinvertebrates living in the water can give information about pollution. For example, aquatic worms can live in polluted water; so it might be a sign of pollution if those are the only macroinvertebrates in a body of water.

Additionally, macroinvertebrates are important because fish eat them.

### Crayfish life cycle

By Jose Garcia  
HERITAGE ELEMENTARY SCHOOL

First a male and female crayfish and female crayfish find each other. Then they mate. The female lays about 200 eggs and then the eggs get attached to the female's tail.

The eggs hatch in about two to 20 weeks. The baby crayfish stay with their mom for two weeks. Then they leave. Not many survive because many animals eat them.

Last the crayfish molts its shell and it will grow and reach adult size in about three to four months. Finally the crayfish mate and the cycle starts over again.

### Facts about plankton

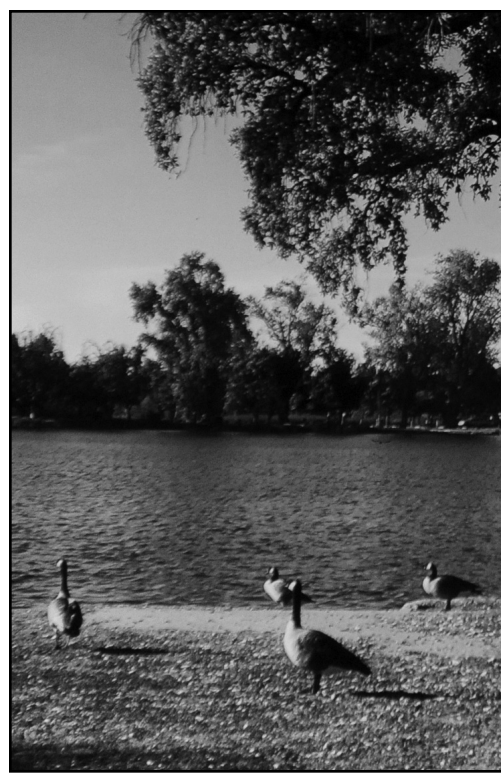
By Cristian DeSantiago  
HERITAGE ELEMENTARY SCHOOL

1. Plankton are so light that they can walk on water.
2. Most plankton are less than an inch long.
3. If plankton bump into a hard object, they may attach themselves and evolve into a barnacle.
4. Plankton are microscopic.
5. Phytoplankton use light to make sugar and use it to eat.
6. Plankton are important to the food chain.
7. Some of the plankton's predators are humpback whales and sharks.
8. Plankton are mostly found in oceans, seas and in fresh water.
9. Plankton come in different sizes.

### Water birds at Lodi Lake



ELIZA LITTON/REESE ELEMENTARY



MASON DE LA CRUZ/  
HERITAGE ELEMENTARY SCHOOL

### Tips for reducing water use

By Madison Brandt  
REESE ELEMENTARY SCHOOL

A lot of people don't realize how much water that we use on a daily basis. We use water for many things, like showers, doing laundry, drinking, washing dishes, cooking, and many more things. Most of us just take it for granted, without thinking about it. In this article, I will be explaining how much water we use on the daily with examples of the ways we use it. I will also be adding up the amounts for each activity to find an average daily total amount of water and an average weekly amount.

One major thing that we use water for is showers and baths. On average, a bathtub holds 30 to 40 gallons of water. However, if you were to take a shower with a standard shower head, you would be using approximately 2.5 gallons of water per minute, or 25 gallons for a 10 minute shower.

Moving on to some more daily tasks, such as brushing your teeth, using the toilet, washing your hands, cooking, and other things that take place in a bathroom or kitchen. For brushing your teeth once a day, it should take about 1 to 2 cups of water; so if you brush them twice a day it should use about 2 to 4 cups of water. An average toilet uses 2 gallons of water for each flush, so let's just say it's flushed about 4 times in one day, so that would use about 8 gallons. In a day, the average person washes their hands about 9 times a day, which uses about 6 to 8 gallons of water for those 9 washes. Cooking can vary, but most people use about half a gallon of water or less for cooking each day. Using a dishwasher uses about 6 gallons of water for each cycle. On average, most people drink about 8 cups of water a day. There are, of course many other things water is used for in bathrooms or kitchens, but these are just some basics.

Some other things that we use water for that may not happen everyday in some households are watering the plants, refilling a pet's water, and doing laundry, along with many other things, but once again, these are just some basic things. Watering plants can use anywhere between 1 to 2 gallons of water. Refilling a pet's water bowl usually uses about 3 to 5 cups of water, depending on the pet. Doing laundry uses an average of 25 gallons of water for each cycle.

There are obviously many other things that we use water for on the daily, but considering these uses, you can see how much water we really use. For an average day, we use slightly less than 99 gallons of water. For an average week, that would be approximately 693 gallons of water! I bet a lot of people don't realize how much water they use in a week. After reading this article, you can really see that water is a very important thing in our lives.

### Rain barrels: An easy way to store water

By Kyle Calamayan  
REESE ELEMENTARY SCHOOL

Not many people have rain barrels, and most people don't even know what they are. Rain barrels are great, especially if you live in California where droughts occur often.

The way rain barrels work is that when it rains, you just set them outside and let the barrel fill up with rain. Most people have one just in case of a drought, or they use the rain water to water plants, bathe, fill up their pools, etc. They are a great way to re-

serve water for times of need.

You can buy rain barrels in many places. Most people buy them at stores such as Lowes, Home Depot, or any other garden supply store. Some people even sell them online, on Craigslist or related websites.

People don't know how useful rain barrels can be. Although some can be expensive, the more expensive ones last longer. The price for a rain barrel can vary from \$50 to \$1,600. The cheaper ones might not last as long, most likely due to the materials used to make them.

The materials used to make the cheaper barrels are mostly plastic or stainless steel/metal. Rain barrels on the pricy side are made of concrete or fiberglass.

There are also different sizes of rain barrels. It always depends on where you live, or how much it rains in your area. If you live on the West Coast of the United States, you will most likely need a barrel that holds 50-plus gallons.

Fun fact: you can have a design on your rain barrel such as trees, flowers, and even dogs.

### TRANSON

CONTINUED FROM PAGE 2

biosphere system as it relates to our local watershed.

I learned that a healthy river will have lots of types of invertebrates and an unhealthy river will have a limited number of varieties. Only the most pollution-tolerant invertebrates are able to survive.

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

**A:** My favorite aquatic invertebrate is the dragonfly larva, because it begins its life underwater then emerges later as a mature dragonfly, and is able to fly.

**Q:** What is the most common macroinvertebrate that you've found?

**A:** The most common macroinvertebrate when I did the first study was a macro called amphipod (common name is scud). They are mostly detritivores or scavengers.

**Q:** Do macroinvertebrates live in water with high or low pH?

**A:** I researched with Kathy Grant and the Storm Drain Detectors. In the dry season, a pH of

about 7, and in the rainy season with runoff the pH is closer to 8. A low number is more acidic and a high number is more alkaline. A pH of 7 is neutral.

**Q:** How would you feel if you dropped leaf packs and then found there were no macroinvertebrates in them?

**A:** I would be very concerned about the river's current health. I would wonder if something like fertilizer had gotten into the river somewhere upstream. Rivers will return to health when the pollutants are eliminated or even reduced.

**Q:** What do you think is the most important thing for people to know about leaf packs and macroinvertebrates?

**A:** The big idea is that healthy watersheds support a large variety of macroinvertebrates, which then, of course, support fish and other critters. The focus of one of the fifth grade science standards is that the biosphere is interrelated to the hydrosphere. Looking at leaf packs helps us look closely at how healthy our local watershed is.

To read the full interview, visit [lodieci.wordpress.com](http://lodieci.wordpress.com).

### Watershed word search fun!

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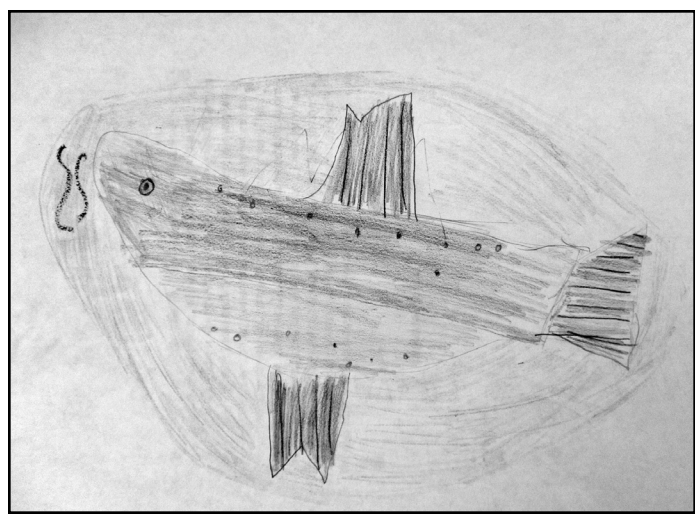
GAVIN LAMB/LOCKEFORD ELEMENTARY SCHOOL



# WILD ABOUT WATER

## Kids share experiences raising salmon in the classroom

Fourth-graders at Reese Elementary and Lockeford second-graders raised salmon from eggs; here's what they learned



KAYLEE LEMUZ/REESE ELEMENTARY SCHOOL

### Testing the water

By Kaylee Lemuz  
REESE ELEMENTARY SCHOOL

In Mrs. Parks' fourth-grade classroom, we had salmon. It was very interesting. We got to see them in different stages in the salmon lifecycle.

When we first got the fish, they were in their egg. Then they were alevin. After that they were fry, and we released them into the Mokelumne River.

Every morning we had to check the ammonia level and other leveled test strips. A couple of times we were in the stress level on the ammo-

nia test strips. We had to take out most of the water and fill it up with spring water.

When we first got them, Mrs. Parks dropped them out from a wet cloth into the fish tank.

We learned a lot about salmon. I wonder, when they come back, if we will be eating fish for dinner.

We got to see the fish hatchery. It was a cool place with lots of fish.

I am gonna miss the salmon. Every day now, I walk into the classroom and don't see them anymore.

### Learning about the life cycle of salmon

By Christopher Garcia Rivera  
LOCKEFORD ELEMENTARY SCHOOL

Salmon are born in the Mokelumne River. They are just little red eggs that live in a redd. The eggs will hatch in a few months.

When they hatch, the little salmon will swim around and around. They have this part of the egg on them from when they were born. They eat the egg, and when it is gone they will be fry.

That means that they go back to the Mokelumne River. You dunk the fry in the river so they can swim out into the river and be free.

The salmon go all the way down the river to the ocean. They go all the way to the place they were born to leave their babies. The babies hatch very quickly. When the mom gets to the Mokelumne River, the mom dies.

The babies need to grow a little because if they were swimming by them-

selves, they might die from a predator. When they grow a little, they swim down the Mokelumne River.

When they are at the Mokelumne Hatchery, the workers get the salmon and hit them with a hammer. When the salmon dies, the eggs come out of the salmon, so they put the dead salmon away and put the eggs in a place that won't be harmed. The workers keep the eggs until they hatch.

That is the life cycle of salmon.

### Releasing the salmon in the Mokelumne River

By Allison Frank  
REESE ELEMENTARY SCHOOL

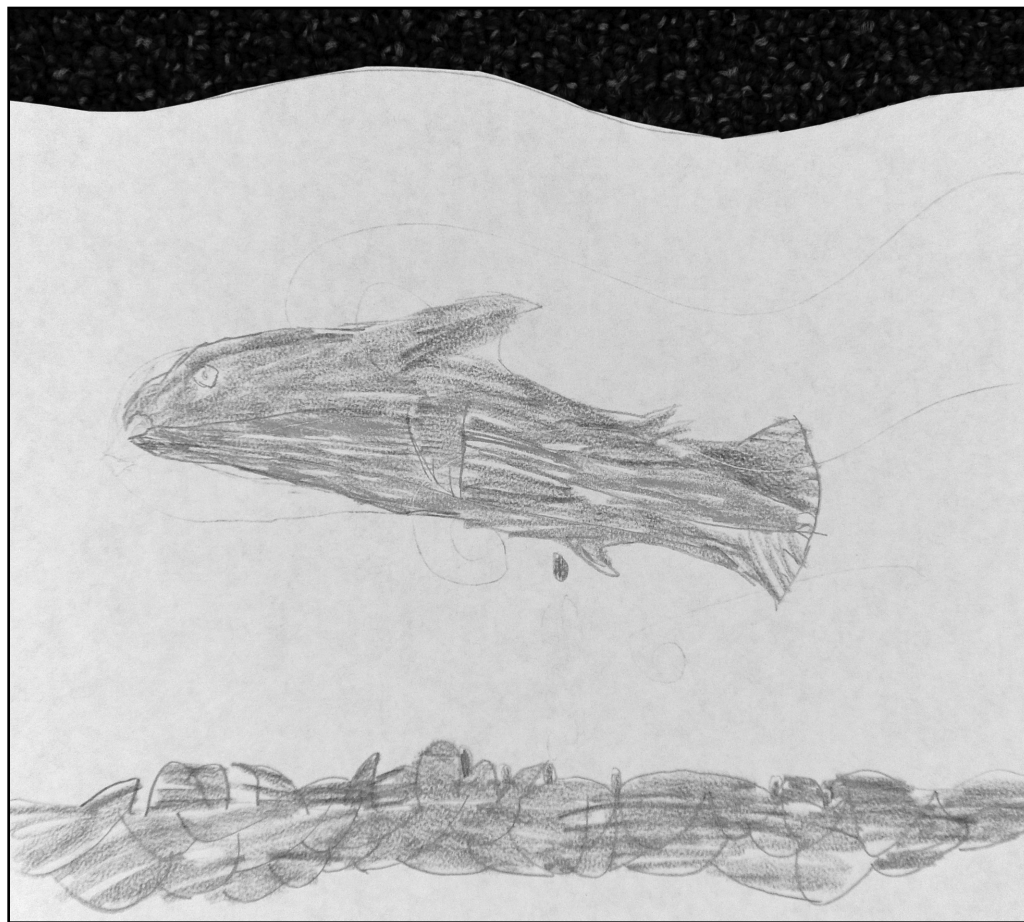
Our salmon adventure all started at the beginning of the year. When we first got our salmon they were eggs, they were very tiny, red, and they were round. When they were eggs, we had to check the temperature of the tank twice a day to make sure that it was in between 50 and 60 degrees.

The next stage was alevin, and during this stage they had yolk sacks on their stomachs. When they were alevin, our class had to test the ammonia level and the nitrogen and pH. I was excited because I was able to name one of the fish and I named it Allison Jr.

The next stage is fry. When they were fry, they had their yolk sacks off of their stomachs and this was when we had to feed them.

On March 6, we went on a field trip to the Mokelumne River to go release our salmon with Heritage Elementary School. We started with 35 fish, but 2 of them died so we had 33 fish left in our tank.

We boarded the bus and it took about 35 minutes to get to the Mokelumne River from Lodi. When we got there we went to go release



DARIEN COX/REESE ELEMENTARY SCHOOL

our salmon in the river. We released them by us taking a Dixie cup and taking a fish and releasing it out on the river.

After we ate our lunch, we went to go look at the salmon at the fish hatchery

and our whole class got to feed them. We also were able to see the salmon in different stages. Finally, we went back on the bus and dropped off the Heritage Elementary School on our way back to Reese Element-

tary.

That is how our salmon adventure ended. I learned so much about salmon and the different stages they go through. Now we have no more salmon in our classroom. I miss Allison Jr.

### Salmon can be tiny

By Abbigail Capps  
LOCKEFORD ELEMENTARY SCHOOL

Some salmon are very, very small, so be careful when you go boating! Some are very creepy because they have big mouths. They start out as eggs in the river. When they hatch they are called fry.

### Salmon families

By Ezequiel Gama  
LOCKEFORD ELEMENTARY SCHOOL

Salmon are talented because they can jump high. When they have babies, they die. The babies don't get to see their family.

We had baby salmon in my classroom. Then, when they got a little bigger, we let them go in the Mokelumne River. We spent a little time at the Mokelumne Hatchery and fed them.

### From hatching in class to their new home in the river

By Samantha Silva  
LOCKEFORD ELEMENTARY SCHOOL

Salmon are interesting animals! Salmon first start off as eggs in the river. They also have to have a nest, called a redd, to keep them warm and safe. Once they hatch, they are called alevin. Then

they get bigger and turn into fry. After a little bit the salmon get big, and if it's a girl, it has babies. We raised salmon and this is what I learned from it.

When we raised salmon, it was so amazing because we got to feed them salmon/fish food. And when they were

tiny fish, we got to take them back to the Mokelumne River in a little cup. It was fun to look at them in the little cup because the little fish were swimming around in the cup!

It was so amazing having salmon this year!

## Exploring leaf packs and macroinvertebrates at Lodi Lake



PHOTOS BY YASMIN ANTUNEZ/HERITAGE ELEMENTARY SCHOOL

Top left: Aleena Khan, Christina Ochoa and Xavier Neri sift through leaves for macroinvertebrates. Bottom left: Leslie Perez, Diego Salgado and Armando Nunez look for water bugs. Above: Nancy Alcantar, Giovanni Luna and Ashley Chavez study one of their macroinvertebrates as they sort them. The fifth-graders from Heritage Elementary School created leaf packs and left them in the Mokelumne River and Lodi Lake for 30 days. The number of bugs, or macroinvertebrates, that moved in can indicate how healthy the water is.

### MSI TRIP

CONTINUED FROM PAGE 1

#### Benthic Station

By Abdul W. Afsar  
and Azarel Obispo

Next, we went to the benthic station where we used a mud grabber to get a sample of mud from the very bottom of the bay. We had to pull the rope and it was hard work.

but we had fun when we got to play with the mud. The mud was very soft.

Small invertebrate animals like worms, clams, crabs and shrimp live in the mud. Invertebrate animals are animals without a backbone.

Our favorite part was playing with the mud and putting a little bit on our face. We made a pledge to keep the bay clean, to not throw trash in it, and to protect the animals that live in it.

#### Ichthyology Station

By Fortino Contreras  
and Jonathan Saucedo

Next, we went fishing on the bay.

First, ichthyology means the study of fish. Here our team got split into two lines. Each line grabbed half of an orange net that was about 16 feet long. We then threw the

net into the water. The fun started when we had to pull the rope. It was really heavy.

After a while, we finally brought in the net to see what we caught. We put the fish in some tubs so that we could study them. We used a big chart to identify what we found in our tub.

We caught a Dungeness crab, a flat flounder fish, and lots of little fish. But later on, another group caught a bat ray! Our guide held it with a glove so we could see it up

close. Some kids even touched it. It felt slimy and wet.

#### Plankton Station

By Nevaeh Buford  
and Breanna Rojas

Last, our group went to the plankton station. We learned that plankton are tiny marine organisms that can be animals or plants. You can only see them with a microscope.

They like to float on the surface of the water. Their size is about 1 millimeter.

We learned that plant plankton are called phytoplankton. Phytoplankton can make its own food like plants. Also, they give us oxygen like plants on land.

Our guide helped us to identify two kinds of plankton organisms under his microscope, phytoplankton and zooplankton. We had no idea these tiny plants and animals lived in the bay.



# RECYCLING FOR THE PLANET

## Cal-Waste educator shares how recycling helps the watershed

By Elizabeth Khoury  
REESE ELEMENTARY SCHOOL

Leesa Klotz works for California Waste Recovery System in Galt.

**Q:** What is your job at Cal-Waste?

**A:** I am the education coordinator for Cal-Waste Recovery System. I visit schools and community groups to share information and promote learning about recycling and caring for our environment.

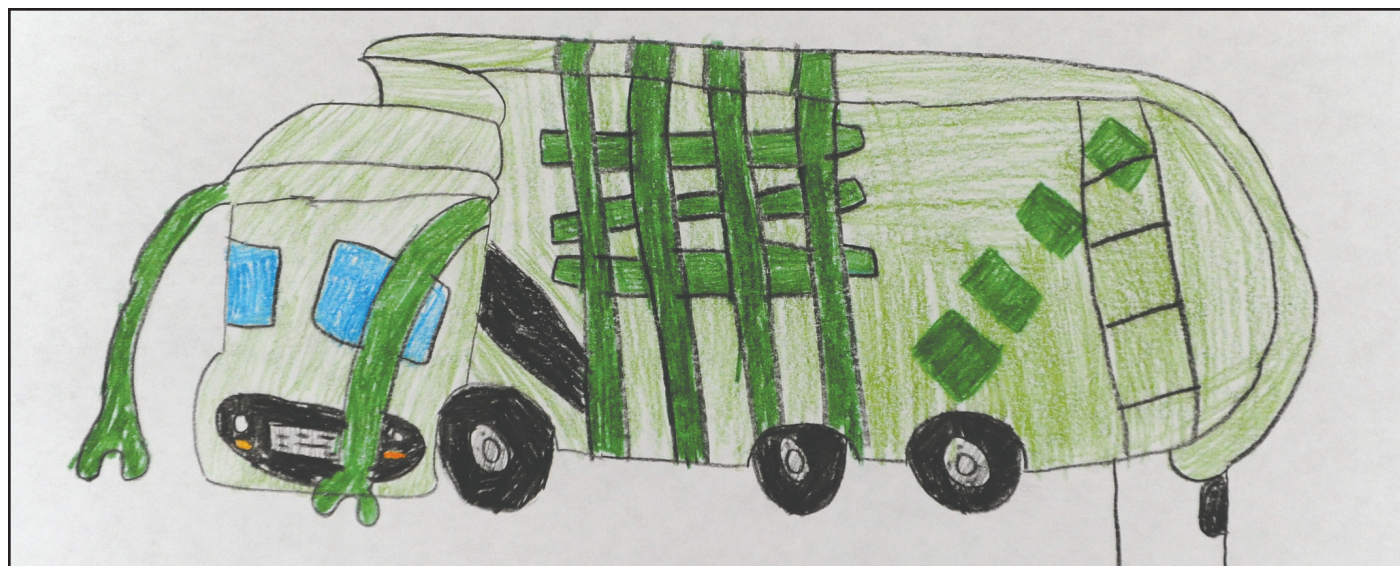
As well, I lead tours of our recycling facility to help students and community members to better understand the process of recycling and the many ways people affect the world they live in.

**Q:** What is a watershed?

**A:** A watershed is land where all the water that falls on it drains off into a common outlet.

Think of it this way: If you spilled a glass of water on a table that was tilted and not flat, the water would run off the table in one direction and will fall off the side of the table that is lowest and onto the floor.

In nature, an example would be rain, falling on a mountainside and draining down to the lowest point in the valley — most likely a



MELIVVA HERNANDEZ/HERITAGE ELEMENTARY SCHOOL

lake, where it would be collected, or a river where it would flow downstream to the ocean.

**Q:** Where does the watershed start?

**A:** Good question! Often we think of the watershed being the side of a mountain, like I gave as an example in your earlier question. However, water is shed or runs down everywhere there is a change in elevation.

But that does not mean a watershed only starts at the top of a mountain. A watershed can start wherever the water first hits the ground and begins its journey

downhill.

For example, if you leave the sprinklers on too long and over-water the lawn in front of your house, the extra water will run off to the sidewalk, then into the gutter and down the storm drain, out to the stream and eventually the ocean. For you, that day, the watershed starts where and when you overwater your lawn.

**Q:** How big is a typical watershed?

**A:** Our entire planet is one big watershed! There is no typical size.

**Q:** What do watersheds provide us?

**A:** Watersheds provide a supply of water for people to drink, to use in growing our food, manufacturing products, provide habitats for animals and plants to grow and allow us opportunity to enjoy nature; swimming, fishing, canoeing, sailing and more!

**Q:** Why are watersheds important to our environment?

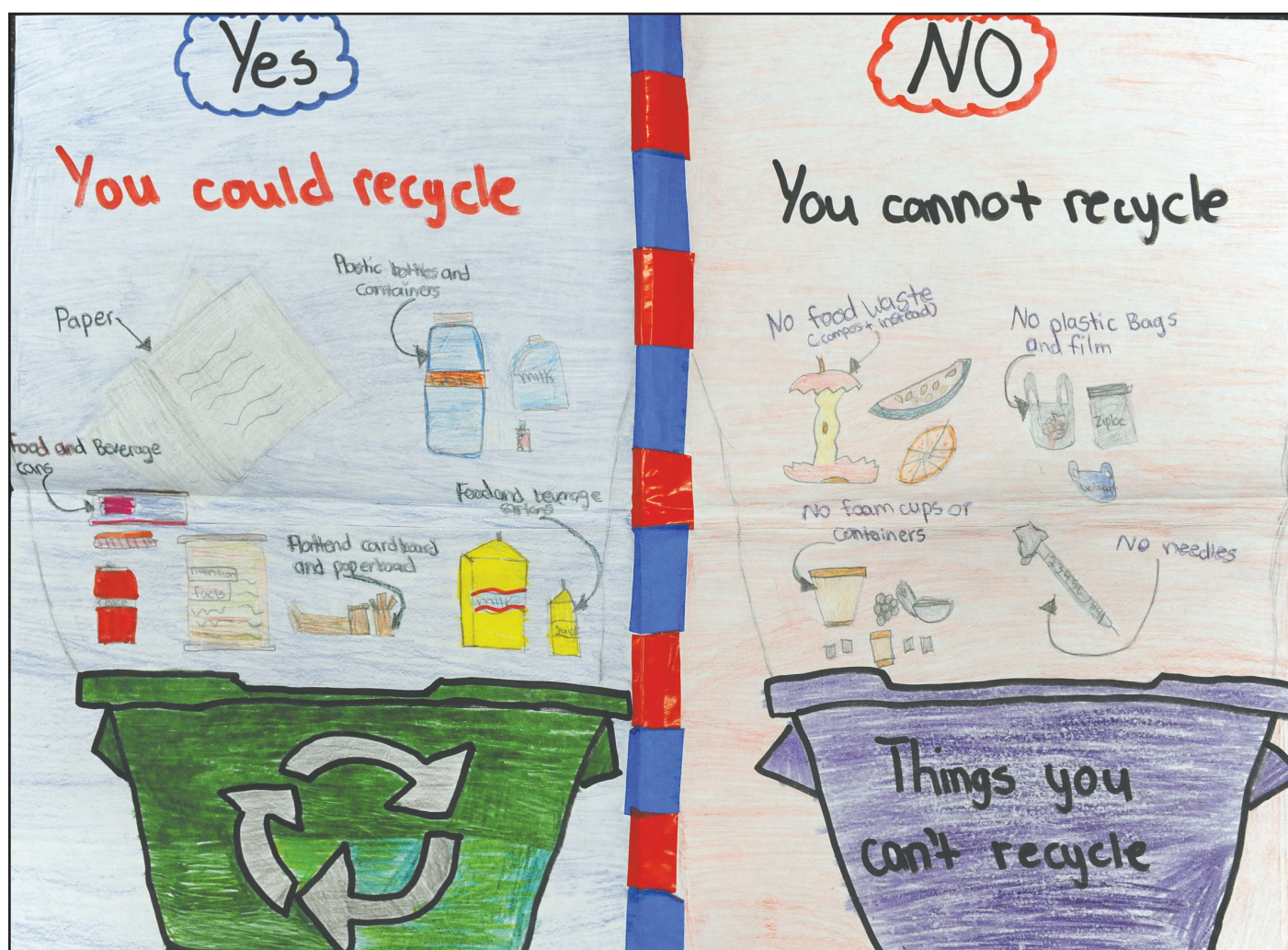
**A:** Without watersheds and the clean fresh water they bring us, the Earth would not be able to support humans or wildlife.

**Q:** Is there pollution commonly found in our the watershed?

**A:** Sad to say, often times there is ...

**Q:** If so, what can we do to reduce it from happening?

**A:** We can place our trash in the proper place. We can recycle whenever possible to conserve natural resources. We can reduce the amount of pesticides and hazardous wastes that escape into our lands. We can insist that industry uses clean manufacturing processes. Most of all, each of us needs to be responsible for our actions, hold others accountable for theirs, and take care of our planet!



NANCY ALCANTAR AND YADHIRA RAMIREZ/HERITAGE ELEMENTARY SCHOOL

## Opinion: It's time to get serious about the '3 Rs'!

By Cindy Jaramillo,  
Sandra H. Mashni  
and Mirian Flores Torres  
NEEDHAM ELEMENTARY SCHOOL

You might think that the "3 Rs" — reduce, reuse and recycle — are old news. You might even wonder what they have to do with you or with protecting animals.

This year we learned about our environment, the water cycle, and our watershed. We even went aboard a discovery boat on the San Francisco Bay to learn about the estuary. In all our studies, we heard a message in common. That message is about how important the 3 Rs are in protecting our environment.

First of all, by getting serious about reducing, reusing and recycling, we can protect our water sources like Lodi Lake, the Mokelumne River, the San Francisco Bay and even the Pacific Ocean.

If you think about it, not all people in our families reduce, reuse and recycle. One question you might ask your family is, "Where do the piles of garbage and recycling material go when they are not properly disposed?" Well, if our trash doesn't end up in a landfill, most likely it will end up down the drains, in our water sources like rivers and lakes, the beautiful San Francisco Bay, and, last but not least, the Pacific Ocean.

So let's get serious about reusing things like bags, containers, tools, objects and so many little things around us. For example, if your little

brother or sister has a room full of stuff, your family should not buy them something every time they go shopping.

Next, let's get serious about reducing the amount of fresh water we use in our houses. We all should take shorter showers and not let the faucet run while brushing our teeth. We need to conserve water even when we're not in a drought.

Let's get serious about reducing the amount of trash in our schools and houses. Let's recycle our paper, plastics, cans and food waste not only at school, but also in our houses. We should try to not use so many water bottles, and if we do, we need to recycle them.

This may not seem like a big deal, but it is! If we do a better job with the 3 Rs, we will make our city and state the best place to live.

If you didn't know it, our trash in Lodi can even affect marine animals far away in the bay and ocean. Many animals are suffering because of people's trash. Some, like fish, turtles, sea lions, dolphins and whales, get hurt by the trash and plastic that end up in their habitats. We learned that every year, about 14 billion pounds of garbage and recycling materials end up in our oceans!

By getting serious about the 3 Rs, we will help keep our rivers, lakes and beautiful bay safe for people and animals to enjoy. So, what are you waiting for? Reduce, reuse and recycle now!

## Easy things to do every day that help our environment

By Haley Quijalvo  
REESE ELEMENTARY SCHOOL

1. Take quick showers. Try to aim for 4-5 minute showers to save more water.
2. Recycle. Make sure to recycle only the right recyclable items. Recycling will help save energy which keeps production costs low and lowers the need for more landfills.
3. Pick up at least 2 pieces of trash a

day. It is not hard at all and will keep our planet a lot cleaner and healthier. Many animals also try to eat trash so you may also save an animals life.

4. Invest in a reusable water bottle. An amazing water bottle is a hydro flask, a very nice water bottle that will keep your drink cold or hot for a good amount of time. Try to save up some money and not use any plastic water bottles that are

bad for our planet

5. Volunteer at any local cleanup near you. This is a super good thing to do that will help our planet out a lot. There are many held very often.

6. Try to drive your car less. The exhaust from your car is very bad for the air, so try biking, scootering, skateboarding, even running or any other activity to help keep our air clean and healthy.

## A trip to Lodi's surface water treatment plant

By Arisha Sajjad  
HERITAGE ELEMENTARY SCHOOL

Our class visited the surface water treatment plant, where we learned how they clean the water.

There are several pumps, pipes and water holding bins.

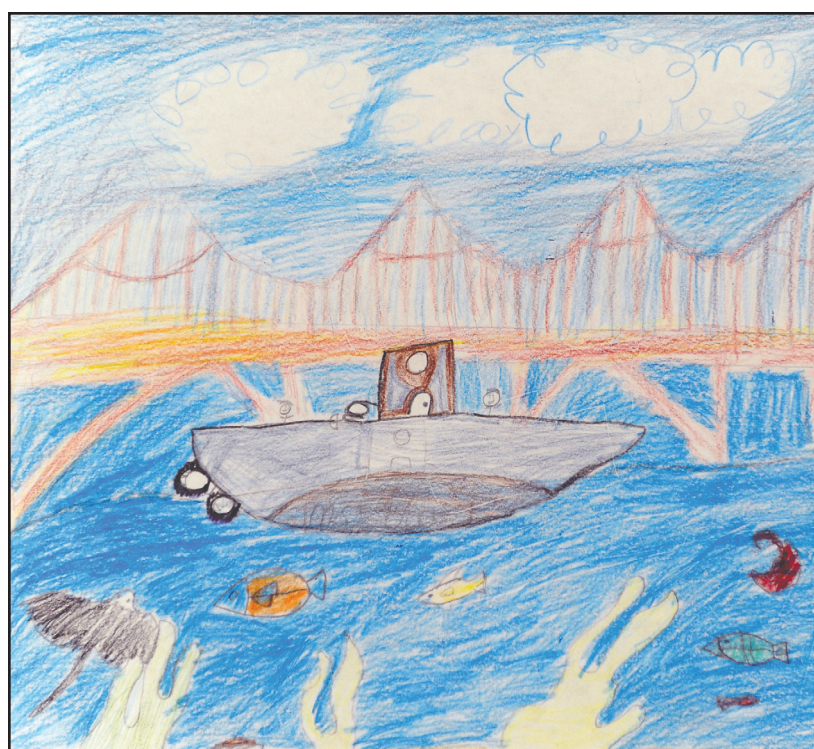
They use special chemicals to clean the water that comes in from the Mokelumne River.

The water is then pumped to the water tower, where it is then sent through the pipes to our homes.

While we were there, we were allowed to taste water the water. It was good!

It was so fun learning how the surface water treatment plant works, and getting a tour!

## A boat trip in San Francisco



JULIAN AVILA/REESE ELEMENTARY SCHOOL

## Keeping our freshwater ecosystem healthy

By Jacob Bechthold  
REESE ELEMENTARY SCHOOL

Water is a resource no living thing can live without. Water seeps into a plant's roots to help keep them alive. Animals and humans have to regularly drink water or else we die of dehydration. We humans also use water for our own benefits. We use water for recreation such as swimming and water parks. We even use water for hydroelectricity. Because water is so important, it is critical that we keep our waterways clean.

Did you know there are living things in our waterways that can help determine if our water is healthy? Some can be seen by the naked eye, while others can be seen only with a microscope. Macroinvertebrates and Microinvertebrates live in many different aquatic habitats. Some live in the sediment at the bottom of lakes and ponds and feed on food that is drifting in the current. Many eat algae off rocks. Others live in fast moving rivers and streams and eat debris that has fallen into the water. The presence or ab-

sence of macroinvertebrates and microinvertebrates can be an indicator of whether or not the water is healthy or polluted. If waterways are too polluted, and macroinvertebrates and microinvertebrates are dying off, this can cause the entire ecosystem to become unbalanced.

An alarming fact is that half of the world's major rivers are being seriously polluted and about 40 percent of rivers or lakes in the United States are too polluted for fishing or swimming. When our waterways are polluted, it is devastating to our environment. Scientists say at the rate we are going by 2050 there will be more trash in bodies of water than fish.

As you can see water has a huge impact on our daily life.

We all need to do our part to keep our water clean. If not, generations in the near future will pay the consequences of our actions now. As humans, we are given the responsibility of being earth's keepers. Caring for our environment and our waterways is one of the biggest responsibilities we have. After all, our lives depend on it.



# 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, walrus, 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

CONTINUED FROM PAGE 1

**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

CONTINUED FROM PAGE 1

**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.

ardship contest, Caring For Our Watersheds, which requires students to propose a best management practice. A BMP is an implemented project that prevents water pollution; we focused on stormwater pollution.

Our proposed BMP was putting in an innovative French drain-like device that would decrease stormwater pollution. The pollutants that are damaging the environment are sediments, oils from cars and trash.

We discovered by using SDD data from a site at our school where the school's water entered the Mokelumne River system

that turbidity — sediments/clarity of the water — nearly doubled over a decade long period, 2007 to 2017.

All storm drains go straight to Lodi Lake without any treatment, which is why it is important to not pollute.

While researching what best management practices our campus, Lodi High School, has in place, we found out that no school in our whole school district has an implemented Stormwater Management Plan, which will soon be required by law. This will outline procedures every school in our district

has to abide by to protect our community against stormwater pollution.

When contacting Mitch Slater, director of maintenance and operations for Lodi Unified School District, with our concerns, Slater said that due to conflicting priorities, the district had not completed a SWMP.

Through our interest in stormwater management, we have been working side by side with the district in planning the SWMP. This plan will be finished on May 30. The development of this plan has allowed us to learn a lot about stormwater management and how to keep

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.

## 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.

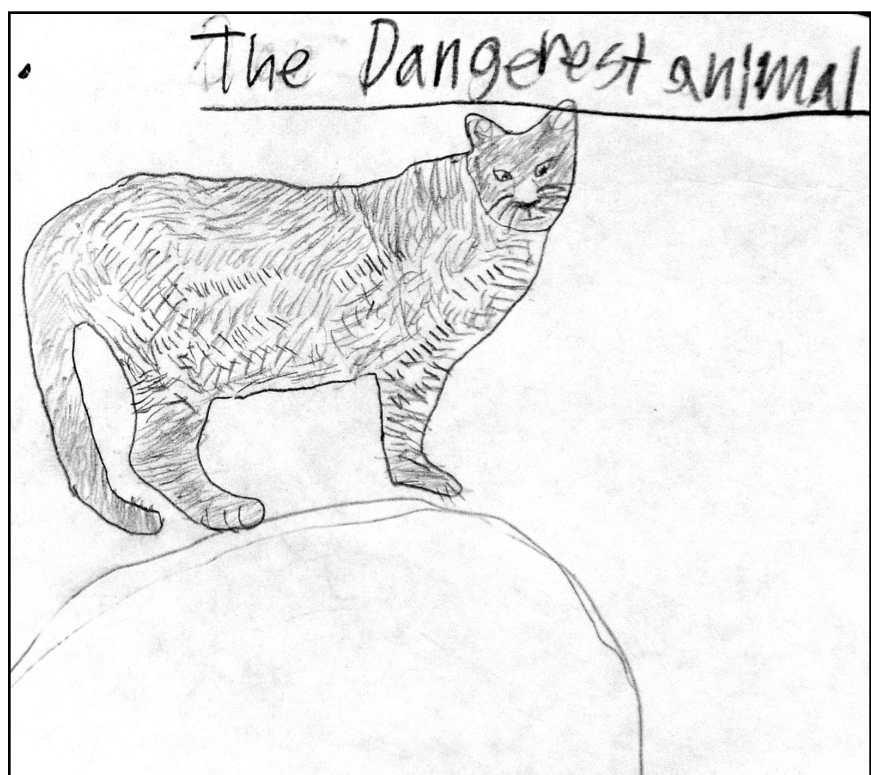
"(It ensures) a healthy ecosystem for the plants and animals that also depend on the Mokelumne River for life," she said.

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.

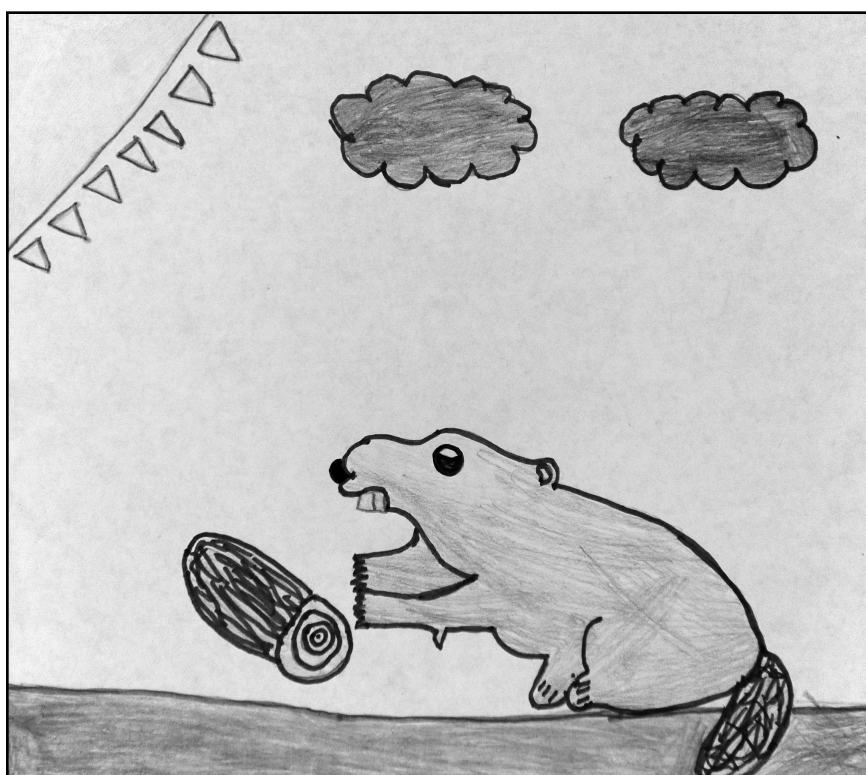
"Having the opportunity to participate in a program like this not only provided for an enriching educational experience, but also showed me how fortunate we are to be able to have a program like this that allows us to understand what is in the water at a molecular level," said Simaron Dhillon, a Tokay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



JULIAN AVILA/REESE ELEMENTARY SCHOOL



MARITAZA MARTINEZ/HERITAGE ELEMENTARY SCHOOL



# AMAZING PLANTS AND ANIMALS

## Mokelumne animals

By **Oliver Jimenez Coronado**  
LOCKEFORD ELEMENTARY SCHOOL

There are different animals in the Mokelumne River. There are deer, ducks, salmon and snakes. Oh, and be careful, because sometimes there are mountain lions and they can eat you! Some of the snakes are poisonous, like rattlesnakes. There is a lot of poison oak that can give you an itchy rash.

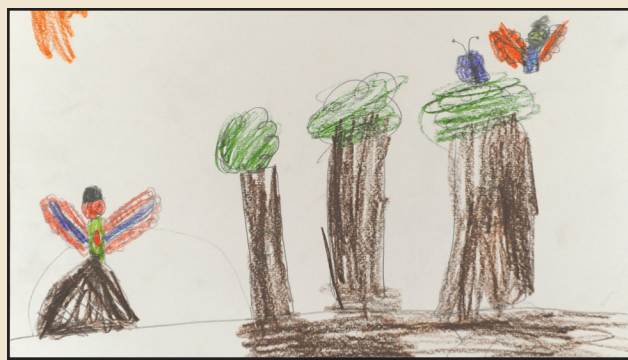


MADILYN GALLAGHER/LOCKEFORD ELEMENTARY

## Poison oak

By **Anabella Ortiz**  
LOCKEFORD ELEMENTARY SCHOOL

Poison oak itches if you touch it because there is poison on the leaves.



EMMA DONALLY/LOCKEFORD ELEMENTARY

## Woodpeckers at a glance

By **Emma Donally**  
LOCKEFORD ELEMENTARY SCHOOL

Woodpeckers are cool animals and their wings are pretty. Do not feed them in the wild. They eat and feed their babies.

The baby birds stay in the eggs for about two weeks for them to hatch. They can live in the forest. The baby woodpeckers hatch sometimes with or without the mother. The dad gets the food for the baby woodpeckers and the mom feeds them.

The woodpecker could eat the babies. They eat insects like worms and nuts and fruit and sap and pine seeds. And they drink berry juice and juicy bugs. Woodpeckers find trees that they like. Woodpeckers drink water, but they eat other birds!

Woodpeckers cannot be pets because it is illegal to have one for a pet. Some of them live in California.

The woodpecker can live 20 to 30 years. You cannot hunt woodpeckers. Woodpeckers can also be different colors.

Woodpeckers are awesome birds!



NATHAN WARMERDAM/LOCKEFORD ELEMENTARY

## Rattlesnakes

By **Nathan Warmerdam**  
LOCKEFORD ELEMENTARY SCHOOL

When you get bit by a rattlesnake, you have to go to the hospital. They have to drain your blood out where you got bit.

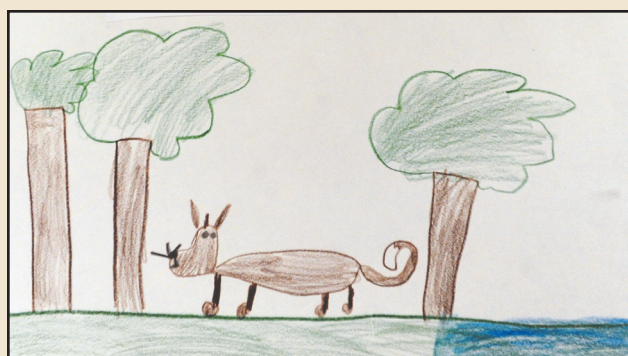
Rattlesnakes will dig big holes in the ground. They make big holes because they like the sun, and they can see it also hid.

Rattlesnakes are cool reptiles. They live in the wild.

## Facts about deer

By **Anabella Ortiz**  
LOCKEFORD ELEMENTARY SCHOOL

Deer are cute animals. Deer are cool because they can jump high. They scare other animals with their antlers. Deer can sometimes survive in the wild. Deer can hide well in forests. They blend in to the brown of the forest.

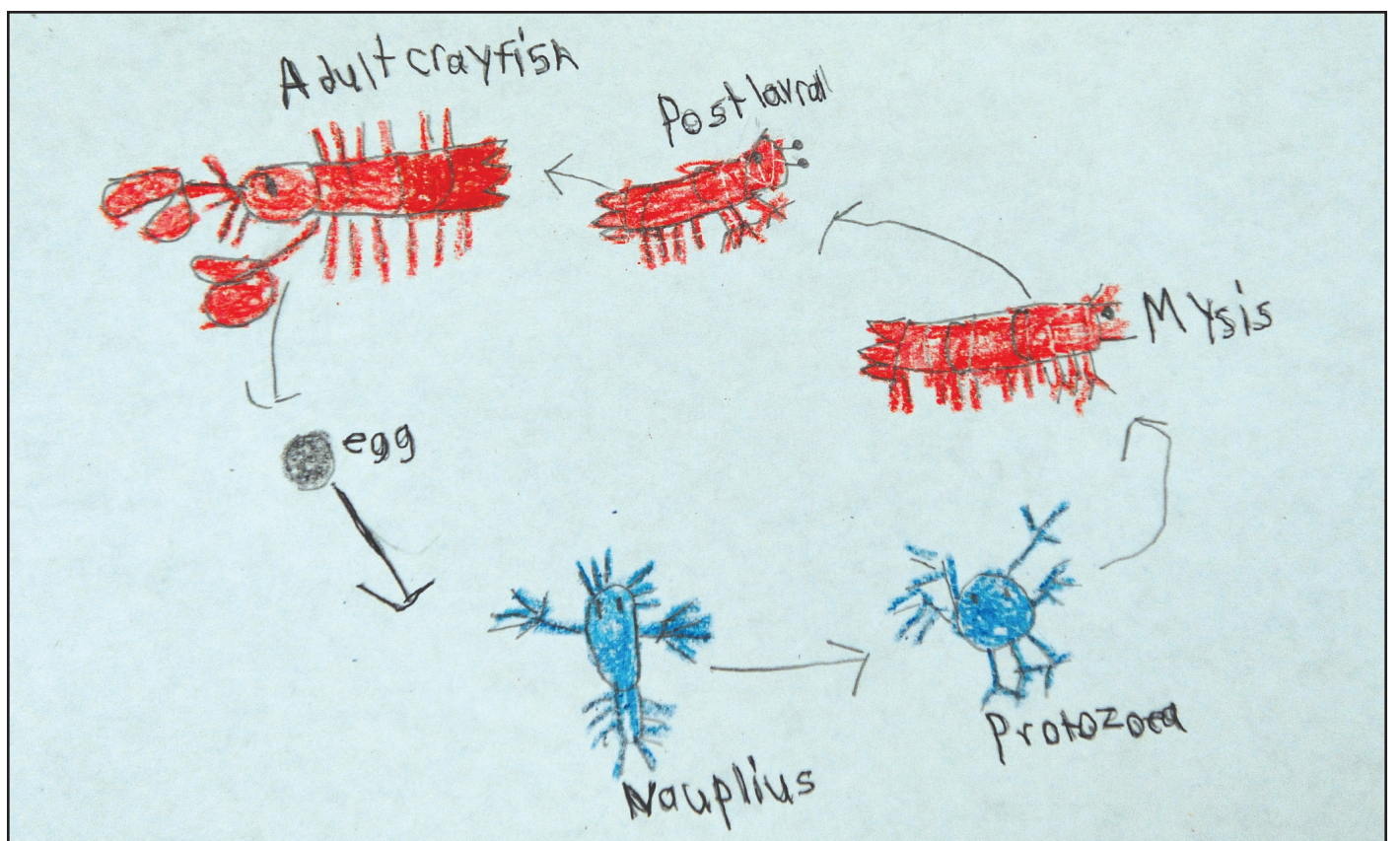


ARLENE VIDAURI/LOCKEFORD ELEMENTARY

## Facts about foxes

By **Arlene Vidauri**  
LOCKEFORD ELEMENTARY SCHOOL

Foxes live next to the Mokelumne River. They hunt for food. They are awesome because they run fast.



JOSE GARCIA/HERITAGE ELEMENTARY SCHOOL

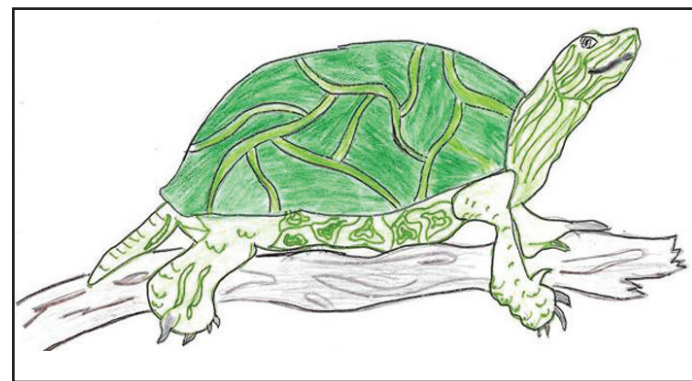
## Getting to know the western pond turtle

By **Noah Silvia**  
REESE ELEMENTARY SCHOOL

The turtles in the Mokelumne River are an important part of the ecosystem. The species of turtle native to the Mokelumne is the western pond turtle.

I went to Lodi Lake and interviewed a Lodi man named Jerry Krein. I asked him if he likes turtles, and his response was, "I don't really like them, but I don't hate them." I also asked him why he thought turtles are important to the Mokelumne, and he said that he "... lives over by a canal and has seen turtles there." "They eat the bugs in the canal, which keeps the food chain in balance," he said.

Krein said that he does not know much about turtles in the Mokelumne, and he is probably not the only one. It is important to know about turtles and other wildlife, because it should be respected and taken care of. Over 90 percent of the western pond turtles' habitat in California has been destroyed because



NOAH SILVIA/REESE ELEMENTARY SCHOOL

of people building homes, farming, and flood control.

Many people take advantage of the Lodi Lake Nature Area. If they are lucky, they can see turtles relaxing on logs in Pigs Lake, keeping warm in the sun. They are an important part of the food chain in the Mokelumne.

Many creatures and plants can be prey for turtles. Aquatic plants are one of their main sources of food. This is important because if turtles don't eat the plants, they will overpopulate the river, and

the delicate balance can be disrupted. Many people fish in the Mokelumne, and if the plants are overpopulated, their hooks can easily get stuck in them.

Two animals on which turtles prey are fish and molluscs. If the fish and molluscs become overpopulated, they will not have enough food, and they will die.

The turtles also have predators in the Mokelumne. Their biggest predators are humans, dogs, and surprisingly, bullfrogs. Humans sometimes

hunt turtles, and eat them when they are caught. We have also destroyed a lot of their habitats. Dogs are predators because when they find a turtle, they may pick it up and try to play with it; sometimes injuring the turtle so it can not survive. Bullfrogs are a major predator of the western pond turtle, because when the turtles are born, they are small enough so that the bullfrogs can swallow them.

The western pond turtle is key to the Mokelumne because it helps keep the food chain in balance. Unfortunately, people have destroyed their habitats, and bullfrogs have made it difficult for them to increase their population in the wild.

To help, we can learn more about the species, and teach others so we can do our part to make sure that the western pond turtle survives, and we can continue to enjoy watching them keeping warm under the sun, on the logs in Pigs Lake.

## How to avoid spreading invasive species like mud snails

By **Jabez Boulware**  
REESE ELEMENTARY SCHOOL

Invasive species are species that were moved from one ecosystem to another. Sometimes this doesn't affect the ecosystem that much — they are just more prey for the bigger animals, or the species can't find food it found in its last home and dies.

But other times, it is much, much worse. The species might have no natural predators and it eats everything in the ecosystem. If there is a specific species that lives in a small area, and invasive species are in the area, that species might go extinct.

You can find Chinook salmon (which are an invasive species) at a hatchery in the Mokelumne, but they are kept away from the other fish, so they don't affect the ecosystem.

But there is something called a mud snail that is spreading fast. It disrupts the ecosystem by eating algae in the water, stopping other animals from eating algae, which is the base of the food chain, messing the entire ecosystem up.

If there is no food for the smaller species, they die. If there is no small



THOMAS DOMIGUEZ OLEA/REESE ELEMENTARY SCHOOL

Red-eared sliders are an invasive species in the Lodi area. They compete with the native western pond turtle.

species for the bigger species to eat, bigger species also die. They're very small and mostly in western U.S.

But you can help by cleaning all gear that comes into contact with water before moving somewhere else. You don't want to take more mud snails with you, spreading them more and more. You

should also use different waders and boots for infested and non-infested waters.

You can remove mud snails with a stiff brush, then rinse it. You could also freeze or completely dry you gear. It would also help to raise awareness, so others can do this, too.

## Sea turtles are endangered; you can help save them

By **Victoria Elias-Varela**  
NEEDHAM ELEMENTARY SCHOOL

Do you like turtles? Do you think that they are endangered? Did you know that most of the turtle species are endangered? Do you know what causes this? If you were thinking pollution, you are correct. For example, the Native Western Pond Turtle that lives in the San Francisco Bay is endangered. Most of this is because we don't recycle trash properly and it ends up in our bay and ocean. Knowing a little about protecting our environment can make a big difference to living things, like the amazing sea turtles.

To begin with, it is hard to believe that most turtle species are endangered. One reason is they're in danger is

that at night, poachers steal the eggs that are laid on the ocean shore. Still, pollution is the most serious problem that affects turtles. Trash, especially plastics end up polluting the turtle's habitat. Turtles usually get stuck in plastic bags that we use and don't recycle properly. This is a major problem. Pollution in the ocean is very serious. If we don't care about protecting our bodies of water, then in a few years marine animals will die out. Every year about eight tons of recycled materials are found in the ocean. Wow! That can take up a lot of space!

Marine biologists have found that plastic bags and bottles are a huge problem that hurt other marine animals, not just sea turtles. For example, in Germany whales

were found dead on shore with fishing nets, plastic rings, and plastic covers found in their stomachs. Fishing nets and rings are examples of plastic items that harm marine animals. These plastic items can be recycled or reduced so they don't end up in the ocean. Marine animal rescuers have even found forks and straws in the turtles' noses. These plastic items are small, but they can hurt animals in a big way. Turtles and other animals can mistake plastic pieces for food pieces.

Finally, there are some simple steps that everyone can take to protect the habitats of sea turtles. We can start by reducing the plastic products we use everyday. We should try to bring our water containers to school instead

of buying so many water bottles. Another way is to reuse more school supplies and buy less stuff. Lastly, we need to do a better job recycling in our houses. Whenever your family goes on a trip to the beach or the bay, remind them to clean up their trash and leftovers after eating or snacking. Grab a bag and clean it up and then recycle! If you have plastic bags at home, remind your parents to use them whenever you go to the grocery store, and make sure they don't keep buying more if they forget to bring bags. Taking these simple steps can make a big difference in the life of a sea turtle, but also in our own lives! I hope to have these beautiful sea turtles around for a long, long time, don't you?