THE Mokelumne Current

Seen a strange plant at Pigs Lake? It's Azolla!

By Maxx Happel
ERMA B. REESE ELEMENTARY

I went to Lodi Lake to learn about turtles. Originally, I was going to write an article on turtles. When I took my dad to Pigs Lake (located in the Lodi Lake nature area), it was completely covered in grass-like stuff.

I was amazed because it looked like grass you could walk on. I tried to walk on it but my shoe went through the plant to the water. After that, I discovered it was a thick layer of fern called Azolla. When I went on a field trip with my class a few months ago this lake was clear water with no Azolla growing on it.

Azolla is a floating fern. It grows very fast and covers water quickly. Its colors range from green, pink, orange and red. It does not like cold temperatures and dies back in winter. It is a small plant that can only grow on fresh water. The plant is about 1 to 2 centimeters across.

Azolla can be used as a fertilizer, food for animals, it helps to keep water from evaporating and is used to help increase rice production. Azolla grows fast in the shade. In the shaded areas it is green but in the sunny areas it was red.

In Asia, Azolla helps keep weeds out of rice paddies by blocking the sun light from getting to the soil. Azolla has shown to increase rice production in these areas by 50 percent. Azolla is part of our watershed area.

Azolla grows on the surface of Pigs Lake.

COURTESY PHOTOGRAPHS

Maxx Happel stands in front of Pigs Lake, where the water plant azolla grows on the surface.

Getting to know our local salmon

By Monica Lopez Chavez and Paisley Bender
LOCKEFORD SCHOOL

Have you ever seen a male or female salmon and their eggs? If you haven't, that's OK. Our class studied all about salmon. The first thing we did was we painted the wooden salmon. That helped us learn the names of the salmon body parts. We made the wooden salmon because our fences are not very colorful.

Second, a nice salmon ranger gave our teacher two salmon. We made fish prints by rolling paint on the salmon. Our teacher cut open the salmon and we saw the teeth and guts! When we cut open a female salmon we saw all of the eggs and when we cut up a male salmon we saw some milt.

ALL ABOUT SALMON: Find out what students learned about the local fish. **Pages 6 & 7**

Then, we adopted salmon eggs in the classroom and had to write in a journal. We had to write and draw what we saw in the tank. We even had to wonder about salmon stuff. We learned about the salmon life cycle: eggs, alevin, fry, fingerling, smolt, adult. That's the salmon life cycle. Life cycles are good in every way.

Here are three interesting facts about salmon:

1.) Salmon live in fresh river water when they are born. When they grow up, they live in ocean salt water for 3 to 5 years. Then they come back to the same river they were born in and lay their eggs.

2.) Salmon were almost extinct because people would catch salmon to show off to other people and then throw them away.

3.) Some farmers put dust on their plants so bugs don't eat the plants. When it rains, the dust goes into the river and could kill the salmon. Bears and other animals like birds and fish eat the salmon. Lots of things could kill the salmon.

Our favorite things about raising salmon were cutting open the salmon, making the fish prints, and painting the wooden fish.

RAFE GABALES/ERMA B. REESE ELEMENTARY

Chinook salmon and steelhead trout.

S.J. County environmental health employee shares details of her job

By Yuridia Cortes, Ronald Osorno and Nimra Gul
HERITAGE ELEMENTARY

Editor's note: As part of her job with San Joaquin County, Laurie Cotulla was responsible for investigating the first groundwater contamination cases resulting from underground storage tanks. She then was the lead investigator for the Downtown Lodi groundwater contamination discovery.

Q: Where did you attend college?

A: UC Davis.

Q: Why did you choose to study about water instead of insects or plants?

A: My degree is in biology, so I actually studied all aspects of life sciences, but when I went to work as an environmental health specialist I was asked to choose a specific area to do extra work on, and I chose the water program.

Q: What was your career, or job title?

A: I was a registered environmental health specialist for San Joaquin County for 28½ years. My job was enforcement of local (city and/or county), state and federal public health and environmental protection laws and regulations. This involved making inspections, approving operating and construction permits for food facilities (like restaurants and grocery stores), public swimming pools, dairies, water wells and septic systems, small public water systems, solid waste facilities (like Harney Lane Landfill), hazardous waste generating and storage facilities, underground storage tank facilities (like gas stations), and oversight of the clean up of contaminated soil and groundwater caused by spills and leaks from underground storage tanks.

MAHNOOR KHAN/HERITAGE ELEMENTARY

Former San Joaquin County employee Laurie Cotulla, second from left, was interviewed by students from Heritage Elementary School.

Q: What interested you in working for the county?

A: I initially went to work for the county because it looked like an interesting job where I could use my biology degree and not be in a lab doing the same thing over and over. It turned out to be an extremely challenging and rewarding career.

Q: What were the most rewarding aspects of your job?

A: The most rewarding part of my job was knowing that my decisions and actions made a difference, not only by preventing people from becoming ill due to exposure to contaminated food and water, but also by protecting the environment from being degraded and damaged by improper storage, use and disposal of sewage, chemicals and solid waste.

PLEASE SEE COTULLA, PAGE 7

How Lodi got its storm basins

By Aaron Wolff
ERMA B. REESE ELEMENTARY

I recently had the chance to interview one lady who changed the way we see Lodi. She was Mrs. Lola Costa. If you ask her, she will tell you that she is a farmer's wife, but if you listen to her stories you will find out she is so much more.

Her family has owned, for about 50 years, a little over 30 acres of cherry trees near Costco, and they own Felix and Sons, a cherry packing company. She helps run it all.

In the 1970s, Lodi was having problems with flooding on the north end of town. The city was looking for a way to control the floods, and one solution was to build a ditch around the city for water runoff, with a tall fence to keep people out of the water.

Mrs. Costa had heard about the ditches and was very upset they could harm people, because she was worried about someone climbing the fence and drowning. She read an article in the magazine Atlantic Monthly about a similar problem in a city in this valley. The article said their city used water basins to help control flooding there.

Water basins are an area that gathers water during storms and drains off into an outlet such as the river or another body of water. During dry times, the water basin could act as a sports park or other usage.

Mrs. Costa was timing a swim meet with another parent who happened to be then-Mayor Wally Katnich. She told him about the article and that she would petition against the ditch.

Then he went to the next City Council meeting and proposed the idea of water basins instead of ditches to control flooding in

PLEASE SEE BASINS, PAGE 7

Did you know?

Raccoons live in the Mokelumne watershed

By Jocelyn Flores
ERMA B. REESE ELEMENTARY

Did you know that raccoons are in the watershed? I had no idea until I did a little research. Raccoons usually eat insects, frogs or crayfish. Sometimes even garbage, fruits and vegetables.

One fun fact about raccoons is when they are born they are blind and deaf. They always use their paws to swim, too.

Some of the raccoons' predators are bobcats, cougars and wolves. Raccoons can get away by climbing up trees, though, so they are safe.

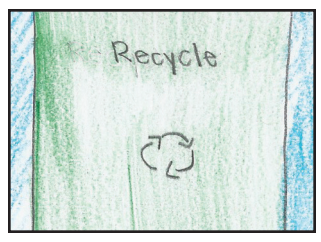
I think that raccoons are very interesting. In fact, they are my second favorite animal.

Creative writing about nature

Could a fox and a rabbit ever be friends? What do fish think about all day? Students explore the inner lives of local animals in creative short stories. **3**

An interview with marine biologist

A student interviews Michelle Workman, supervising biologist for the East Bay Municipal Utility District. **5**



Find out how you can help

What can you recycle? What can go down your drain? What are the Earthkeepers and Storm Drain Detectives clubs? Find out how to pitch in. **7**

AMAZING PLANTS AND ANIMALS

The life of Tillie Lewis, who built a Stockton-based food empire

By Estrella Ortiz
HERITAGE ELEMENTARY

The daughter of Austrian Jewish immigrants, Tillie Ehrlich-Weisberg Lewis was born on July 13, 1901 in Brooklyn, New York. She started off living a normal childhood. When she was 14, she was working at the Garment District. In 1916, she married Louis Weisberg. She introduced the Italian pomodoro tomato to Stockton, California.

She established tomato canning and other plants and vegetables in the San Joaquin and Stanislaus Counties. Louis was a member of a wholesale grocery business that imported pomodoro tomatoes.

When her marriage ended, Tillie traveled to Italy where she canned tomatoes in Naples. She returned to Stockton, California and begged farmers to try to experiment raising tomatoes. Then she tried to persuade Pacific Can Company to try to build a plant in Stockton with an option for her to buy it.

By 1940, she made the San Joaquin County the top tomato producing County in the United States. Tillie met Del Gaizo and formed Flotfill Foods Corporation. When Del Gaizo died in 1937, Tillie borrowed money from the company and became the owner of Flotfill Foods.

Over the next decade, she began canning spinach, asparagus and other plants. Flotfil Foods also canned food, baby food, and juice.

During World War ll, Flotfil Foods was the largest Army C-Ration supplier in the nation. Because of the great experience in World War ll, they were selected again in the Korean War and became one of the largest ration assemblers for the military.

When the agricultural industry faced shortages due to World War ll, Tillie sponsored Mexican workers to assist Stockton farmers through the bracero program.

Tillie then met Meyer Lewis, who was an American Federation of Labor organizer. In 1940, Meyer helped her make an agreement for a contract with her employees.

In 1941, Tillie signed what she called "the first full union contract in the history of agricultural labor of the United States." Keeping her company strike free, while other companies dealt with struggles. Tillie fell in love with Meyer and got married with him seven years later.

In 1952, Tillie launched Tasti-Diet Foods, a line of artificially sweetened foods. By 1953, a menu based entirely about Tasti-Diets was available at the Vanderbilt Hotel in New York.

Tillie then became the center of advertising campaigns, constructing a story of a woman who had dealt with weight issues and developed a solution to share with other women. Tillie's success was told in articles in Time, Parade: The Sunday Picture Magazine, Everywoman's Woman and Readers Digest.

In 1951, Tillie was named "Business Woman of The Year" by Associated Press. She changed the name of her company to Tillie Lewis Foods and began selling shares on the American Stock Exchange in 1961. Tillie Lewis Foods combined in with Ogden Foods (now part of Pet, Inc) of New York City in 1966.

Tillie was selected the first woman director of Ogden Foods. By 1971, Tillie Lewis Foods had sales over 90 M per year. Her husband (Meyer Lewis) died in 1976 and Tillie Lewis died on April 30, 1977, after suffering a cerebral hemorrhage.

Animals we've studied

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BIRDS
TURTLE
DEER
FOX
FISH
WORMS
FROG
SALMON
ZOOPLANKTON
CRABS
SQUIRRELS
LEOPARDS

ODALYS ORTIZ/HERITAGE ELEMENTARY

Facts about asparagus

By Gabriel Lobato Martinez
HERITAGE ELEMENTARY

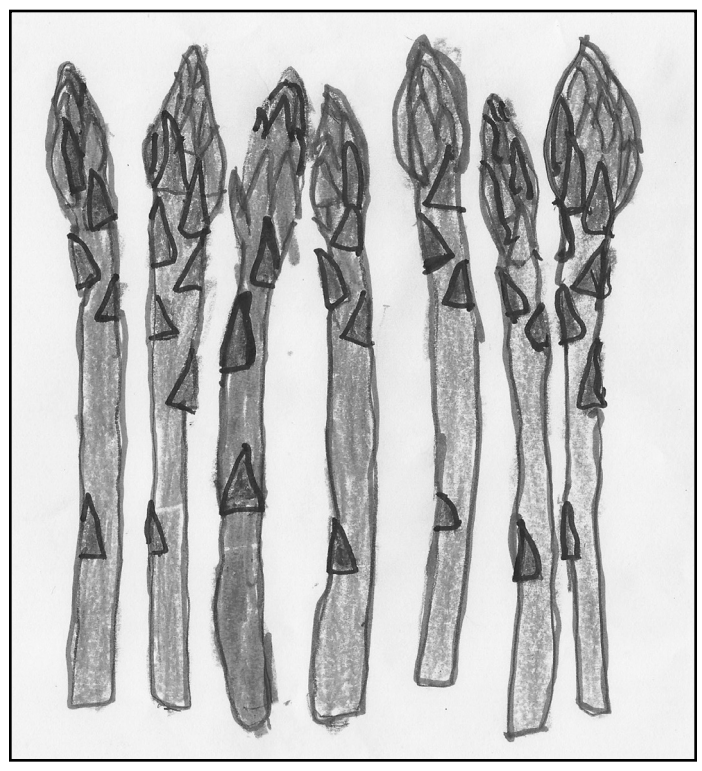
Asparagus comes in three colors: green, white and purple. Yes, purple!

Asparagus can grow to be 4 to 5 feet tall.

California, Michigan and Washington are the major asparagus producing states in the United States. Due to labor costs, however, much of the asparagus we eat comes from other countries. The US is the top asparagus importer.

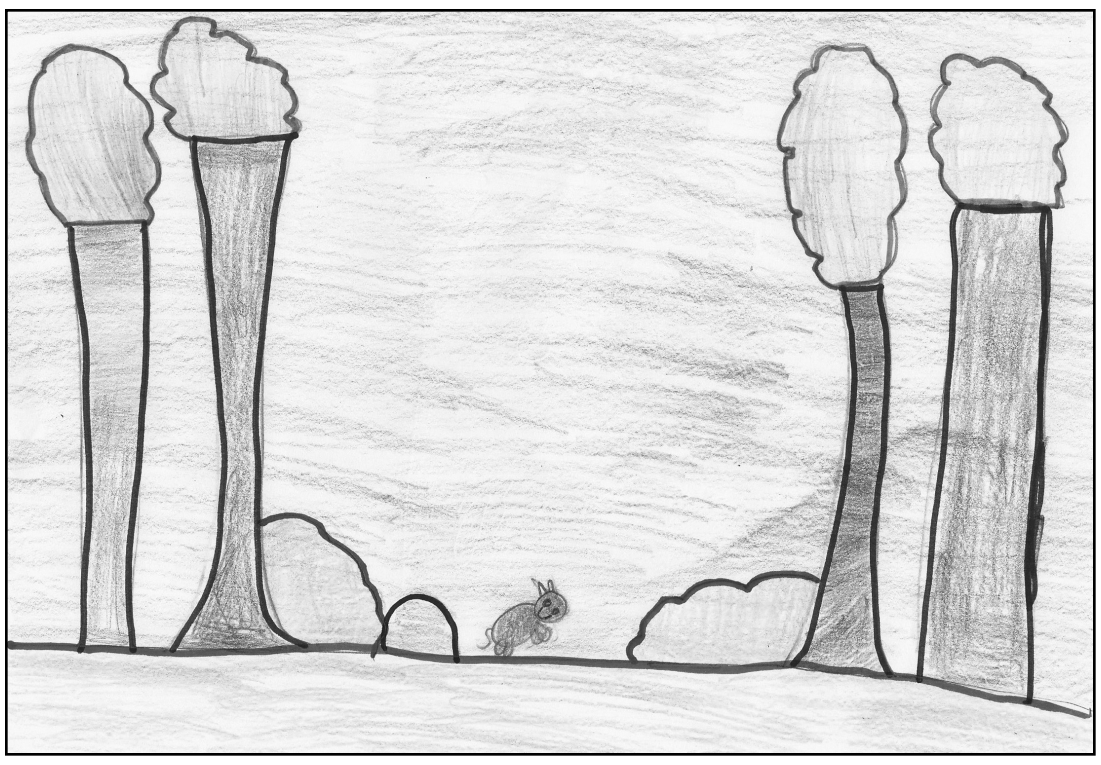
The name Asparagus comes from the Greek language meaning "sprout" or "shoot".

Asparagus is related to the onion, leeks, and garlic.

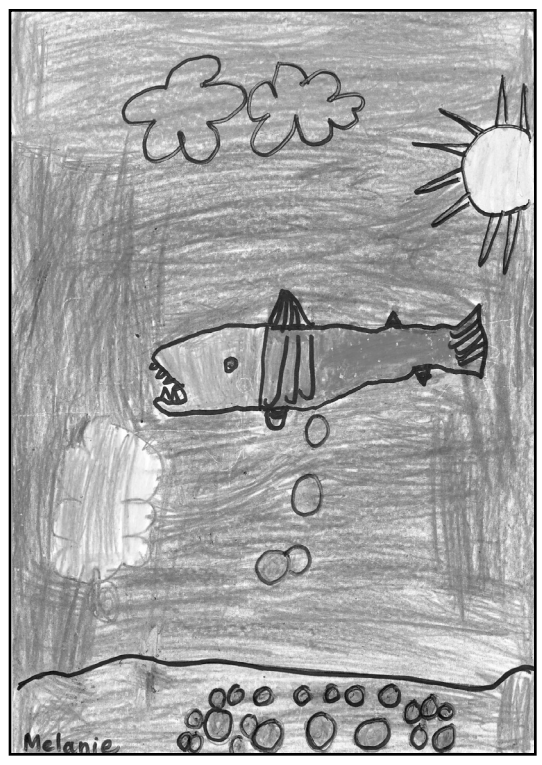


GABRIEL LOBATO MARTINEZ/HERITAGE ELEMENTARY

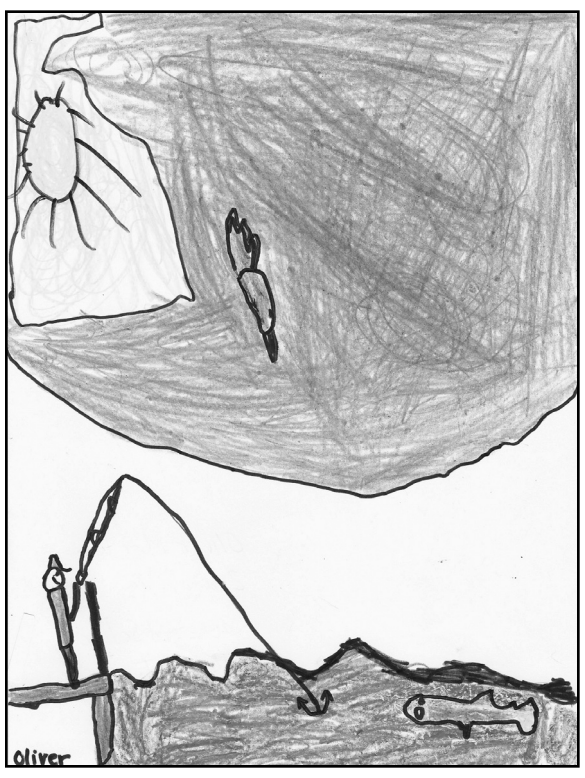
Wild art and games



LESLIE TORRES/HERITAGE ELEMENTARY



MELANIE FLORES/LOCKEFORD SCHOOL



OLIVER MARTINEZ/LOCKEFORD SCHOOL

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WORD BANK

- Bear
- Foxes
- Salmon
- Willow
- Bee
- Frogs
- Tule
- Deer
- Oak
- Watershed

ARIEL VIZCARRA/ERMA B. REESE ELEMENTARY

Carpenter Bees

By Alexandra Cruz
HERITAGE ELEMENTARY

Carpenter Bees buzz like saws when they make their nests. In fact, that is how they got their name. However, they do not saw or eat the wood.

The bees depend on flowering plants, feeding on nectar, with the females collecting pollen for their offspring.

The female Carpenter bee has a dark face. Carpenter bees can sting, but they rarely do.

Amazing cherry facts

By Linos Flores
HERITAGE ELEMENTARY

The English colonists brought cherries to North America in the 1600s.

A cherry tree can grow 33 feet in height.

The word cherry comes from the French word "cerise."

There are more than 1,000 varieties of cherries in the United States, but fewer than 10 are produced commercially.

May 26 is National Cherry Dessert Day.

On average there are about 44 cherries in one pound.

Tomatoes

By Junior Mendoza Rodriguez
HERITAGE ELEMENTARY

Tomatoes are believed to be native to the Americas.

Tomatoes are the state fruit of New Jersey.

The biggest tomato fight in the world happens each year in the small Spanish town of Bunol. The festival is called La Tomatina. It involves 40,000 people throwing 150,000 tomatoes at each other.

AMAZING PLANTS AND ANIMALS

JULIAN CORONADO/HERITAGE ELEMENTARY

Get to know Sandhill Cranes

By Jocelyn Salasar
HERITAGE ELEMENTARY

Sandhill cranes have been around for 2 million years. They can be three or four feet. Their nest are usually up to 40 inches wide and 6 inches high. During migration they can travel more than 200 miles a day.

JOCELYN SALASAR/HERITAGE ELEMENTARY

Learning all about spider crabs with the Marine Science Institute

By Angel Ledesma
HERITAGE ELEMENTARY

During our study trip aboard the Robert G. Brownlee in the San Francisco Bay, we caught and learned about spider crabs.

There are many different kinds of spider crabs. The spider crabs that live in the San Francisco Bay are approximately four inches across, although the males grow larger than the females.

Spider crabs have eight legs and two claws in the front. Spider crabs have poor eyesight, but the legs of spider crabs have sensors on the ends that allow it to sense when food is near.

Crabs that have lost legs are able to regrow them. They can walk side to side, but usually walk forward.

The spider crabs in the San Francisco Bay are brownish in color so that they blend in with the bottom of the bay.

Spider crabs can also be found on rocky shores. Japanese spider crabs, also known as the long-legged crab, are the largest variety of spider crabs. They can have a span of 18 feet from claw to claw.

Japanese spider crabs have been known to break off a human finger. They also have a longer lifespan than many humans, as they can live up to 100 years.

I enjoyed learning about spider crabs on our study trip, and I hope you have enjoyed learning about them as well.

RUBI NICOLAS/HERITAGE ELEMENTARY

Creative corner: 'The Tale of Two Small Friends'

By Christina Ochoa
HERITAGE ELEMENTARY

Hi, I'm Grayson. Now, before I get into the story of my small, odd friend, let me just make something clear. I'm not a wolf, okay? I'm a fox. A gray one. Very common mistake, but I thought I'd just make that clear.

Now, as you know, foxes are predators. They have prey. My prey just happens to be things such as bunnies. Anyway, I happen to be much smaller than the other foxes that surround me. I also get bullied for it. I would absolutely HATE for someone else to go through the same thing I did. That's what brings me to this story.

One day, while I was hunting for food, I heard rustling in the bushes. I already knew who it was. Then, a few other foxes soon appeared. They each got closer, completely surrounding me. Then, they started tormenting me, calling me cruel names and scratching me up. After it was all over, I went to a tree to rest. After I settled down, I heard rustling behind the bushes. I guess they weren't finished with me.

But when I got up, ready to run, I managed to peak a bit to see what actually was behind the bushes. It was ... bunnies. Just bunnies. But I noticed that out of all of them, there was one that stood out. It was very small. Smaller than the rest. When I noticed the small bunny, I also noticed that she had a sad, scared look on her face, while the others looked mischievous yet happy. I knew that they were bullying her. They were bullying her for her size. And I couldn't let that happen.

I jumped over the bushes, and growled. The bunnies were shocked. They took one look at me and ran. I admit, that made me feel a bit powerful since they were scared of me. But I mean, they were just bunnies. Anyway, the other bunny, the small one, didn't move at all. She stared at me for a second and then thanked me, relieved.

"I'm Riley," she said.

"I didn't ask," I said. "Just because I saved you doesn't make us friends."

She looked confused. "Sure it does!" she said.

I ignored her.

While I was walking home, she was still beside me, thanking me and arguing with me whether we were friends or not. When I finally got home, I asked her, "Why aren't you scared of me?"

She stared at me blankly. "Well, you are kinda small for a wolf," she said.

I explained to her that I was NOT a wolf, and that I was a fox. "Well, you're kinda small for a bunny," I said.

"And that's what makes us great friends," she said. "Great, small friends."

Creative corner: Fishy Diaries

By Andrea Castillo Pacring
LEROY NICHOLS ELEMENTARY

Dear Fishy Diary,

My name is Olly (I'm a girl fish, not a boy). And by the way, I have NO idea about how this whole diary thing works. I think you're supposed to write in your diary everyday until it's full, so when you're an elder fishy, you say, "Oh, wow! I was soooo childish!"

OK. Today was HORRIBLE! I ran into Jenesicse Calamari, the most popular fishy at Fish Benedict Arnold Elementary School. I asked her if I could sit and hang out with her at lunch, and she told me I was crazy. She said I wasn't popular enough to hang out with her anyways. To top it off, she reminded me that my Grammy died from all the pollution in the ocean. This made me so sad, and I thought of all of our best times. They even played "Boogie Fishy and Woogie Bugle Boy" at her funeral. I couldn't believe I lost my absolute BFF (Best Fish Friend) to fin cancer caused by pollution.

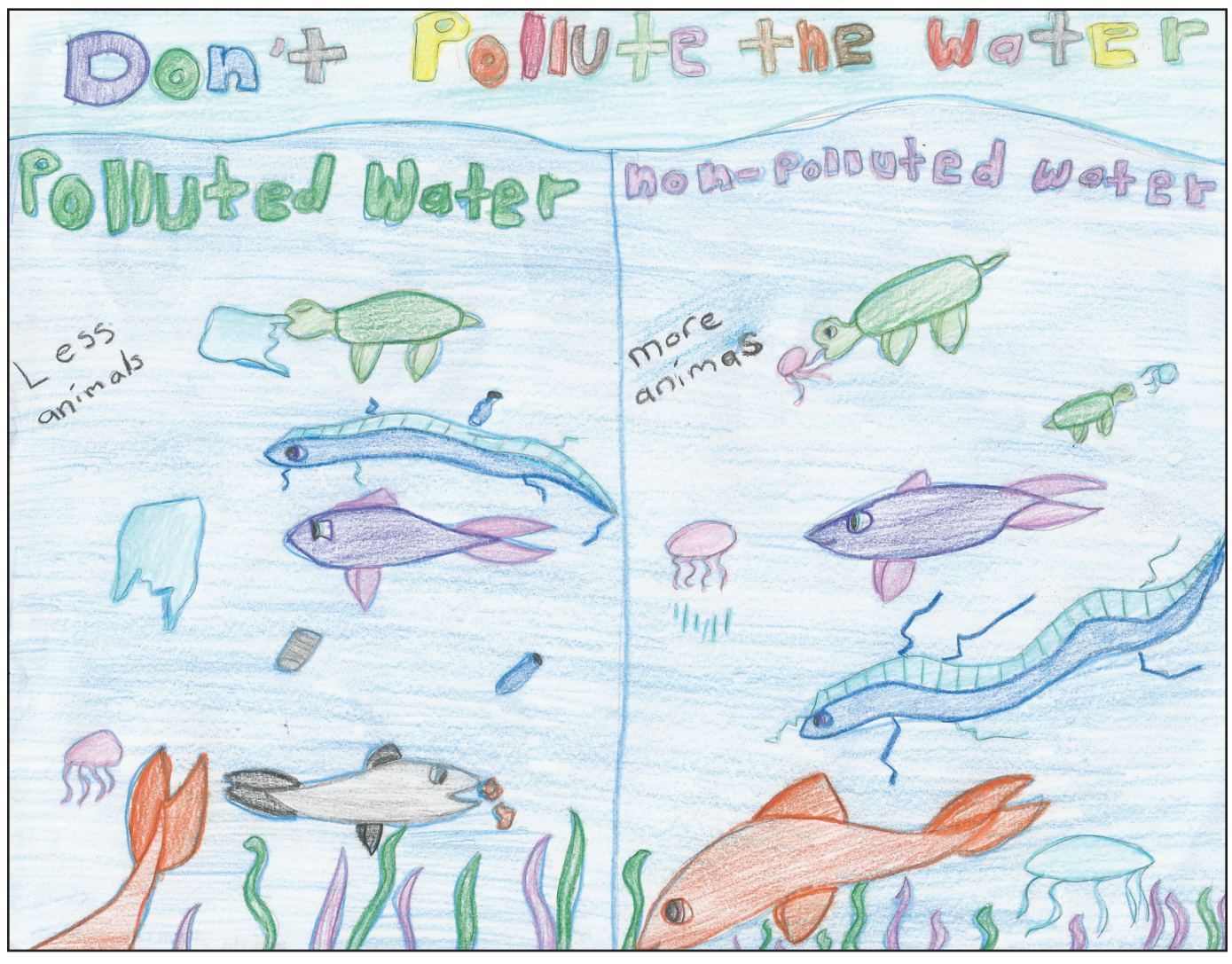
Humans can be so ignorant, and it hurts me so much (figuratively and literally). I didn't even get a chance to say good-bye to her at the hospital. I mean, I could've gone anyway, but the teacher didn't let me leave because all the pollution would hurt me. I could only leave if I had a mask to protect me from all the particles and small trash. Pollution is garbage ... literally.

OK, I know this is kind of awkward, but I am going to explain what pollution is. So, pollution is basically like food poisoning. You throw something in another something and once someone eats it, they die in a matter of time. Pollution in the sea is throwing garbage and waste into the ocean, which kills sea animals.

I am also depressed because I lost two of my friends: Sabrina, a manatee, and Olivia, the otter. They were my best friends I used to hang out with at school, but garbage took them away from me. Now, I can't go and swim with my besties anymore.

Pollution is giving my dad, Oliver, a headache. My mom, Moana, is sick because she ate a long silver thing that you can make drawings with. I think it's called lead. I'm losing my whole family due to pollution, and I hate it. Anyways, I have to go now. One of my friends, Jamie, is coming over to watch our FAVE show, "Fishy Tails"!

Till we meet again,
OLLY



GAVIOTA ALVAREZ/VINEWOOD ELEMENTARY

The bear necessities: Comparing grizzly, black and panda bears

Editor's note: Black bears live in many parts of California, including the Mokelumne River watershed. Grizzly bears once lived throughout California, but are now extinct. Panda bears are not native to California, but a pair did live at the San Diego Zoo until recently.

By Sergio Martinez
HERITAGE ELEMENTARY

Popularity

The last grizzly bear in California was shot in the 1920s. There are about 600,000 black bears left in North America. There are about 1,500 pandas left in the world.

Height

The grizzly bear can grow up to 8 feet tall. The black bear can grow up to 6 feet tall. The panda bear can grow up to 5.3 to 6.2 feet tall.

Weight

Male grizzly bears weigh 600 pounds, females weigh 290 to 440 pounds. Male black bears weigh 300 to 600 pounds and females weigh 90 to 250 pounds. Male Pandas 165 to 300 pounds and females weigh 150 to 276 pounds.

Lifespan

Grizzly bears usually live up to 20 to 25 years. Black bears usually live up to 10 years. Panda bears usually live up to 20 years.

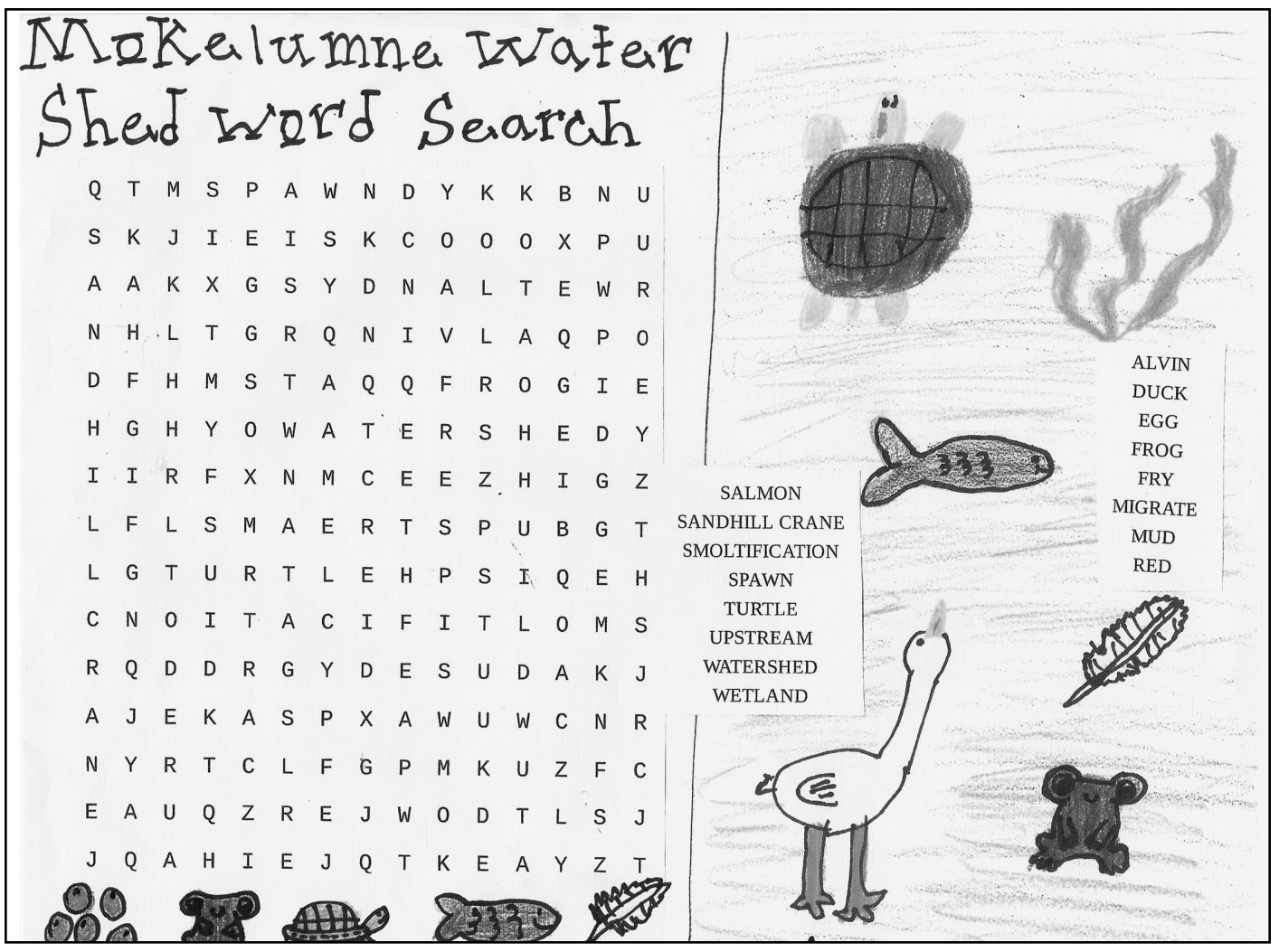
Diet

Grizzlies eat berries, roots, grasses, deer, elk, dead animals and insects. Black bears eat grasses, roots, berries and insects. They also eat fish and other mammals. Panda bears usually eat bamboo and leaf shoots.

Cool Facts

Did you know that a grizzly bear likes to live a lonely life? Did you know that 85 percent of the black bear's diet is vegetation? Did you know that panda bears have a good sense of smell and at night could find bamboo stalks?

WILD ABOUT WATER



ABBY STROUD/ERMA B. REESE ELEMENTARY

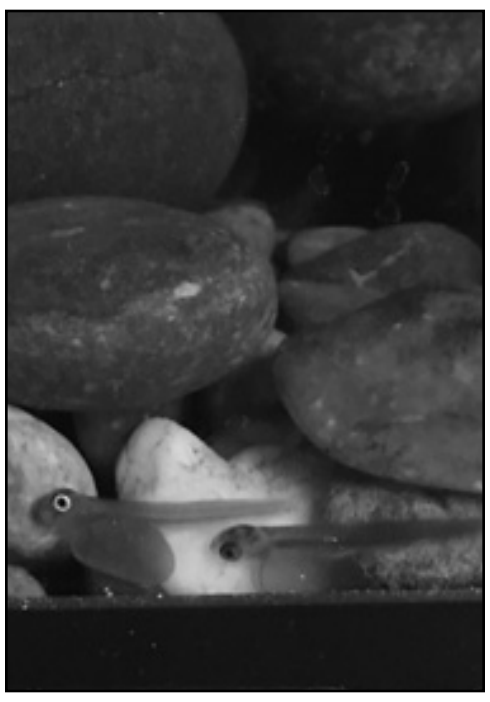
Wild art

TYLER GOMES/ERMA B. REESE ELEMENTARY

Lodi Lake geese.

COURTESY PHOTOGRAPH

Felix Munoz releases salmon at Mokelumne River Hatchery as part of an effort to preserve the river's natural habitats.

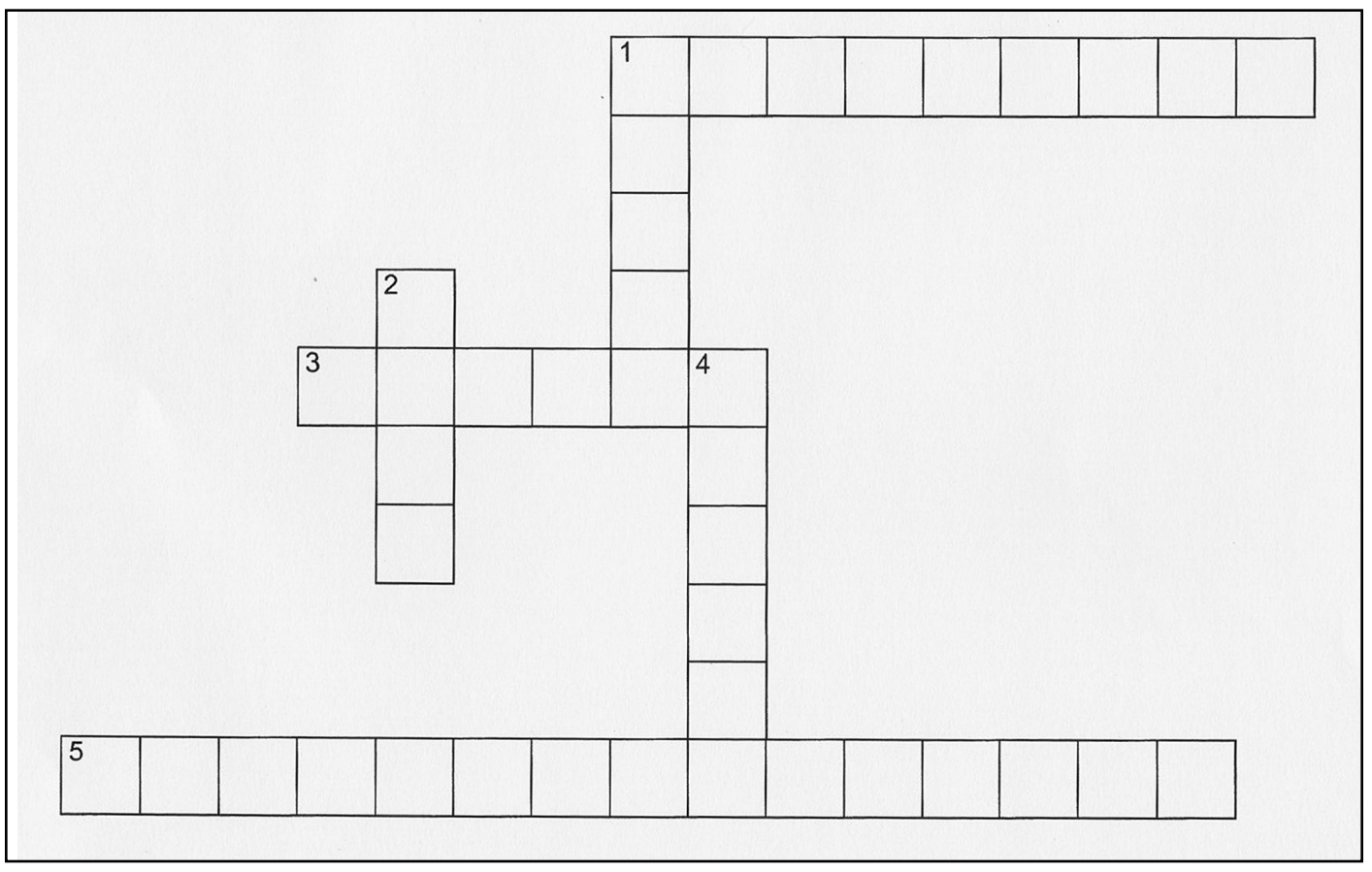


COURTESY PHOTOGRAPH

ALEXIA VILLAGOMEZ/ERMA B. REESE ELEMENTARY

Above: The two ducks that you see are called mallards. Boy mallards have shiny green heads to impress the girls. The brighter the boy's head is the more likely he is to attract a mate. Left: Two salmon alevin swim in a tank in Mrs. Janine Jacinto's classroom at Heritage Elementary School.

Mokelumne River Watershed Crossword



DIANA SUAREZ BRAVO/HERITAGE ELEMENTARY

ACROSS
1 an area that flows water to different rivers and seas
3 flows and carries water from the mountains to the sea
5 the river that flows near Lodi

DOWN
1 something we drink
2 animal that eats macroinvertebrates and swims in the river
4 this fish has a spawning nest called a redd

Helping the Mokelumne

By Julian Coronado
HERITAGE ELEMENTARY

One way we can help Mokelumne River is by not making it dirtier than it already is. We can do that by cleaning up after ourselves.

Many animals get sick or die if they eat garbage, especially if they eat plastic. Also, the water we drink at our houses comes from the Mokelumne River. Keeping it clean is healthier for people, too.

If we see someone polluting when we visit the lake or the river, we should tell them to stop. If we go with our families we should probably bring some big plastic bags and gloves, so that we can help clean up while we're there.

Lastly, visiting the nature trail will make you want to help keep the Mokelumne River and Lodi Lake clean. When you're in there you will feel happy because you will see many animals, and it is cool and peaceful.

By keeping the river and lake clean, you are helping baby animals grow up in a healthy way.

A little about the shells of macroinvertebrates

By Nancy Colin
HERITAGE ELEMENTARY

Many macroinvertebrates are known to have hard, protective outer layer. Some of the macroinvertebrates that have shells are gastropods, mollusks, snails, clams, etc. ... Animals such as ducks, raccoons and minks eat macroinvertebrates.

Snails and mollusks eat algae. Clams eat algae and small organisms. Gastropods eat plankton.

Clams can have two shells of equal sizes that is connected by two adductor muscles and that they have a powerful burrowing foot. Pouch snails are known to be distinctive since they have a shells that are considered to be left-sided.

In praise of plankton

By Nimra Gul
HERITAGE ELEMENTARY

In the environment, many animals are recognized for the important roles they perform to help our environment.

For example, honey bees pollinate plants and squirrels are known to plant acorns. But not many people know about plankton. They deserve to be recognized.

To begin with, plankton do more than just help the environment, they also help people. First of all, they give us 88% of the oxygen on Earth! Plankton produce oxygen through photosynthesis, which is a process that uses sunlight. The sun light then converts carbon dioxide into sugars that living things use for energy. If all the plankton were to die, it'd be likely for humans to die.

Plankton are also helpful because they not only produce oxygen, but also clean the air. Because plankton like the carbon dioxide, they use it for fuel, reducing the amount of carbon dioxide in the atmosphere. It is very important for us humans to breathe in fresh, clean air. And for that, you can thank plankton.

If giving humans oxygen is not enough, plankton are also a very important part of the food chain. If plankton were all to die, we would not have healthy fish, or other animals that eat fish (Including humans). Also plankton are easy to catch because they are drifters, meaning they will go wherever the tide takes them. As a result, it will be easy for other small animals to get food.

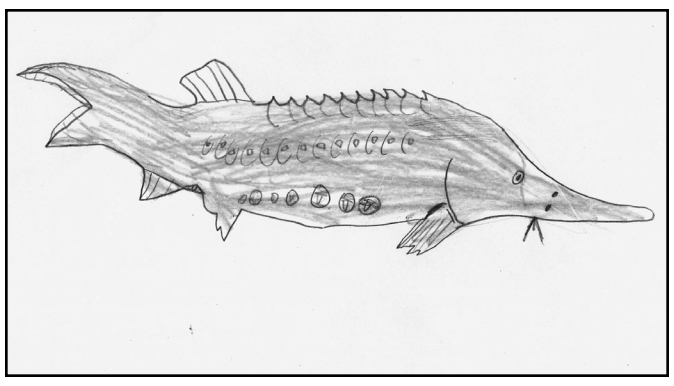
This is why I believe plankton should be recognized for the important roles they play in our environment. We are very dependent on plankton, and without them, we wouldn't be able to survive!

More about plankton

By Juan Mejia
HERITAGE ELEMENTARY

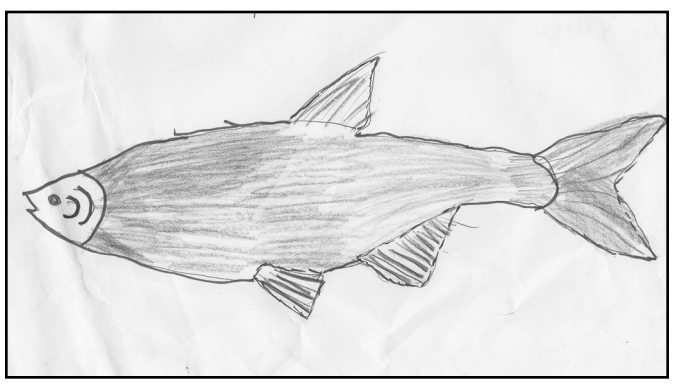
As you know, most sea creatures swim against the current. You may not know, however, that plankton cannot swim against the current. They are drifters that simply float wherever the current takes them. Plankton are tiny plants and animals. Phytoplankton, the tiny plants, are a needed source of oxygen on the planet. Even though they are tiny they are very important to humans.

Under the water



GABE BRODEHL/HERITAGE ELEMENTARY

Lake sturgeon.



ALICIA SALAS TORRES/HERITAGE ELEMENTARY

Fish.

WILD ABOUT WATER

An interview with biologist Michelle Workman

Editor's note: Michelle Workman is a supervising biologist for the East Bay Municipal Utility District, which manages Camanche and Pardee reservoirs.

By Yuridia Cortes
HERITAGE ELEMENTARY

Q: Where did you attend college?

A: I attended college at California State University in Sacramento, which is also called Sac State.

Q: What is your career or job title?

A: Supervising Fisheries Biologist for EBMUD.

Q: What were the most rewarding aspects of your job?

A: The most rewarding aspect is when I see that the salmon are doing great, and I feel like I had a small part in it. The San Joaquin River was dry and didn't have salmon for 60 years. It took 10 years to bring the salmon back.

Q: What were the least rewarding?

A: Sometimes supervising is hard because you have to act like a boss.

Q: What is your favorite part about the Mokelumne River?

A: My favorite part is all of the species that live in there. There are over 35 different species of fish.

Q: Who are some of your personal heroes and why?

A: My dad is my personal hero. He instilled the love of nature and the environment in me.

Q: Did you want another career besides this one?

A: In high school, I knew I wanted to become a biologist. I also thought of becoming a doctor. I worked in a hospital for a while as a phlebotomist.

Q: Do you enjoy your job?

A: I love my job!

Q: What is your favorite salmon?

A: Chinook Salmon is my favorite because it has adapted so well. We mostly have Chinook Salmon here.

Q: What is the first fish you studied?

A: The desert pupfish. Something interesting about the pupfish is that the male courts the female by nuzzling her.

Q: What is your favorite fish?

A: Pacific Lamprey is my favorite. It looks like a tube of meat without bones.

Q: What is your favorite mammal?

A: My favorite mammal is the River Otter because they are playful.

Q: What is something hard in your work?

A: Working with lots of data is hard. Also, the physical part of the job is sometimes difficult because I am so small, and salmon can weigh 40 pounds or more.

COURTESY PHOTOGRAPH
Michelle Workman, East Bay Municipal Utility District supervising biologist, with interviewer Yuridia Cortes.

How much water does a fifth-grader use daily?

By Malena Heredia-Tinney
LEROY NICHOLS ELEMENTARY

Today I will record how much water is used on a daily basis by seven fifth-grade students.

In Ms. Bregman's class at Leroy Nichols, I will see what the students say about how much water they use a day.

***

Me: Hi, Student 1. How much time do you spend on average in shower?

Student 1: U-uh, I'd say about 5 to 10 minutes.

Me: OK! Do you leave the water running while brushing your teeth?

Student 1: No, no, not usually.

Me: OK, thank you for your time.

***

Me: Hi, Student 2! How much time do you spend on average in the shower?

Student 2: About 20, or like, 15 minutes because I listen to music.

Me: Do you leave the water running while brushing your teeth?

Student 2: ... Yes.

Me: OK, thank you for your time.

***

So far it's equal for leaving water on for 5 to 20 minutes in an average shower. Now for Student 3.

***

Me: Hello, Student 3! How much time do you spend on average in the shower?

Student 3: Thirty minutes on average.

Me: OK, do you leave the water running while brushing your teeth?

Student 3: No, my grandma doesn't let me.

Me: OK, thank you for your time.

***

Me: Hey, Student 4! How long are you usually in the shower?

Student 4: Thirty minutes.

Me: Do you leave the water running while brushing your teeth?

Student 4: No.

Me: OK, thank you for your time.

***

Me: Hi, Student 5! How much time do you spend on average in the shower?

Student 5: Average and I would say 15 to 20 minutes. If I take long, it would be at least 35 minutes.

Me: OK, do you leave the water running while brushing your teeth?

Student 5: No, I don't.

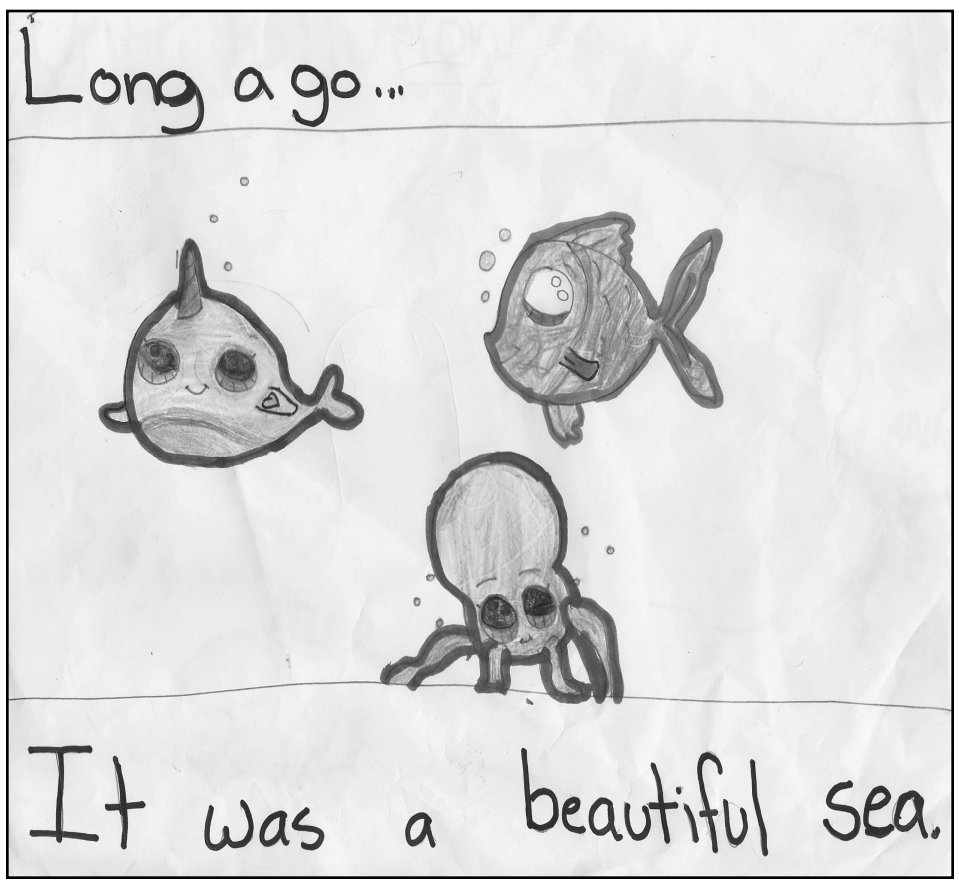
Me: OK, thank you for your time.

***

Me: Hi, Student 6! How much time do you spend in the shower?

PLEASE SEE WATER, PAGE 7

A pollution story



CAMRON HOYLE, ALIJAH CRONE, PRESTON CANTRELL AND LUIS AVALOS/ LEROY NICHOLS ELEMENTARY SCHOOL

Marine Science Institute Study Trip Word Search

E	C	K	L	A	Y	S	F	P	C	N	V	E	L	O
L	R	C	E	B	G	L	A	A	M	E	A	E	Y	B
O	N	U	K	Y	O	M	F	L	A	I	O	P	F	E
P	Z	A	T	H	L	M	N	F	I	P	R	P	F	N
J	O	C	E	A	O	K	X	U	A	N	J	H	K	T
S	K	Q	M	Z	R	G	B	R	J	E	I	N	S	H
J	O	G	I	X	D	E	D	Y	H	V	H	T	R	I
J	R	G	Q	O	Y	V	P	Q	I	S	C	R	Y	C
A	E	Q	D	D	H	I	C	M	I	Z	B	M	K	C
Y	T	I	S	N	E	D	T	F	E	Y	P	R	T	W
F	A	P	L	A	N	K	T	O	N	T	A	Y	P	B
S	W	M	U	D	L	A	A	E	O	H	O	E	T	Z
Y	E	M	U	X	L	N	B	R	S	S	P	E	F	L
T	C	R	S	F	G	Y	K	B	U	R	I	J	D	D
P	N	Y	M	W	I	X	N	G	X	F	T	C	W	E

DIEGO JIMENEZ/HERITAGE ELEMENTARY

WORD BANK
- Benthic
- Density
- Flatfish
- Hydrology
- Leopard
- Mud
- Plankton
- Salinity
- Shark
- Shrimp
- Temperature
- Water

Water, water everywhere

By Linos Flores
HERITAGE ELEMENTARY

97% of water on Earth is salt water, meaning only 3% of the water is fresh.

30% of freshwater is underground.

1.7% of the world's water is frozen and therefore unusable.

Approximately 400 billion gallons of water are used in the United States per day.

Water weighs about 8 pounds a gallon.

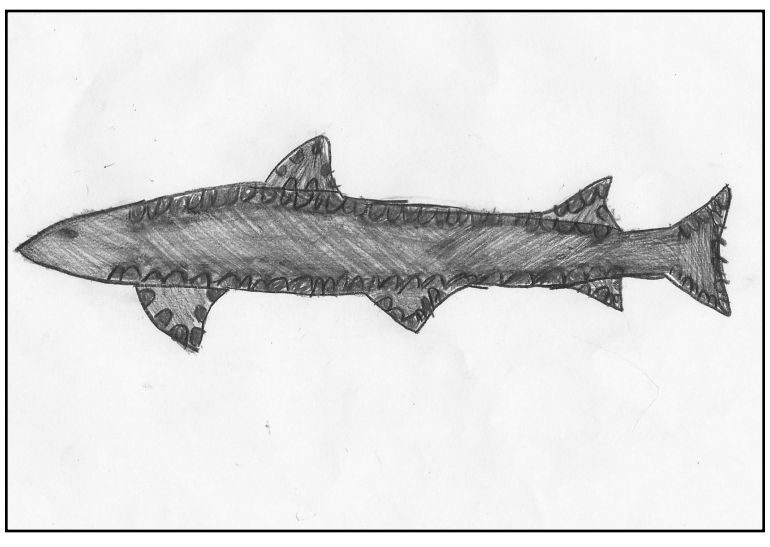
Water can dissolve more substances than any any other liquid including sulfuric acid.

70% of the human brain is water.

Water expands 9% when it freezes.

A water efficient dishwasher uses as little as 4 gallons per cycle but hand washing dishes uses 20 gallons of water.

It takes more than twice the amount of water to produce coffee than it does tea.



FARAH JAFFAR/HERITAGE ELEMENTARY

What do you know about leopard sharks?

By Sania Bibi
HERITAGE ELEMENTARY

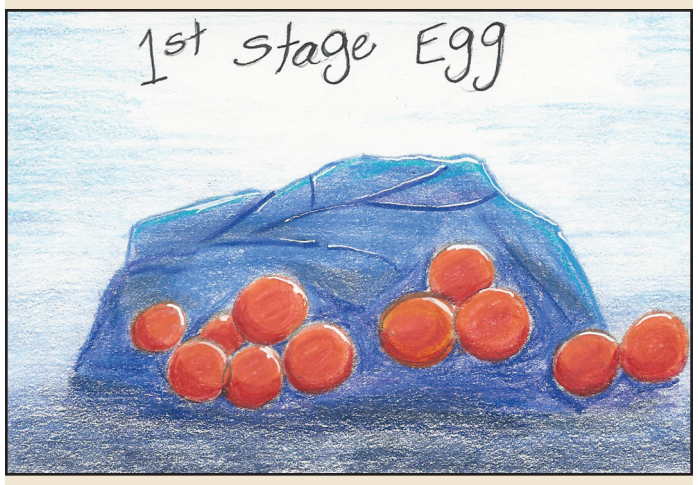
Did you know that leopard sharks pose almost no danger to humans? There is only one record of a leopard shark injuring a human. In 1955 a leopard shark gave a diver a nosebleed. The diver did not have any other injuries.

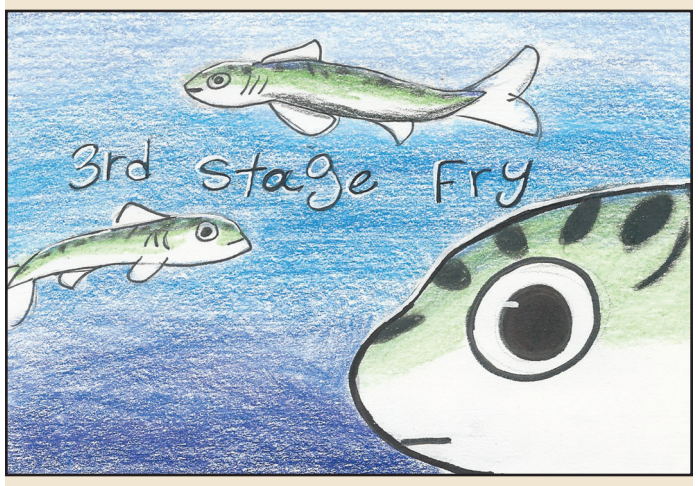
Did you know that leopard sharks keep their eggs inside of their bodies? Many sharks lay eggs, but not leopard sharks. Mother leopard sharks keep the eggs inside their bodies until they hatch. She then gives birth to live baby sharks, called pups.

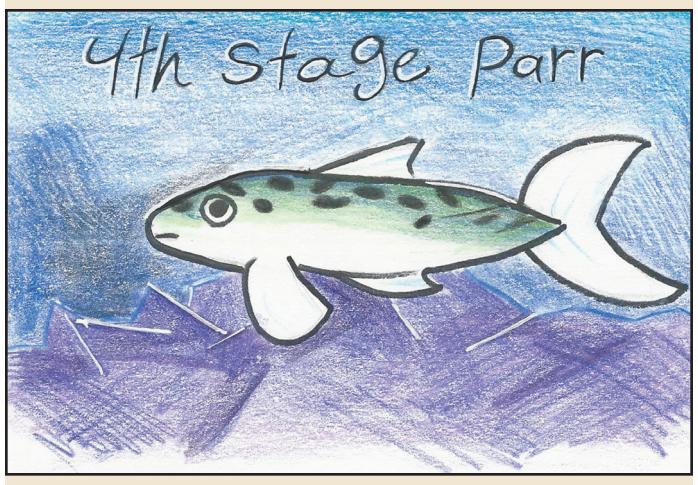
SWIMMING WITH SALMON

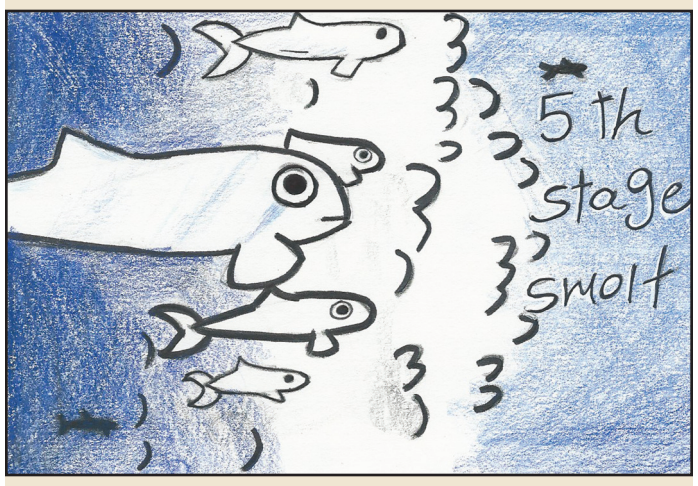
The salmon life cycle

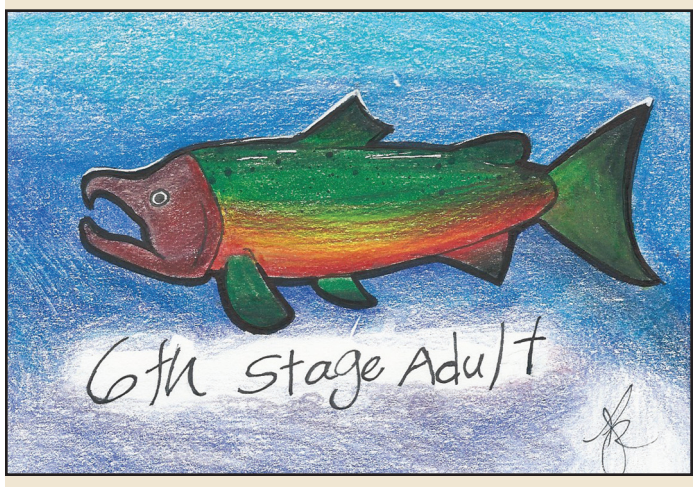
By Jasmin Reyes
TURNER ACADEMY











How to make a wooden salmon

COURTESY PHOTOGRAPHS

Cole Hart, Emma Aguilera and Samuel Madera point to their wooden salmon on the fence at Lockeford School.

By Waylon Carroll
LOCKEFORD SCHOOL

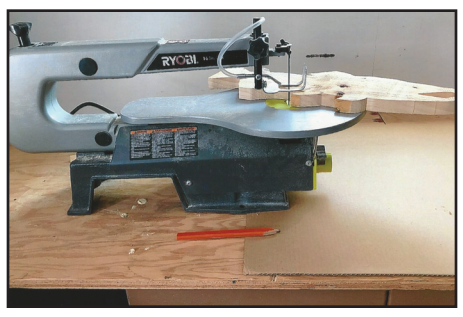
This is how to make a wooden salmon to use as a decoration on your school's chain link fence.

First, cut wood into the shape of a salmon. Second, sand it. Then, drill two holes into the middle. This will be used later to tie the salmon to the chain link fence. Next, paint it white and let it dry. After that, sand it again until it is smooth.

Paint the stomach red, the head, neck and back green, and the fins gray. Last, spray little drops of paint on the wooden salmon. Now, varnish it with clear.

Finally, get a small and strong wire. Put the wire through the two holes and tie it to the fence.

I think this salmon decoration was fun to make. It took us a whole year.



Above left: Jessica Cardenas and Monica Lopez Chavez point to their painted salmon. Above right: Students paint their wooden fish at Lockeford School.

The salmon life cycle, from egg to adult

By Jaelin Carr
TURNER ACADEMY

Salmon have six different stages in their life cycle. The six stages in a salmon life cycle are egg, alevin, fry, parr, smolt and adult. During the salmon's life cycle, they experience different events including changing of colors, they changed from saltwater to freshwater, they live in an estuary, and return to their home waters when they're adults, After they die their bodies helps the ecosystem.

Egg

The first life cycle stage of salmon is an egg. A mother lays 3,000 to 7,000 eggs in a lifetime. Salmon eggs are orange/red and soft. Mom buries eggs under rocks to protect eggs from predators. The father fertilizes the eggs.

I think the most interesting thing during this stage is that a mother lays over a thousand eggs.

Alevin

The second life cycle stage of salmon is alevin. Alevin have their yolk sac for 4 to 6 weeks, then the sac comes off. Alevin stays close to rocks to not get swept away. Alevindo not have their fins; they use their tail to swim.

Fry

The third life cycle stage of salmon is fry. Fry can actually swim. Fry is when their yolk sac actually disappear. Fry stay in schools of 100. I think the most interesting thing during this stage is fry losing their yolk sac.

Parr

The fourth life cycle stage of salmon is parr. Parr develop spots, stripes and colors. Atlantic salmon stay parr for 2 to 6 years. Pink and chum salmon have no spots and are silver as parr. I think the most interesting thing during this stage is parr can camouflage with rocks.

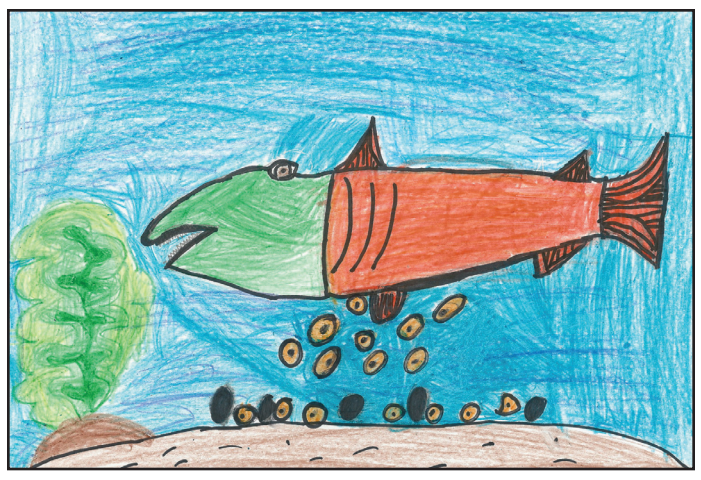
Smolt

The fifth life cycle stage of salmon is smolt. Smolt grow to 1 to 6 inches. Smolt migrate to the ocean following the currents. Smolt are silver to blend in with the ocean.

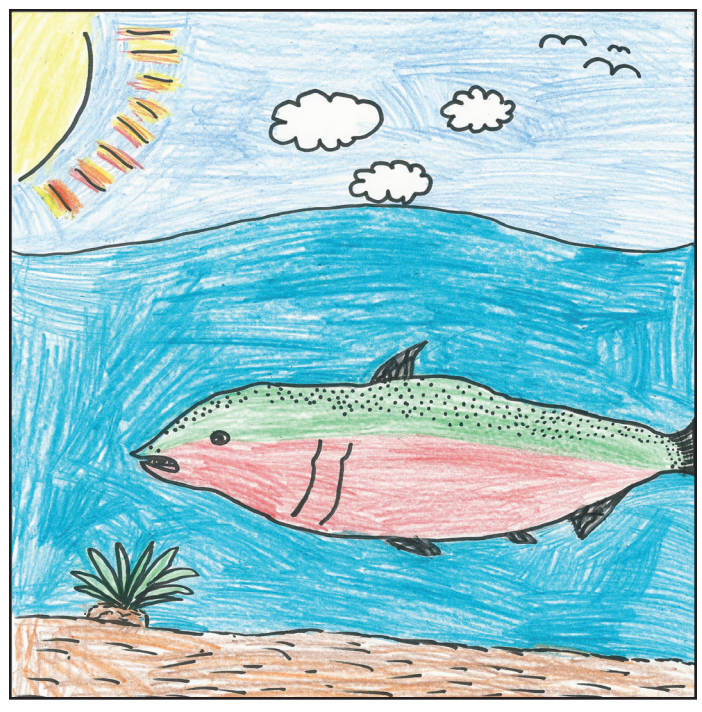
Adults

Adults can live in the ocean for up to 7 years. Adults eat shrimp and herring. Adults go back to the river where they were born in to spawn and lay their eggs.

Aquatic artwork

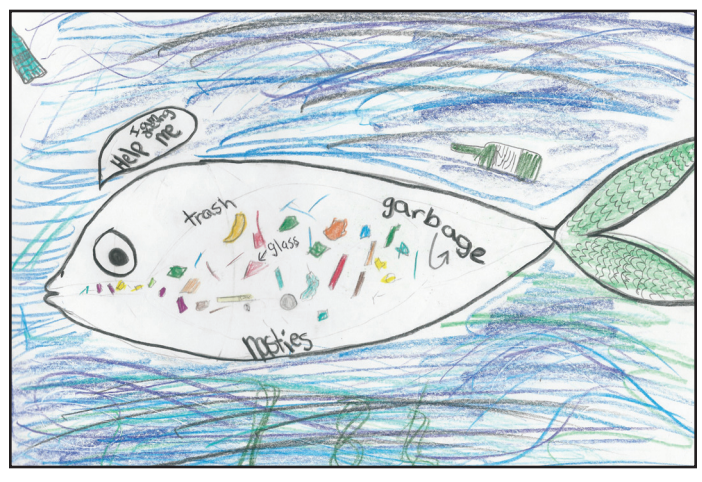


MONICA LOPEZ CHAVEZ/LOCKEFORD SCHOOL



PAISLEY BENDER/LOCKEFORD SCHOOL

EMMA AGUILARA/LOCKEFORD SCHOOL



EMERIE LOPEZ AND ELVIN SANTOYO/LEROY NICHOLS

Releasing the salmon raised in our classroom

By Oliver Martinez and Weston Pemberton
LOCKEFORD SCHOOL

We were raising salmon in the classroom and it took like 20 days for each stage of the life cycle. At the end, we let the salmon go at the Mokelumne River McIntyre Fish Hatchery on March 2, 2019. We went to the fish hatchery on a Saturday and it was pouring. We had our coats on and our clothes still got wet!

We had to release two salmon. We brought the fish to the hatchery in a bucket and then had them in a cup so we could release them. We had to name the salmon. We had to say, "Swim, little fishie, swim."

GET INVOLVED

Facts about recycling

By Farah Jaffar
HERITAGE ELEMENTARY

People in the United States throw away $11.14 billion of recyclable goods and packages every year.

In the United States, people throw away 2.5 million plastic bottles every hour.

Each piece of material you recycle makes a positive impact on the environment, because that is one less piece of material that is in a landfill or litter.

Recycling 1 ton of paper saves 7000 gallons of water. Also, each ton of recycled paper can save 17 trees.

What happens to glass when it is recycled

By Khizar Saeed
HERITAGE ELEMENTARY

1. First, glass is separated from other items.
2. Then, the glass is crushed into tiny pieces.
3. Next, the glass is melted down at 1700 degrees.
4. The melted glass gets poured into molds to make new products.

Never put these items down the drain

By Oscar Jaimes Reyna
HERITAGE ELEMENTARY

Cooking oil/ Fats
Flour
Paper towel
Garbage
Grease
Plastic
Potato peels
Glue
Honey
Egg shells

Earthkeepers save the world, and you can, too

By Audrina Epperson
HERITAGE ELEMENTARY

Lots of schools probably have after school programs such as running club, tutoring, and Bridge. But do they have Earthkeepers?

Earthkeepers is a club where kids have the opportunity to help clean our environment. In Earthkeepers you will help keep your school clean.

First of all, we pick up trash with grabbers. We pick up trash around the blacktop, playground, and field. Also we sweep the gutters to get leaves and trash out to prevent them from getting into the storm drain. If the trash were to go in the drain, it would pollute the river.

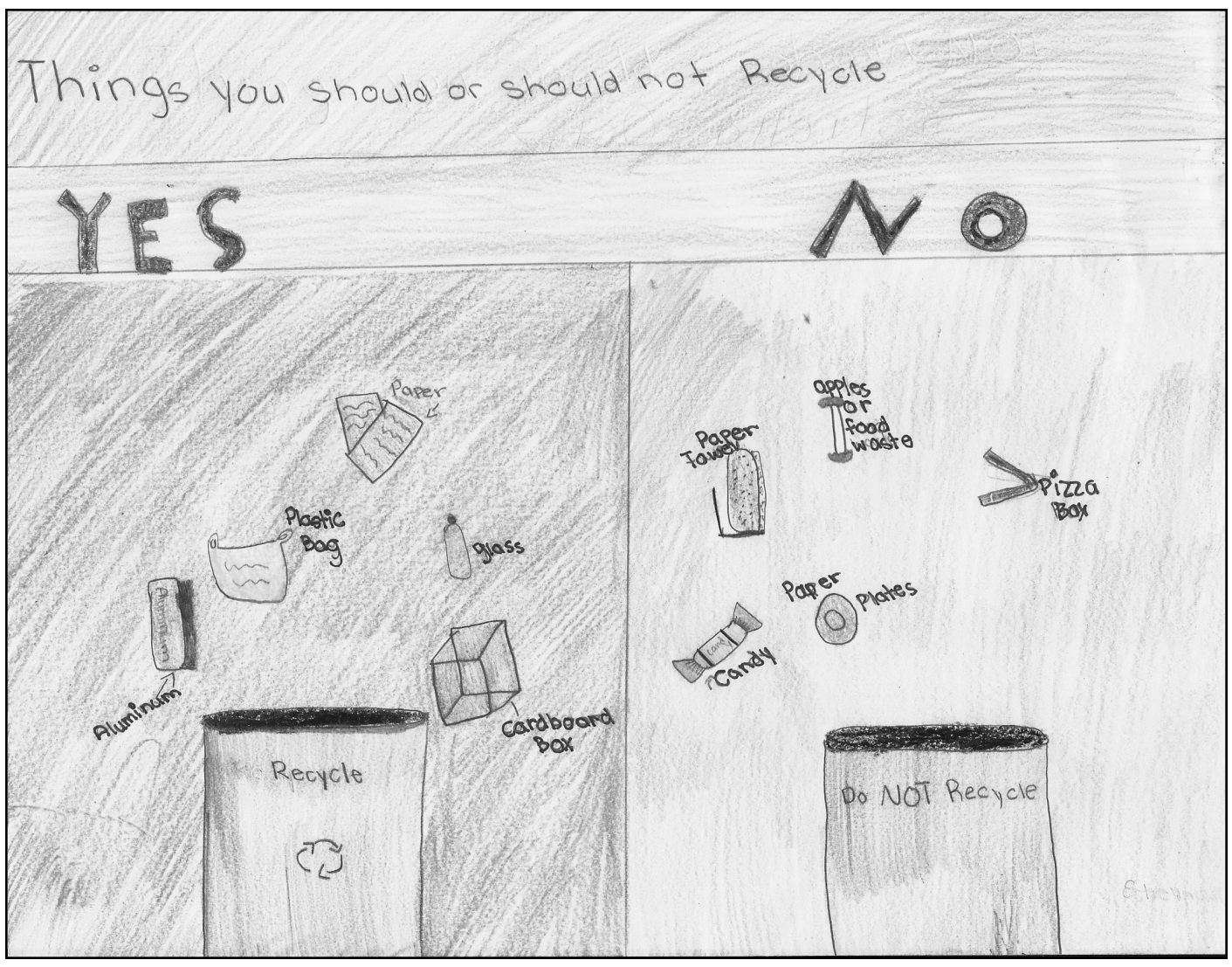
Second, it gives students something to do in their spare time. Instead of playing "Fortnite," you could be helping pick up trash. Also,if you don't have enough time in the day to talk to teachers, Earthkeepers gives you that time!

Earthkeepers helps the community. We stop trash from getting into the storm drain and polluting the river. So, if you have tutoring and running club, maybe you might consider adding an Earthkeepers!

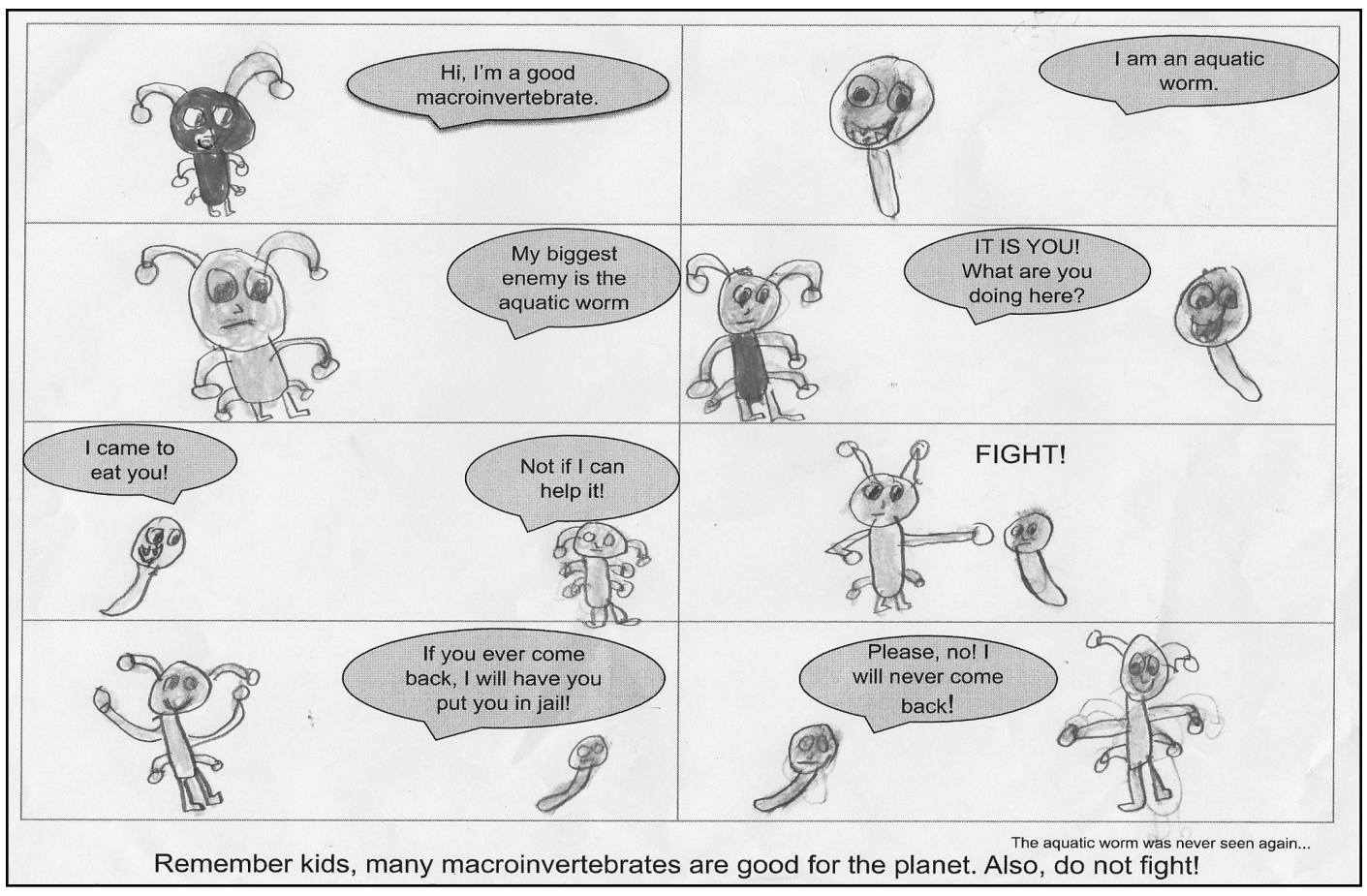
EARTHKEEPERS DATA FOR 2018-19

Here is a by-the-numbers summary of what the Earthkeepers of Heritage Elementary School have done this year:

- 15 Earthkeeper afterschool cleanup days
- 94 buckets of trash
- 1 large box of leaves/trash
- 26 small bags of trash/gutter litter
- 26 of the 30 gallon bags of trash/leaf litter
- Average of 12 students participating each day



ESTRELLA ORTIZ/HERITAGE ELEMENTARY SCHOOL



OSCAR JAIMES/HERITAGE ELEMENTARY SCHOOL

What Storm Drain Detectives has done for me

By Jasmine Owens
LODI HIGH SCHOOL

Ever since I was a little girl, my parents told me, "Jasmine, you can pick any college you want, but you will go to college."

So, I had always prepared myself to attend college. Me not wanting to go to college was never a worry for my parents, because it's evident that college is the gateway to a successful life. Since I knew I wanted to go to college, it boiled down to a matter of what I wanted to do in my life.

Since I can remember I had always aspired to become a marine biologist. I love the ocean, the animals, and the environment. In the eighth grade, I even went to a marine biologist camp at Catalina, where I fell in love again.

However, over my high school time, it generalized. When I was a freshman, I attended a program called Storm Drain Detectives, where kids all across Lodi gathered to test the water quality of the runoff water that ended up in the Delta. (Hence the name Storm Drain.)

What started off as a requirement for my Honors Biology class became a new love in my life. We collected data on turbidity, dissolved oxygen, pH, temperature and the nitrogen levels year round. We put such data in a presentation given by us — the students — to the Lodi City Council annually, thus making it known of any drastic changes needed to be made to sustain our water.

Being a part of Storm Drain led me to my major of environmental studies. Something more public, political, and on the compliance side. I think this major shows promise, being how important it is to society today. Without taking part in Storm Drain Detectives, I doubt my major would be the same.

I am grateful for the program, not only because of the incredible opportunity, but for the guidance that is well needed in this chapter of my life.

BASINS

CONTINUED FROM PAGE 1

Lodi. He took a bus of city officials from Lodi to the city mentioned in the article to see the water basins there. When they came back, he was into the idea. Soon, the first water basin was being dug.

After the success of the first water basin, they decided to build many more to prevent the flooding from happening again. Thanks to Mrs. Costa, Mayor Katnich, the Lodi City Council and Lodi Public Works for making the water basins possible and keeping our city from flooding for future generations, as well as giving us sports parks.

WATER

CONTINUED FROM PAGE 5

Student 6: Five to 10 minutes.

Me: OK, do you leave the water running while brushing your teeth?

Student 6: No.

Me: Alright, thank you for your time.

***

Me: Hi, Student 7, the last one! How long are you on average in the shower?

Student 7: Fifteen to 30 minutes.

Me: Alright, do you leave the water running while brushing your teeth?

Student 7: Yes I do.

Me: OK, thank you for your time!

***

In conclusion, most people do not leave the sink on, wasting water, but it was nearly equal for wasting water in the shower by taking too long.

How much time do you spend?

COTULLA

CONTINUED FROM PAGE 1

Q: What were the least rewarding?

A: The least rewarding part of my job was dealing with elected officials and politicians who often did not understand the reasons for the laws and regulations my agency was requiring businesses and individuals to comply with, or disagreed with the requirements.

Q: Do you do anything to try to support our environment?

A: As an individual, I try to do everything I can to minimize my impact on the environment. When I was working, I rode the bus from Lodi to Stockton everyday. I use drip irrigation in my yard. I recycle and use non disposable containers as much as possible. I try to choose sustainable and nontoxic products and materials.

Q: Did anything in particular inspire you to help our environment?

A: I was particularly inspired by my mother who was a teacher and a naturalist. She taught me about native plants and animals, and helped me appreciate the world around me.

Q: What is your favorite part about the Mokelumne River?

A: We are extremely fortunate to live near such a pristine river. The Mokelumne is relatively free from contamination and actually helps replenish groundwater supplies in our area.

Q: Are there any interesting stories that influenced you to work helping the Earth?

A: As I mentioned, my mom was a naturalist and spent many of her summers hiking in the Sierra Nevada and the Rocky Mountains. So her stories fascinated me. And, as a teenager, my aunt gave me a copy of "Silent Spring" by Rachel Carson, which made me realize action needed to be taken to protect nature.

Q: Who are some of your personal heroes, and why?

A: My personal heroes are Marie Curie who was the first woman to win a Nobel Prize, and is the only person to have won Nobel Prizes in two different disciplines; one in physics for her work with radioactivity and the discovery of X-rays, and one in chemistry for discovering the chemical element polonium.

Another hero of mine is Nelson Mandela, who led the effort to overturn apartheid in South Africa. He was imprisoned for 27 years, but continued to support the movement to end racial segregation and oppression of black people in the country even while in prison. He was finally released from prison and became the first black president of South Africa.

I also greatly admired Nelson Mandela's friend and coleader of the anti-apartheid movement Bishop Desmond Tutu. He led the Truth and Reconciliation Commission after Mr. Mandela was released, which sought to have black people who were abused and oppressed by white police face each other and forgive each other.

Q: What are some of your future plans for helping the environment?

A: I will continue to do as much as I can to minimize my personal impact on the environment. I firmly believe that the actions of each individual can make a difference.

All of the following questions came about after the students saw a picture of the water tower:

Q: Why do they store water in a tower and not something else?

A: The water tower helps stabilize pressure throughout the water system by providing a steady supply of water when there are heavy demands, like when people are taking showers in the morning going to work or school. Without that supply, individual pumps would have to go on and off to keep up with demand. Another reason is that it can maintain water pressure in the system when the electricity goes out. It also enhances the pressure and supply when there is a fire.

Q: Was that tower always used to store water?

A: Yes. It would not be safe to store any other substance in the tower.

Q: Why is the water tower in that location?

A: It is close to where the old tower was, so it was easy to connect to the water system, and the city already owned the property.

Q: Is there only one water tower in Lodi?

A: Yes, there is only one water tower on the public water system.

Q: How much water can the tower hold?

A: I am not sure, but it may be around 1 million gallons.

Q: What happens inside the water tower?

A: Nothing really, just the water from close wells is pumped up into the tower, then it flows out when needed.

Q: Where does the water come from that is in the tower?

A: From wells primarily, although water from the surface water treatment facility could be pumped in as well.

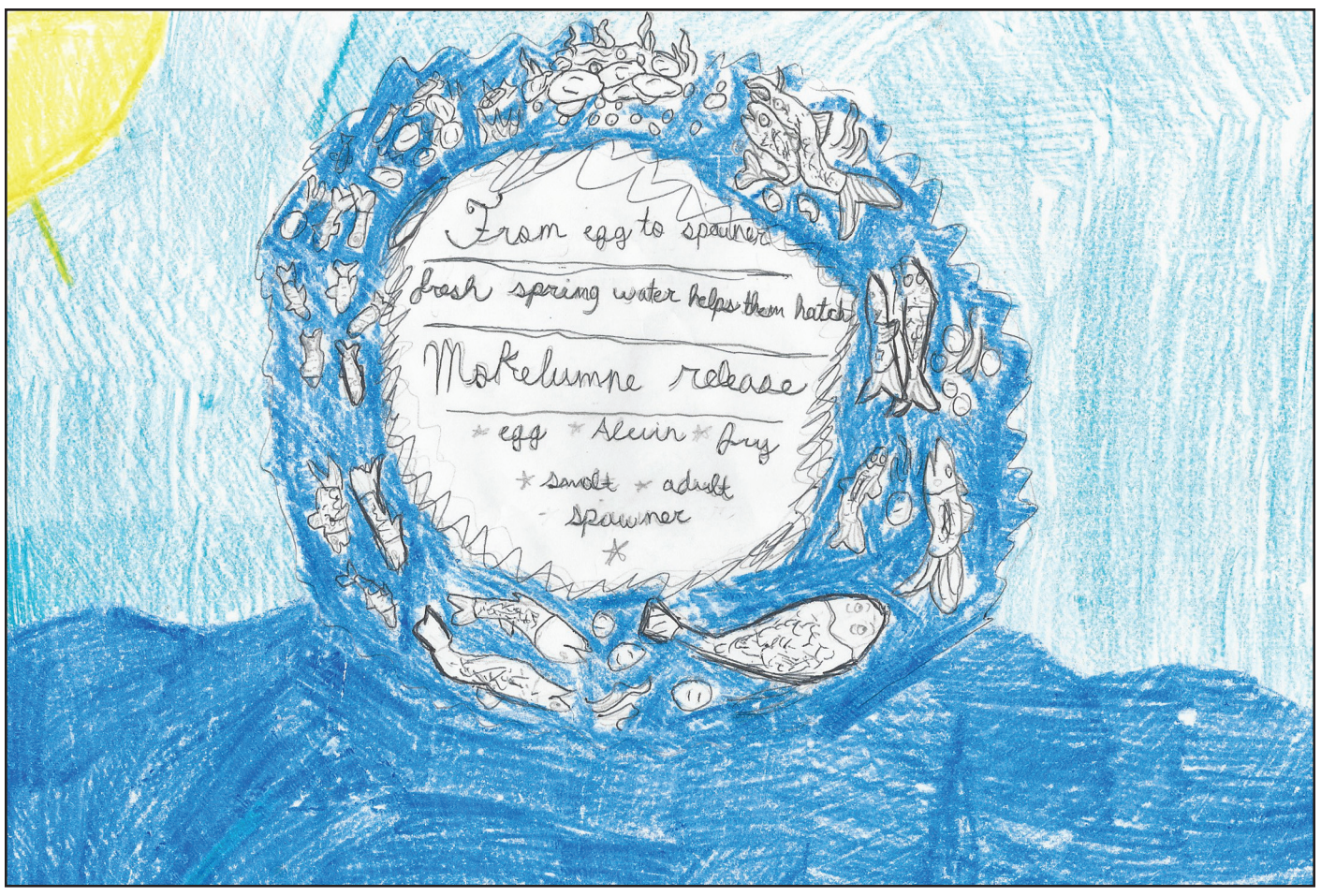
Q: Who controls how the water gets in the tower?

A: The City of Lodi Water Utility.

Q: Why is the water tower shaped like that?

A: That shape is one of the designs available for water towers, and the City chose that design because it looks like a wine glass.

WILD ART



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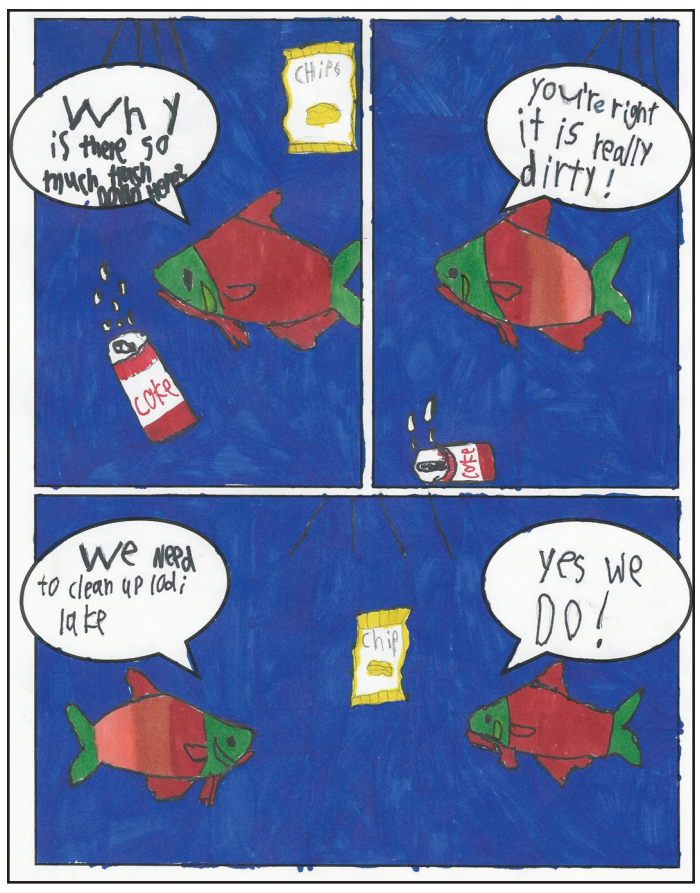

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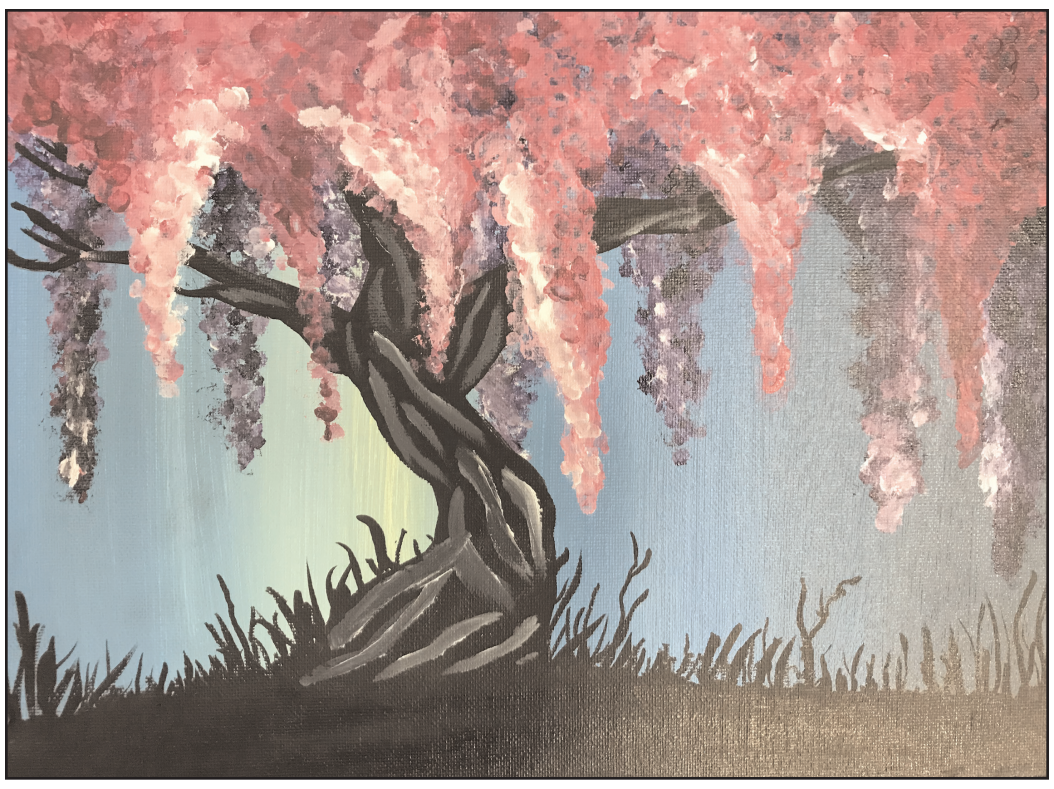

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