



A Field Guide To The Quick Sandy River

Created by Health and Science School 6th graders, 2011
Paintings, Habitat, Adaptations, Water Quality, Foodwebs & Poetry

GREEN
VOLUME
FOUR
2011



A Field Guide To The Quick Sandy River

Created by Health and Science School 6th graders, 2011

Introduction written by Zachary David Morello, 6th grade

In our third exhausting (but fun) trimester in science, art, humanities and math, we started to learn vast amounts about our native organisms and how they survive. We learned how humans affect the earth's organisms and how we have tried to undo that. We learned about how animals adapt to survive and sustain themselves. We graphed the water quality of the Sandy River. We made numerous drafts in art and in writing about our species and made this field guide. You may think: "how is science related to humanities, math or art?" To explain how we did this I will make a brief explanation.

Before anyone started to even make a first draft the whole sixth grade went to Camp Collins on the Sandy River for three days. When we were there we did many activities (including breaking their flag pole). One of them, probably most significant, was the Audubon Society teaching us about the local animals.

In art, my peers and I chose a species to draw and made a first draft, it wasn't a masterpiece but it was a start. We brought our drafts up to let our peers give us feedback like "you might try to add this" or maybe you could try this". Our art teacher told us to make only "kind, specific, and helpful suggestions. Not, " it looks horrible, scrap it". After peer critiques we made some revisions and finishing touches and started to paint our final/second draft which are in this field guide.

In our science class we researched our organisms, when I say organisms, I mean species like animals, insects, plants and trees. We learned about impacts, adaptations then drew our thumbnails, food webs and started typing our guide. In math we made our water quality graphs and wrote about the water quality samples we took on the Sandy River.

Finally, in humanities, we made skits based on a conversation between Theodore Roosevelt and John Muir about national parks. Our class researched characters such as oil drillers and loggers to decide how much humans are responsible for the environment. We also observed the wildlife in our schoolyard. We then started to peer review and edit all of our writing and dump our information into a sample field guide.

This measly bit of information about our field guide is just the introduction to explain the hard work behind the scenes of this field guide. Please keep reading and turning the pages to see how great all of our work turned out. *-Written by Zachary David Morello*

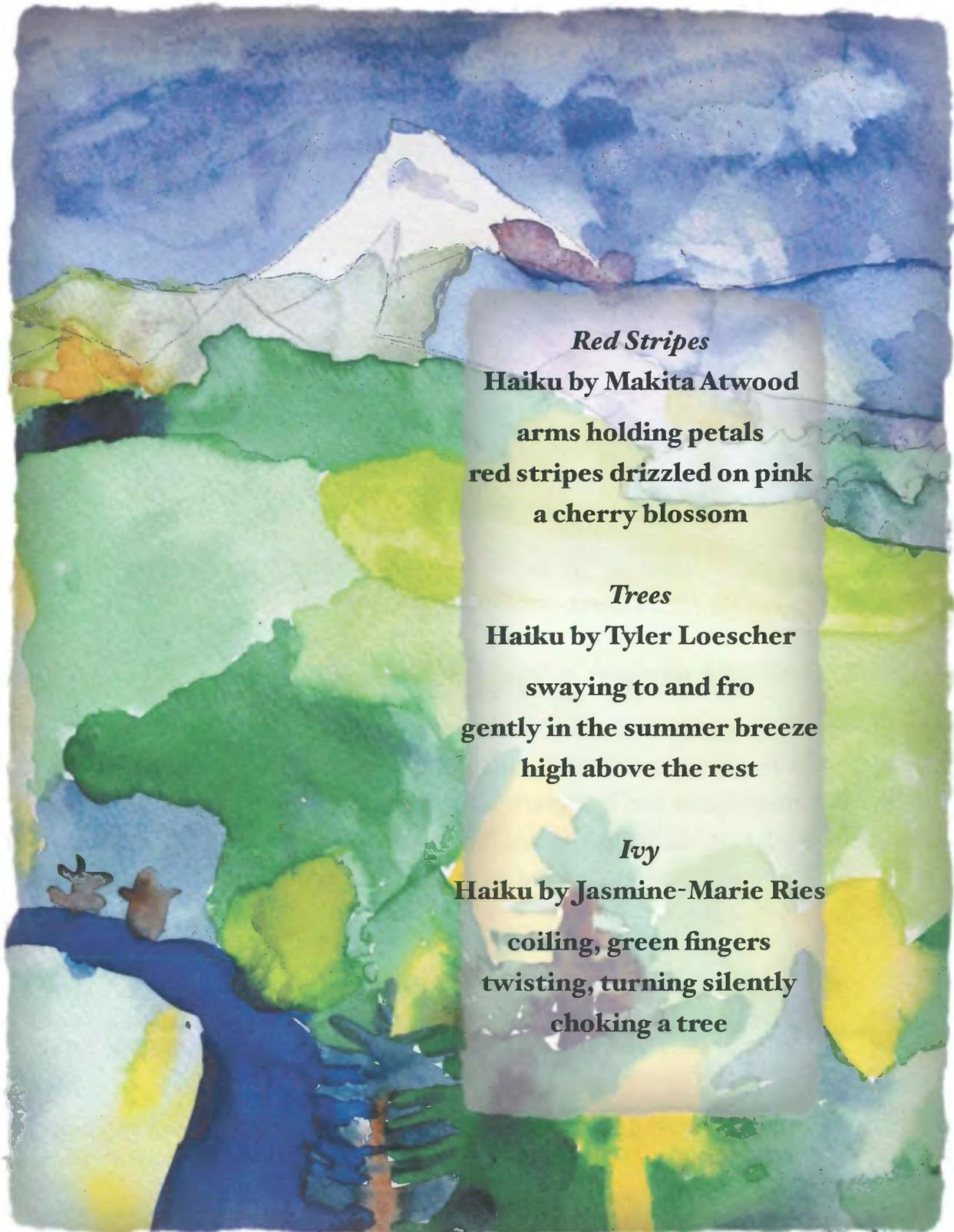
A Special Thanks!

A Special Shout out to our teachers, Ms Rybak, Mr Jones, Ms Burger, Ms Youngbee and Mr Miller. Thanks especially to Ben Asbury's mom, Lynn Asbury, Anne Abernathy's mom, Ellen! Thanks to Kalea's, Joey's, Natalie's, Tyler's and Chloe's mom. Ms Quig helped too. We could not have done this with out you! Thanks to 7th grade mom, Andree Hertz too.

Haiku of the Quick Sandy River

P A U S E , B R E A T H E , L I S T E N

Painting by Justin Lu



Red Stripes

Haiku by Makita Atwood

**arms holding petals
red stripes drizzled on pink
a cherry blossom**

Trees

Haiku by Tyler Loescher

**swaying to and fro
gently in the summer breeze
high above the rest**

Ivy

Haiku by Jasmine-Marie Ries

**coiling, green fingers
twisting, turning silently
choking a tree**

F L Y A G A R I C / F L Y A M A N I T A

Scientific Name: Amanita Muscaria

WATERCOLOR 11X14 • MAY 2011

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ARTWORK AND WRITING BY Deven Bishnu

HABITAT & SPECIES OVERVIEW

The Fly Agaric is a mushroom that is distinguished by its bright red and yellow colorings. It lives almost everywhere, including forests, grasslands, beaches, and fields. The mushroom can be eaten if it is completely detoxicated. Due to its outrageous colors, it has been taken with travelers around the world, and now is present on every continent except for Antarctica.

THREE AMAZING ADAPTATIONS

The mushroom contains psychoactive poison that intoxicates any animal that tries to eat it. Occasionally, the poison may be fatal.

Another adaptaion of the Fly Agaric is its bright yellow/red coloring. Biright colored plants are recognized by animals as poisonous.

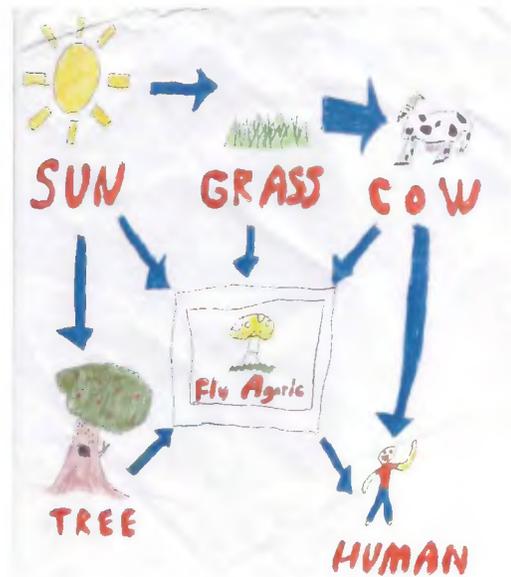
The Fly Agaric has also adapted by growing spores. When you try to kill a Fly Agaric, its spores fall off and grow more of them.



ENVIRONMENTAL IMPACTS

The Fly Agaric, as opposed to many other species, is more a threat to nature than threatened. Due to its worldwide exportation, it has been devouring local wildlife and killing animals unfamiliar with the plant. As mentioned previously, this mushroom is regarded as a weed in several countries. Unfortunately, there is no way to kill this mushroom easily because its spores will simply grow more mushrooms. Though it's not as much a threat to the environment as some other species of fungi, it still is a threat that must be dealt with.

FOOD WEB ILLUSTRATION



A M E R I C A N M I N K

Scientific Name: Neovision vision

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ARTWORK AND WRITING BY ISABELLE CORDOVA

HABITAT & SPECIES OVERVIEW

The American mink is a solitary, nocturnal creature about two feet long, with thick oily fur, short legs, a long neck, small mouse-like ears, small eyes, and a long fluffy tail. Mink are found in most of the U.S., Canada, Europe, and Siberia; they live in heavily wooded areas near lakes, rivers, streams, ponds, or marshes. The mink is a carnivore; it eats mainly fish. It also eats muskrats, rabbits, mice, chipmunks, snakes, frogs, crayfish, birds, and eggs of birds that live on the ground. When threatened they spray awful smelling liquid and interestingly they can aim it. Mink have brown or black fur with a white chin and they have webbed feet. Mink are hunted for their fur, so mink have become wary of humans.

THREE AMAZING ADAPTATIONS



One of the adaptations of the mink is its short stubby legs and small webbed feet. This makes them excellent swimmers. A mink in warm water can swim for up to three hours.



Mink have thick oily fur that keeps them warm. Their fur is waterproof since it is so oily. And since it is waterproof their thick fur does not pull them down when they get wet.

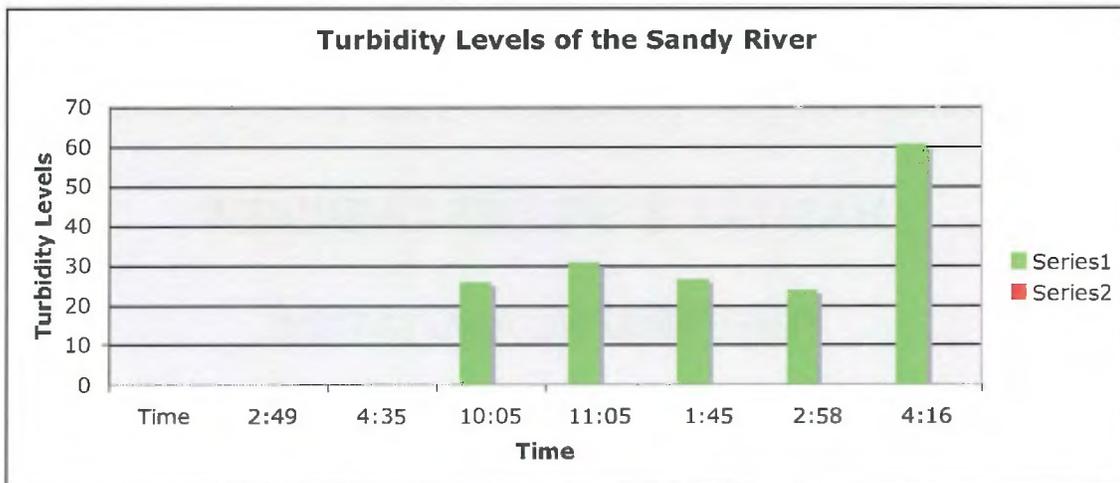
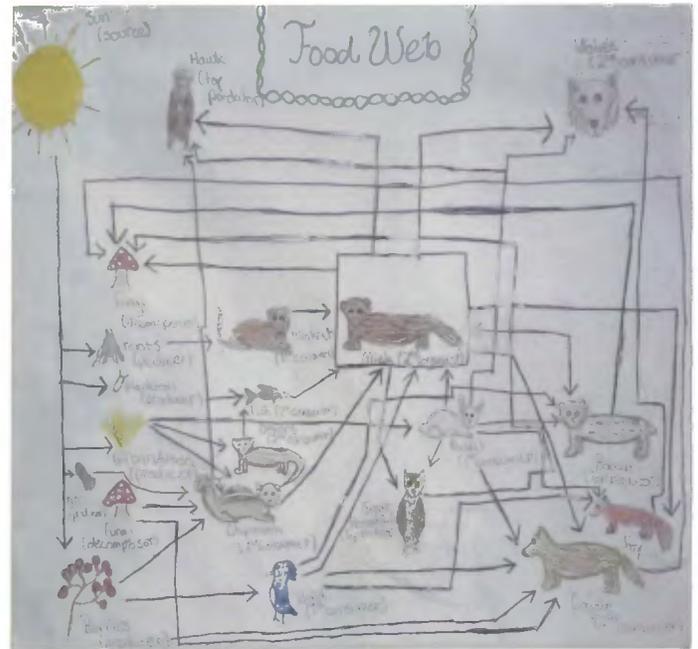


The mink has a long slender body that allows them to squeeze through and into the burrows of their prey; which they take more food than they need from.

ENVIRONMENTAL IMPACTS

The mink is nowhere near extinction even though they are hunted wildly and run over by cars. Mink are also not troubled by habitat abuse because they usually do not make their burrows; they use or steal others. And because of their wide variety of foods they do not starve. Mink do not have a vast amount of predators so they are not threatened by predatory destruction. So the mink is an animal that we should not be worried about, but we should not be careless with them because of it.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

In conclusion I would say that the Sandy River is moderately healthy. I think the main cause of this were the turbidity levels. The turbidity levels were quite high; which was probably because we were testing water that was at the shore line instead of in the middle of the river. I think the water temperature was at a healthy level as well as the pH. So based on this information I would say the river is able to sustain a lot of life but is not in excellent health.

Environmental Research conducted by: Isabelle Cordova

G O L D E N M A N T E L
S Q U I R R E L

Scientific Name: Callospermophilus lateralis

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ARTWORK AND WRITING BY JONATHAN CRANE

HABITAT & SPECIES OVERVIEW

THREE AMAZING ADAPTATIONS



The teeth are used for breaking shells of nuts.

The eyes are used for seeing things like food.

The ears are used for hearing things like hunters.

ENVIRONMENTAL IMPACTS

Humans and animals have been hunting this species of squirrel. Humans have been feeding the squirrels junk and the squirrels forget how to feed themselves and that will kill them in the winter.

FOOD WEB ILLUSTRATION



P O R C U P I N E

Scientific Name: Erethizon dorsatum

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ARTWORK AND WRITING BY Cross Devers

HABITAT & SPECIES OVERVIEW

THREE AMAZING ADAPTATIONS



The porcupine has sharp quills on its back that protect it from predators. They also detach when they come into contact with skin.

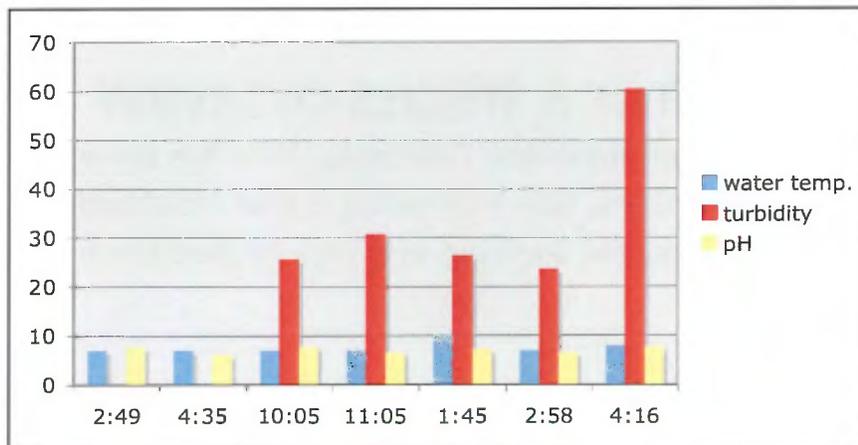
The porcupine also has a good sense of smell it can smell predators from long distances. Its nose is an invaluable tool for survival.

The porcupine also has sharp claws for digging and climbing. It cannot defend itself with them though.

ENVIRONMENTAL IMPACTS

Porcupines have lost their habitats mostly due to logging and human interactions. Porcupines also have quills that scare humans into killing them. Their claws also frighten people into attacking them to get off their lawn or out of the backyard. Humans prey on porcupines because they eat or destroy anything like shovel handles, boots and clothing that have salt from sweat on them.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

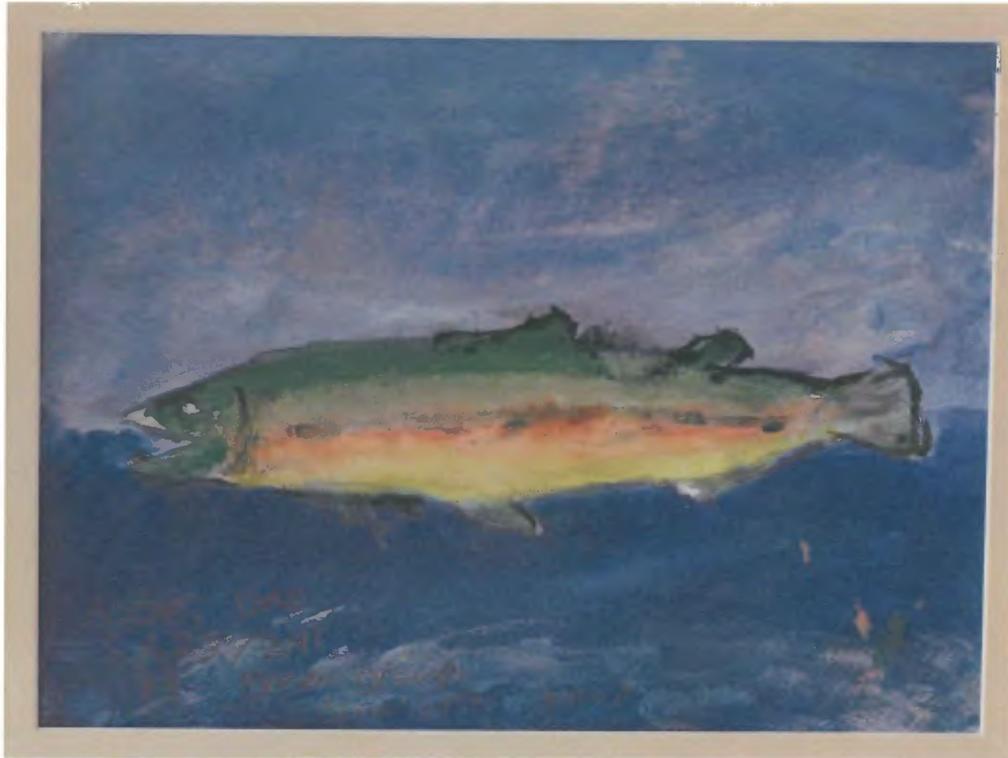
The Sandy River used to have a dam in the middle of it but was recently removed. Its removal caused many animals including salmon and many macro-invertebrates to return. In my research, the Sandy River had a good level of pH and its water temperature was also good. The river's turbidity was quite high. In my studies, I found that the river was in overall good health with the exception of the turbidity which was over 60.

Environmental Research conducted by: Cross Devers

S T E E L H E A D

*Scientific Name: **Oncorhynchus mykiss***

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ARTWORK AND WRITING BY Oscar Diaz

HABITAT & SPECIES OVERVIEW

Steelhead lives in the ranges of Oregon and California. They live there for the dissolved oxygen. They also live in streams. One interesting is that steelhead they are the same species as rainbow trout. They eat anything that they fit their mouth. Young steelhead eats eggs insects.

THREE AMAZING ADAPTATIONS



They have a highly developed sense of smell. They smell better than humans. They rely on it to get them back to their spawning place.

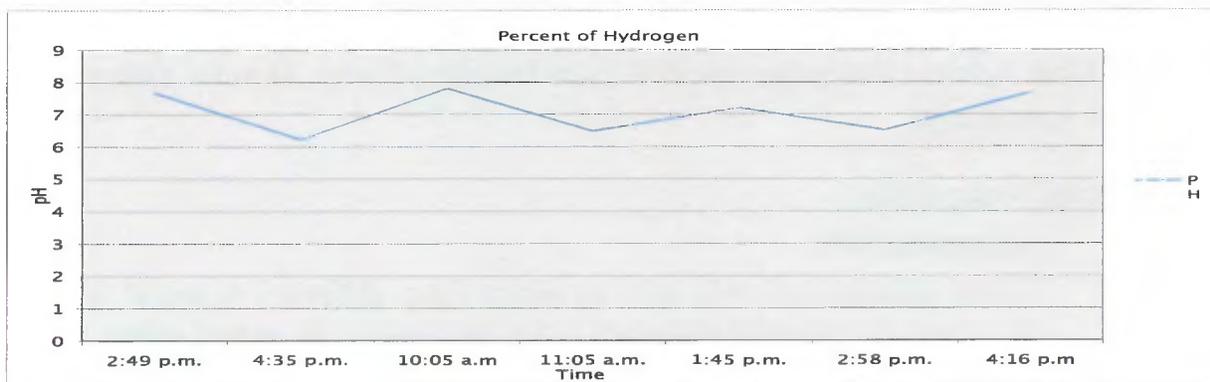
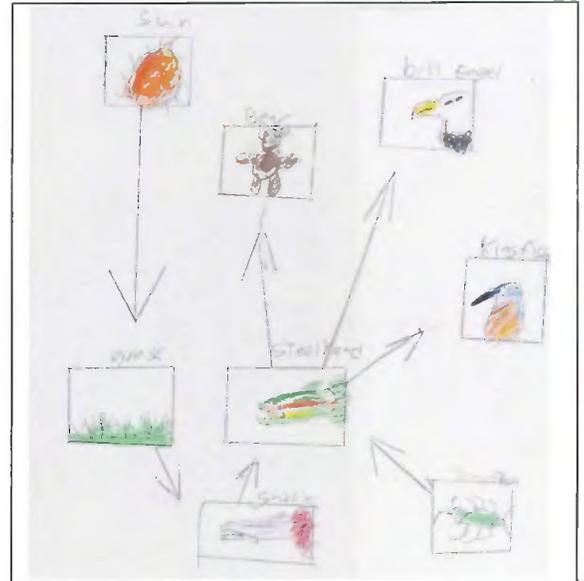
Their eyes can see up to 30 feet. They can see in great depth. Their sight shortens from the level of sediment.

Their mouth taste and feel their food. It helps them to feel their food. If it's real or not.

ENVIRONMENTAL IMPACTS

One thing that mankind impact steelhead in their environment is dams. Dams block their way. Even if people make fish ladder. Some fish don't even know how to go up it. Fish even get killed by dams. Another thing is fishing. Some people fish a little. Some people fish a lot when salmon are spawning back where they were born. One big one that affects steelhead is pollution. Some companies dump waste in water. Sooner or later the pollution travels to different part of water even rivers. It can stop steelhead to get where they need to go even die. Another one is waste. When like you are washing your car. All that soap goes down a drain, some drains go to rivers and that can kill fish and their food.

FOOD WEB ILLUSTRATION

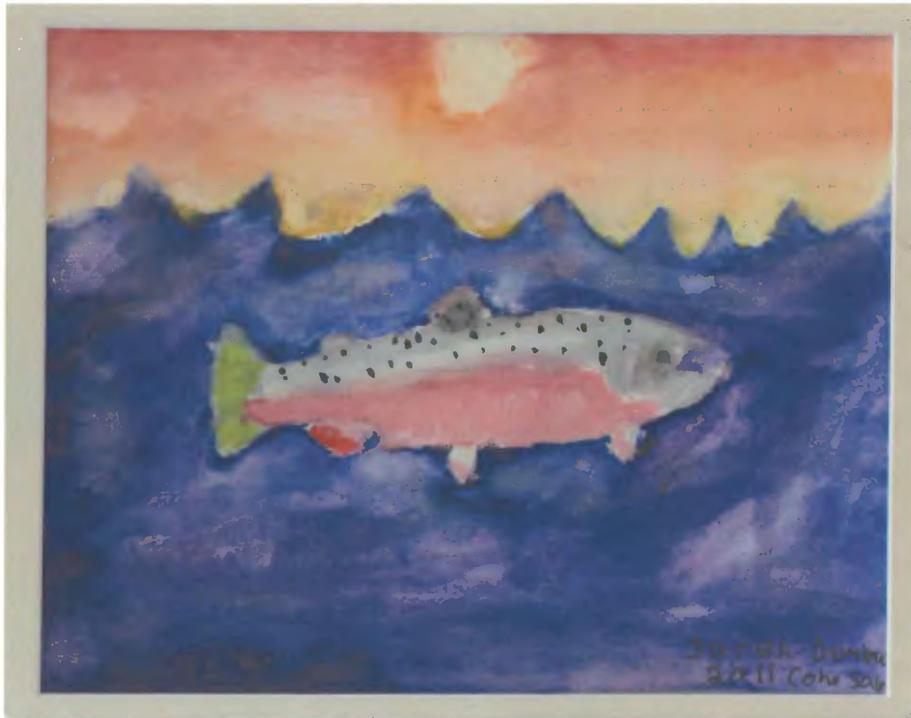


WATER QUALITY OF THE SANDY RIVER

Water temperature, pH, and turbidity can make you see if a river is healthy. Water temperature can tell what kind of fish live in a river. pH can decide if the river is good for fish or people. It should be around 6 or 7. Turbidity is how much sediment there is in the water. macroinvertebrates can see if a river is healthy. If there are a lot of them the river is really good. The Sandy River is healthy but there was a high level of turbidity because it was flooding, but we did find some macroinvertebrates.

Environmental Research conducted by: Oscar Diaz

C O H O S A L M O N
Scientific Name: Oncorhynchus
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ARTWORK AND WRITING BY JAREN DUMBROW

HABITAT & SPECIES OVERVIEW

Coho salmon live in water whether it's freshwater or ocean water. Coho salmon eat krill, it's kind of like a shrimp I guess it's like a relative; krill are a lot smaller than shrimp are. Male salmon are more colorful than female salmon. Female salmon create a depression called redd.

Three Amazing Adaptation

Adaptation #1



Coho salmon use their gills to adapt from different types of water, so when the salmon changes from freshwater to ocean water their gills have to adapt to the different types of water.

Adaptation #2



Coho salmon use their scales to blend in with other things around the fish so their predator can't see or find them.

Adaptation #3



Coho salmon use their fins to swim very fast around their predators, so when a salmon are around a bear they would have to swim very fast so they don't get caught or eaten.

ENVIRONMENTAL IMPACTS

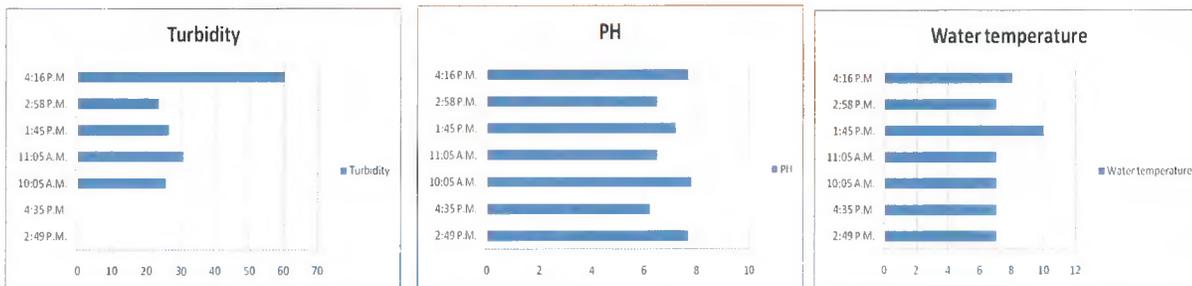
Humans impact Coho Salmon by fishing or over fishing. That can happen if your only aloud 2 fish and you get 5 fish. Humans impact the earth by polluting. That can happen if people throw trash in the water. If stuff like the oil spill in the gulf of Mexico than Coho Salmon will go extinct. People need to stop building dams or start destroying them. Yes it does give a little bit of energy but it's not worth it we can use other stuff that produces energy like wind-mills or solar panels.

FOOD WEB ILLUSTRATION



The water quality at the Sandy River was good; we found lots of different kinds of macroinvertebrates like crayfish . We also found lots of each kinds of macroinvertebrates. Also, depending on which kind of macroinvertebrates depends on the water quality. Some macroinvertebrates are healthy for the Sandy River. For the math part of the water quality, the water quality was good. The pH was really high, but the water temperature was at a good rate. For the turbidity was also at a good rate. So I think that the Sandy River's health overall was good, even though the turbidity was very high.

WATER QUALITY GRAPH OF THE SANDY RIVER



Enviromental Research Conducted By: Jaren Dumbrow

W E S T E R N T R I L L I U M

Scientific Name: Trillium Ovatom

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ARTWORK AND WRITING BY Fleming, Kaden

HABITAT & SPECIES OVERVIEW

North America has a lot of insects, and the trilliums depend on insects. One way they need insects, is for them to be fertilized. Another way is they depend on insects to carry their seeds to different places. Western trilliums can live up to 72 years; it has lots of colors and habitats. The colors it has are white, red, pink, purple, and yellow. They can live in open woods, in the forest, and along stream banks.

THREE AMAZING ADAPTATIONS



It dies, and the life goes back into the underground part of the plant. Then, it grows again the next spring. This plant has a 6-8 week life cycle.



The plant puts out a freshly organ called elaiosome, which gives off a scent that ants like, and they take the seeds and plant them in there hill.

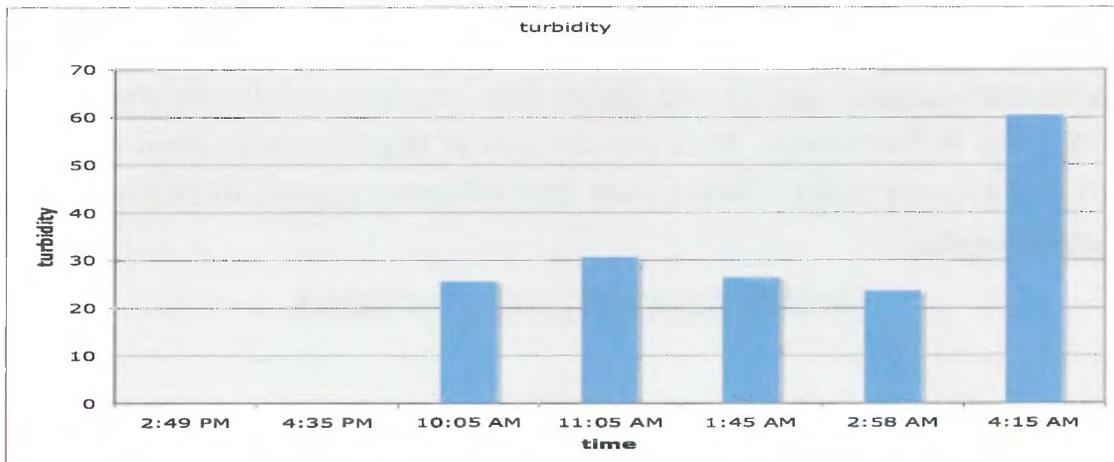
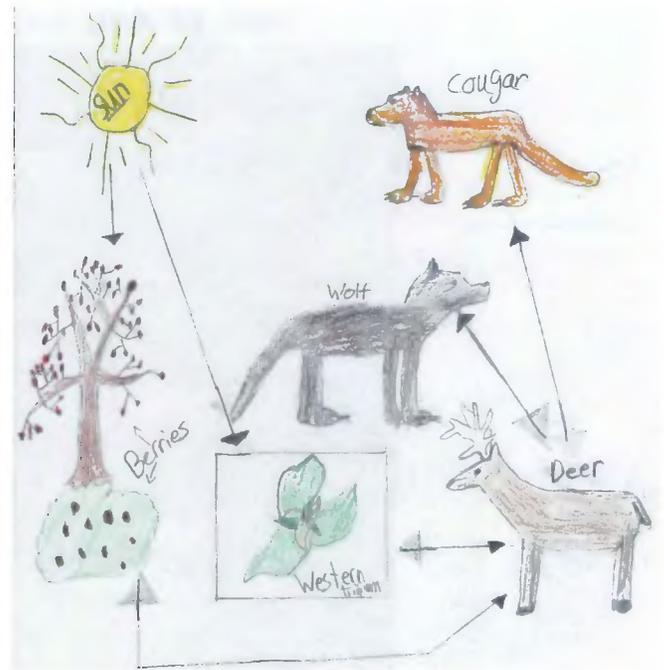


Long term survival of the flower in the ice age, they depended on deer to carry their seeds long distances, to warmer climates.

ENVIRONMENTAL IMPACTS

We pick the flowers, and they won't grow again for 7 years. Humans also deforest, and that kills a lot of trilliums. We pollute the forests as well. When we do these things, they can't reproduce. Deer do eat the flower and bring the seeds to warmer climates, then it drops it and later in the year it grows. Ants also effect these flower. They think it is food for them, so they bring it to their hill, and despose of it. The flower grows there. This floweris secure, so we don't have to worry about its survival.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

In late March, my class and I went to the Sandy River to see how healthy the river was. There are three ways we checked to find out if the river is healthy or not. We studied the pH, water temperature, and the turbidity. The water temperature is cold. that has lots of oxygen. Turbidity is a measurement of how much sediment/particles are in the water. The turbidity is really high. The pH affects the river because, the lower the pH, the more acidic the water. The higher the pH, the more basic the water is going to be. The pH is also good. We found some macroinvertebrates. They tell us if the water is healthy, or not. They also tell us if there is a lot of oxygen, or a little of oxygen.

R A Y F I S H

Scientific Name: Procambarus Clakii (red swamp Cayfish)

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ARTWORK AND WRITING BY Callen Guillory

HABITAT & SPECIES OVERVIEW

Crayfish are omnivores, that means they eat meat and plants. Some of the predators of the crayfish are otters, reptiles and bigger fish. crayfish can live in the ocean, but most species live in freshwater. They usually stay at the bottom of clear rivers and ponds and stay on rocks. They're over 500 different species of crayfish and most live in North America.

THREE AMAZING ADAPTATIONS



Exoskeleton: The crayfish's exoskeleton makes a great defense. It helps them hunt for food. It molts its exoskeleton as it gets bigger.



Claws: The claws of a crayfish are strong. It is used for defense and for catching prey. If its leg is broken it can grow it back.

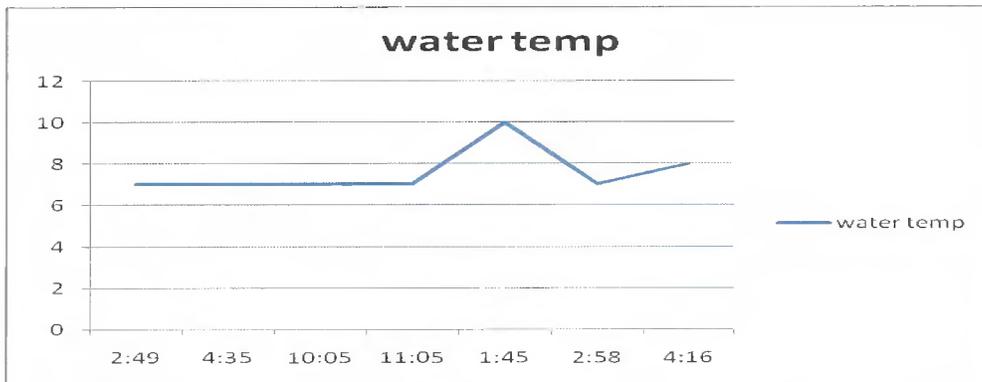
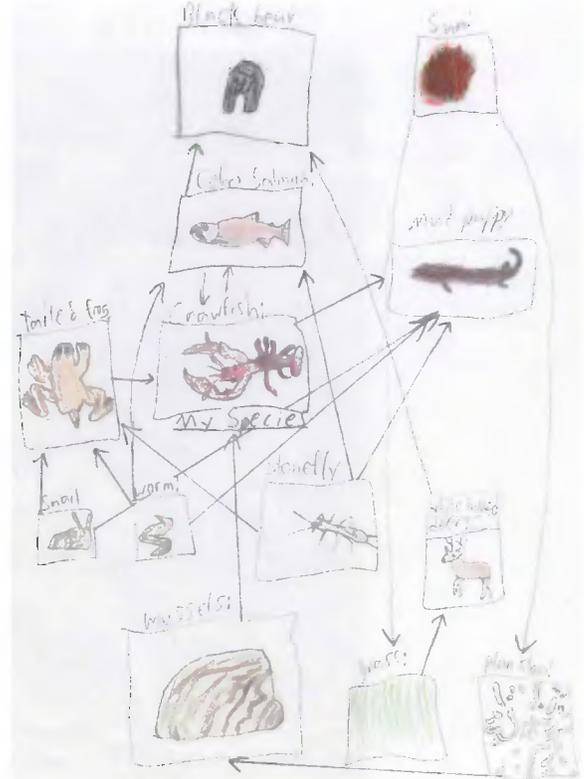


Carapace: The carapace is the hard shell in the center of the body. The carapace is the hardest part on the crayfish's body.

ENVIRONMENTAL IMPACTS

Crayfish's habitats are being ruined due to dams (or dam) in the Sandy River. When their habitats are destroyed they can't survive because they could starve without their needed prey. Their numbers also decrease because of water pollution and siltation in their habitats. And because of this, 65 species of crayfish are endangered. Crayfish are served at many restaurants across the globe, except this is not one of the major concerns for crayfish.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

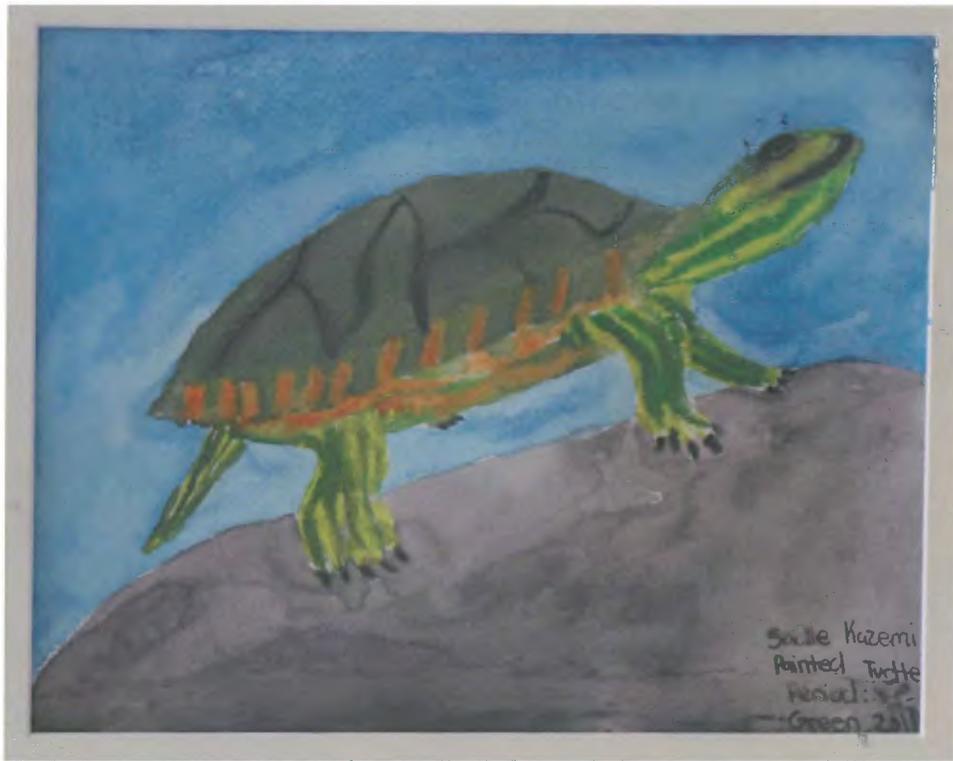
The water quality of the Sandy River is measured in three ways. The pH (the acidic level), turbidity (how clear the water is), and water temperature. We did these measurements 7 times for the three days we were there. The average pH measurement was 7.0757142, the average turbidity was 32.94, and the average water temperature was 7.5. Water quality is also determined by the visible spineless macroinvertebrates in the Sandy River. Macroinvertebrates are what make rivers be named healthy, especially when you have a variety of them because then you know that the river can support so many creatures. They also play a congenial role in the food chain.

P A I N T E D T U R T L E

Scientific Name: Chrysemys Picta

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ARTWORK AND WRITING BY Sadie Kazemi

HABITAT & SPECIES OVERVIEW

The Painted Turtle is about 5 inches long lives in Southern Canada and Southwestern part of the U.S. They live in fresh water. They have webbed feet, which help them swim and they have special organs in their nose that helps them sniff out prey. They eat frogs, tadpole's small fish and insects. Painted turtles have lots of colors on their shell to help them blend in with their surroundings.

THREE AMAZING ADAPTATIONS



The Painted Turtle uses **camouflage** to blend in with their surroundings. They have colors on their shell such as orange, black, and brown to blend in with their wetland environment.



The Painted Turtle **webbed feet**. They are like fishing nets, they scoop tadpoles and frogs and their prey with their feet.

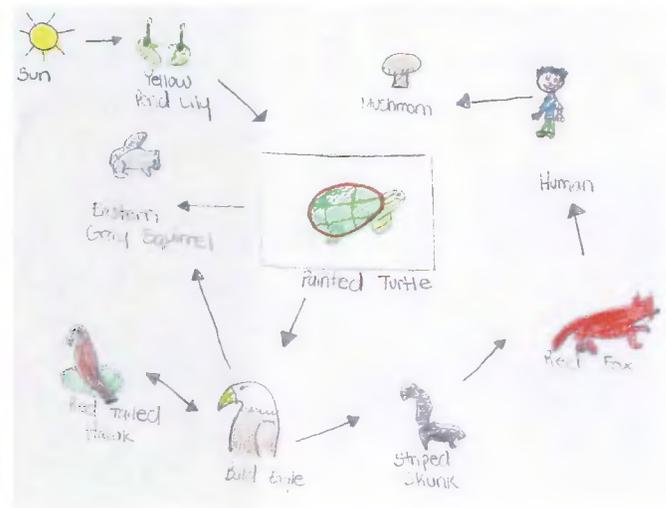


The Painted Turtle have special devices in their nose that helps them sniff prey. It's called **Jacobson's organ**.

ENVIRONMENTAL IMPACTS

The Painted Turtle is one of the least concerned animals for extinction. The humans impact the turtles, by polluting. They are also hurting the turtles by dumping in their homes, also known as the water. Though the turtles have the least concern of extinction, these turtles are probably not the turtles that are getting hurt by humans. The populations of Painted Turtles slowly are decreasing because of habitat loss and road killings. Their waters are getting polluted, and it's hurting them. When their water gets polluted it kills the things in it as well as destroy the home of the Painted Turtle.

FOOD WEB ILLUSTRATION



WATER QUALITY OF THE SANDY RIVER

Time	Turbidity	pH	Water Temperature
2:49 P.M.		7.67	7
4:35 P.M.		6.22	7
10:05 A.M.	25.6	7.8	7
11:05 A.M.	30.7	6.47	7
1:45 P.M.	26.4	7.2	10
2:58 P.M.	23.6	6.5	7
4:16 P.M.	60.4	7.67	8

During our stay at Camp Collins, on the Sandy River, we measured different qualities of the water. The pH of a river is best at the neutral level of 7. The water temperature is how cold or how hot the water is. We also measured the NTU. The water pH was very healthy, we had around 7-10 for the pH, which is very pure. The temperature was at a good level too. Depending on what macroinvertebrates we find determines what the river quality is. We found caddisflies and stoneflies and they only like to live in the best water, because their fragile.

Environmental Research conducted by: Sadie Kazemi

P E R E G R I N E F A L C O N

Scientific Name: Falco Peregrinus

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ARTWORK AND WRITING BY Ben Lemoine

HABITAT & SPECIES OVERVIEW

The Peregrine Falcon lives and nests on cliff edges. Sometimes they nest on tall buildings or skyscrapers. The Peregrine Falcon is the fastest bird in the world. It can reach speeds up to 200 miles per hour during its power dives where it snatches its prey from the sky. The Peregrine Falcon mostly hunts in open areas along the coast. Their diet is mostly made up of other birds.

THREE AMAZING ADAPTATIONS



1. The Peregrine Falcon has feet with claws on them. These claws are adapted to hold on to its prey during flight.



2. The Peregrine Falcon has a specially adapted tooth that is used to snap their prey's neck.

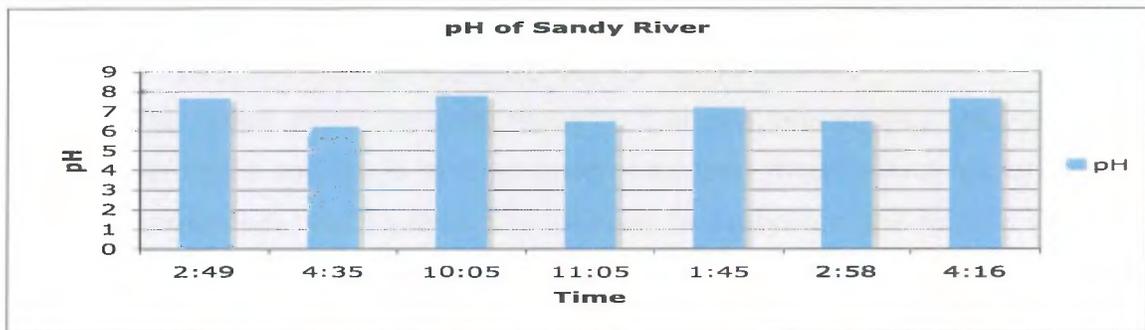
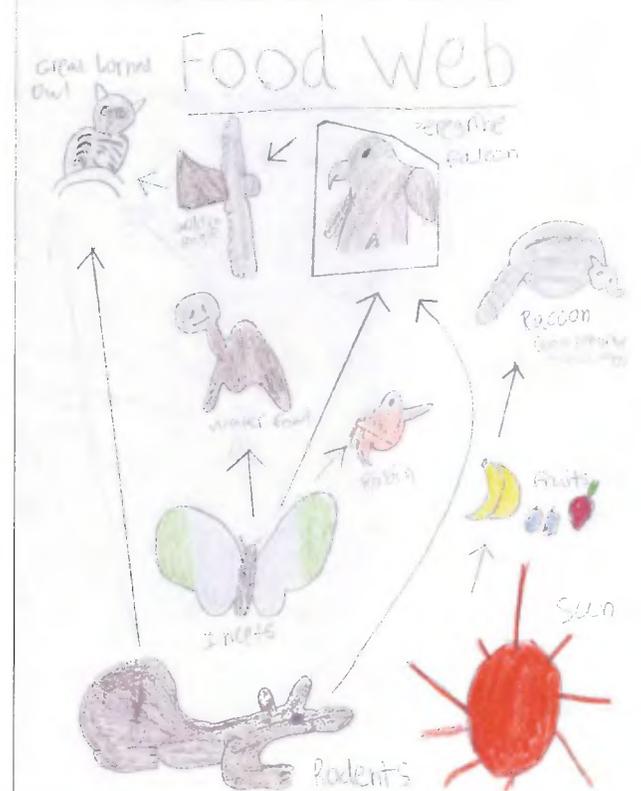


3. The pressure produced on one of the Peregrine Falcon's power dives would damage their lungs. They have special nostrils to reduce the pressure.

ENVIRONMENTAL IMPACTS

My species, the Peregrine Falcon, is not in very good shape. It is on the endangered species list. This mainly is because of two reasons. One is because during World War Two, peregrine falcons killed many carrier pigeons. Carrier pigeons were used to transport secret messages to France. As a result, many Peregrine Falcons were hunted and killed. The second reason is due to habitat loss. Peregrine Falcons like to nest by water but so do humans. So their habitat is being destroyed.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

For this project, we tested the pH, turbidity, and water temperature of the Sandy River. pH is the level of acid in the river. 7.0 is considered neutral. The water temperature is the temperature of the water measured in Celsius. We also tested the turbidity, which is the amount of sediment in the water. The pH affects the organisms in the water because if the water has too much acid or base in it, they could die. The water temperature affects the organisms in the water because they can only live up to a certain temperature. The Sandy River is in very good shape.

C O P E ' S G I A N T S A L A M A N D E R

Scientific Name: Dicamptodon Copei

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ARTWORK AND WRITING BY TYLER LOESCHER

HABITAT & SPECIES OVERVIEW

The Cope's Giant Salamander lives in freshwater streams, rivers, lakes, and marshes. They are native to the Pacific North West and spend most of their time under rocks. The Salamander usually mature and reproduce in their aquatic form without metamorphosing into a terrestrial adult. Lastly, their skin is the color of the rocks that they stand on so they blend in.

THREE AMAZING ADAPTATIONS



They have short gills that let them breathe and live under water.

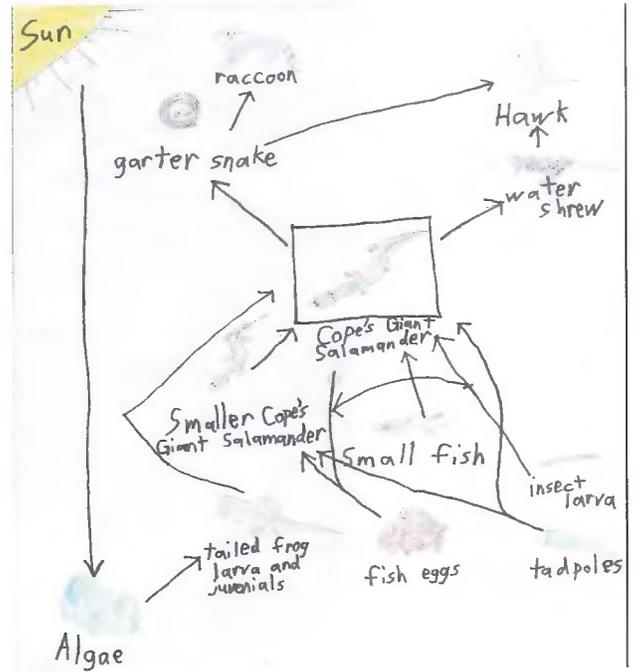
They have a tall thin shaped tail fin that helps them move through the water.

Their skin has the same pattern as the stream/river/lake/marsh they live in.

ENVIRONMENTAL IMPACTS

The Cope's Giant Salamander is not endangered, but logging could change that. When humans log, it puts silt in the water. Silt kills them because they can't breathe in it. If logging stops, at least by the rivers and streams, they can live for a long time.

FOOD WEB ILLUSTRATION



F O U R - S P O T T E D C H A S E R

Scientific Name: Libellula Quadrimaculata

WATERCOLOR 11X14 • MAY 2011
HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY JUSTIN LU

HABITAT & SPECIES OVERVIEW

The Four-Spotted Chaser is a dragonfly that comes from the libelludae family. They can be found in North America, Europe, Asia, and the North part of Africa. They live near acidic ponds, lakes and slow flowing rivers. Poisoned, polluted or unhealthy water may be a threat to the Four-Spotted Chaser. On average, they are 43 mm, and their wingspan is 75 mm. Like butterflies, they start out as larvae and evolve into dragonflies.

THREE AMAZING ADAPTATIONS



In the larvae stage, they cover themselves up in large amounts of setae, which can trap accumulated debris. The setae can also help camouflage, since it is easy prey for birds.



Without its wings, this dragonfly wouldn't be able to catch its prey. They fly in a rapid, jerky motion. They also use their wings to mate, which only lasts about 5-8 seconds.

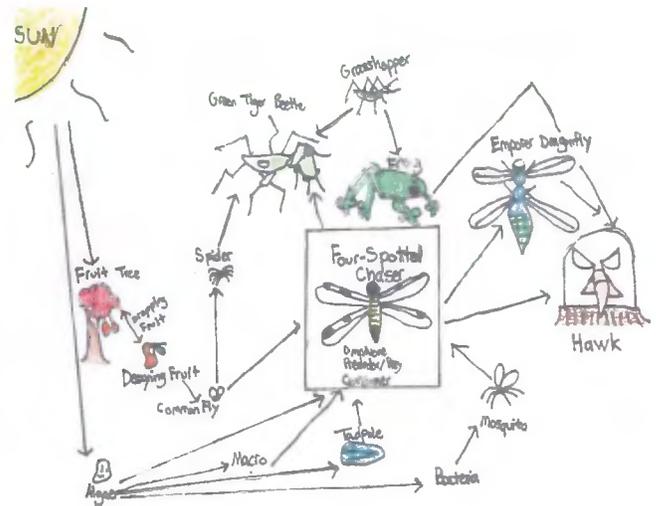


It has small, long legs that allow it to walk over soft mud in ponds and ditches in search of their prey. They have the nickname "Mudspawler".

ENVIRONMENTAL IMPACTS

Four-Spotted Chasers are usually found around acidic lakes and ponds. These creatures are very delicate and any change in their environment can be deadly. If their habitats (lakes, ponds and rivers) are polluted, and then they drink it, they will probably be poisoned and die. If their lakes suddenly go from a 7 pH to a 7.5 pH, chances are they will either be dead or they would have to move and find a new home. Air pollution and global warming may intercept their flight pattern. However, they are so abundant around the world that they are least concerned and won't go extinct for a long time.

FOOD WEB ILLUSTRATION



W I L L O W T R E E

Scientific Name: Salix

WATERCOLOR 11X14 • MAY 2011
HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY BEN MABREY

HABITAT & SPECIES OVERVIEW

The Willow Tree is a strong tree that usually looks old and likes to live near bodies of water so that it can grow better though it can still live easily in other areas. Trees can make food from simply absorbing the sun into their leaves which starts the miniature food making factories inside them. Also, it breathes in carbon dioxide (the thing that humans breathe out and is toxic to humans) and breathes out good air (oxygen) so that it helps oxygen breathers to live. The Willow Tree lives in the forest, tropical, wetlands, grasslands and maybe jungles so it also helps the habitats a lot as animals can live in it or eat it. Despite all that, the tree does for the environment, humans still recklessly over log the trees, which are used for all kinds of crafts (willow ware) and even medicine (aspirin), and burn them. The biggest threat to these trees' survival is the pollution of waterways which it relies. Also farmers destroying them because the willows roots are far spreading and can interfere with agriculture. So next time you see a tree, always remember to admire the benefits of the Willow Tree and to remember all that the Willow Tree does for the environment.

THREE AMAZING ADAPTATIONS



The Willow Tree has adapted to the environment by digging in huge roots into the ground. They are able to survive storms and/or powerful forces. These strong, far traveling roots also find water sources.

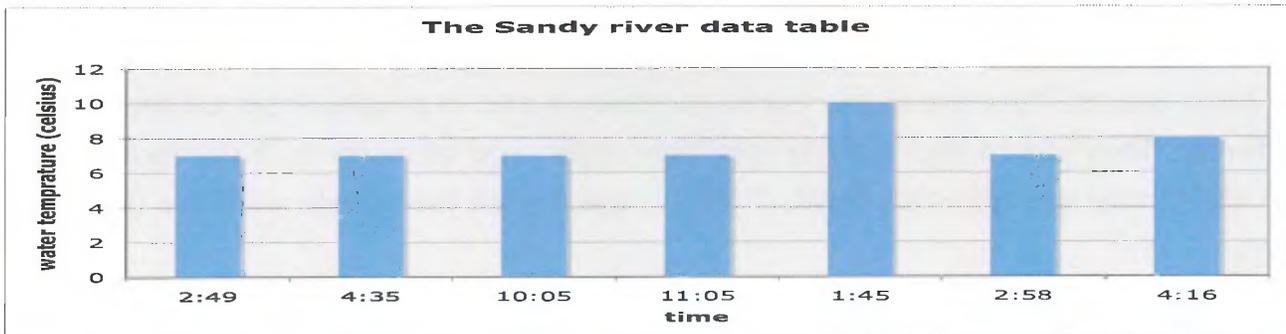
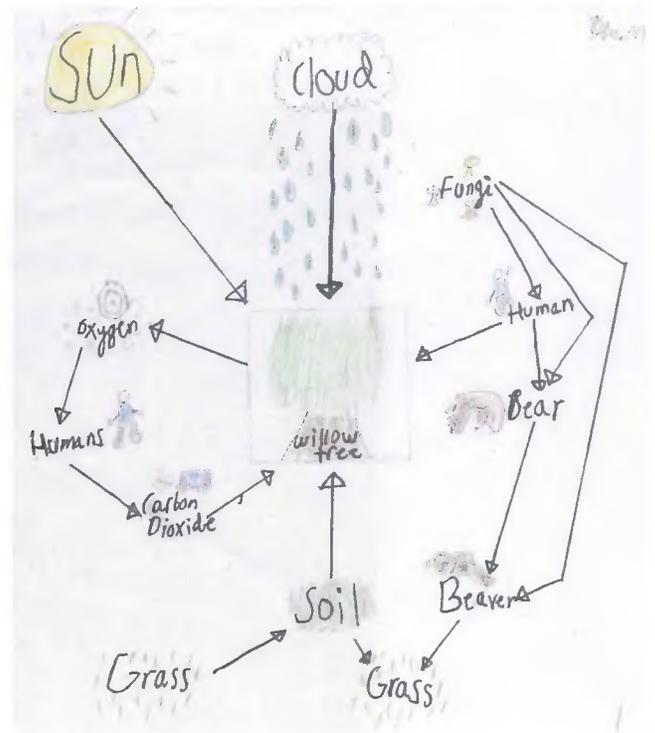
Willow Trees have a tough layer of bark to defend itself against a lot of things, such as storms, animals, and people.

Its many leaves help the tree by making food for it through the sun-powered miniature food-making factories inside it.

ENVIRONMENTAL IMPACTS

As the human population continues to grow so does the need for raw resources grow, as humans need plants and animals to survive. For example, humans chop down trees for wood then hunt (or poach) animals for meat. Then humans can accidentally cause forest fires with machines and campfires or destroy habitats. Unfortunately although a lot of things are out of necessity or accidents, we still pollute water, over log, hunt and confuse animals with our technology in order to make way for us. The willow tree is considered a decorative tree and prized for its beauty in gardens, but in the wild, pollution and purposeful destruction are taking its toll on the various kinds of willows. Wild willow trees are becoming rarer and rarer as its habitats are destroyed and as the trees themselves are harvested for human use or destroyed to make farmlands and paved roads free of the willows' roots.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

So in conclusion from all the information that we observe from the graphs, the Sandy River is fairly good but not great. I can say this because most of the levels are good PH levels average is around 7, which is pretty good. Then for temperature we got an average of 7-8 which is good as well. However turbidity is the part that gets bad as all the levels exceeded the normal level and are pretty high so the score for turbidity is poor. We also know that it is healthy because of the type of macroinvertebrates we found, as these macroinvertebrates can live only in healthy rivers. So all in all the other levels still balance out the turbidity and the Sandy River is still a healthy river.

B L A C K T A I L E D D E E R

Scientific Name: Odocoileus hemionus

WATERCOLOR 11X14 • MAY 2011
HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY Payton McCoy

HABITAT & SPECIES OVERVIEW

The black tailed deer is an herbivore that eats grasses, berries, acorns, forbs, ferns and other plants. They live in the Pacific Northwest and in brushy areas on the edge of the forest. They like to live in areas that have brush and some trees. If the food is low than the female will have one fawn. If food is good than the female will have two fawns.

THREE AMAZING ADAPTATIONS



If the food is low than the female will have one fawn.
If food is good than the female will have two fawns.



They have large ears to hear the slightest movements of its predators.



The male deer have antlers to help them defend their territory.
They also compete for mates by fighting another male.

A M E R I C A N B L A C K B E A R

Scientific Name: Ursus Americanus

WATERCOLOR 11X14 • MAY 2011
HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY ASHER MORAN

HABITAT & SPECIES OVERVIEW

The American Black Bear typically lives in forested areas. This animal is a top predator; it eats all, but nothing preys on the bear. Human environments are attracting bears and they're eating the garbage. This is the smallest and most common species of bear. It is usually found on the West Coast. Their diet consists of lots of berries and meat. This makes the American Black Bear an omnivore.

THREE AMAZING ADAPTATIONS



The claws help kill their prey. This also helps them climb trees and make claw marks on a tree to establish dominance.



Their nose can smell prey from miles away. A way this doesn't help the bear is that it can get stung by bees.

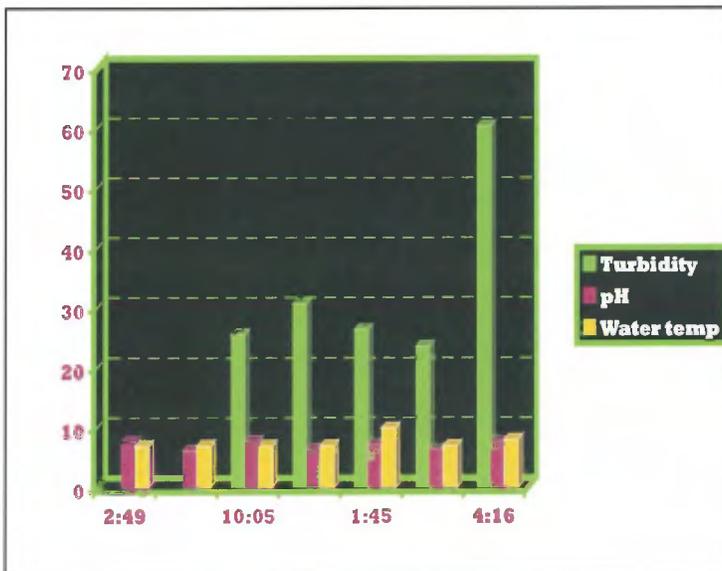
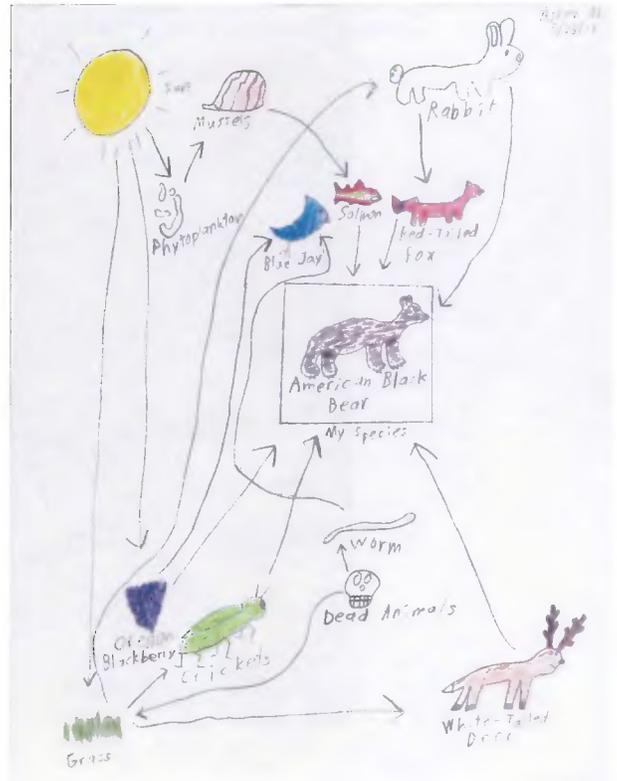


The bear's fur keeps it warm. It also protects the bear from bee stings when trying to get honey.

ENVIRONMENTAL IMPACTS

My species, the American Black Bear, is of least concern when it comes to endangerment of bears. It is actually the most common bear; adding up to about half of the total current bear population in North America. Deforestation is destroying the bears' habitat though. (However, other bears are harmed more than this one.) Deforestation is also damaging the habitat of animals and plants that the American Black Bear eats; making it harder for them to find food. Human communities are moving in on the bears' territory and are attracting these bears with their easily accessible food in their garbage cans. This makes the bears lose their need to hunt and find food, and makes them comfortable around humans.

FOOD WEB ILLUSTRATION



WATER QUALITY OF THE SANDY RIVER

Looking at certain macroinvertebrates living in the river, you can determine the river's health. Based on the macroinvertebrates we found, the Sandy River is in good health. The river's health only receives a "good" rating because of all the rainfall we had which washed a lot of sediment into the river.

Environmental Research conducted by: Asher Moran

O R E G O N S L E N D E R
S A L A M A N D E R

Scientific Name: batrachoseps wrightorum

WATERCOLOR 11X14 • MAY 2011
HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY Cameron O'Brien

HABITAT & SPECIES OVERVIEW

The Oregon Slender Salamander is vulnerable or threatened from habitat loss.

It is red and black with white spots. The red is on the back and the black is the stomach. They live in Hood River and Clackamas County Oregon at around 1800 feet. The scientific name for the Slender Salamander is *Batrachoseps Wrightorum*.

THREE AMAZING ADAPTATIONS



adaptation #1: The Oregon Slender Salamander is incapable of "breathing" or "drinking". It uses its epidermis for hydration.



adaptation #2: It has an elongated body and miniaturized limbs and eyes.



adaptation #3: It has forward pointing eyes that help it judge distance and makes it easier to catch bugs.

ERMINE

Scientific Name: Mustrela Erminia

WATERCOLOR 11X14 • MAY 2011
HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY ANGELA PALMA

HABITAT & SPECIES OVERVIEW

Ermine have small faces big black eyes, sharp teeth, claws, and black tip at the end of their tail. They can live up to 13 years, and are about 15–23cm long, also have litters of 7. They are found in 4 ranges such as Asia, Europe, North America, and Greenland. Their habitat may either be forests, taigas, or tundra's. Their homes may be woodlands, meadows, abandoned burrows, and or mountain areas.

THREE AMAZING ADAPTATIONS



In the summer the Ermines' **coat** is rich brown with a white belly. In winter the coat is thicker and pure white. This helps blend in through **camouflage**.



An Ermines' front **paws** are smaller than the back paws. This helps them fit into small places, they also have claws which enables them to dig.

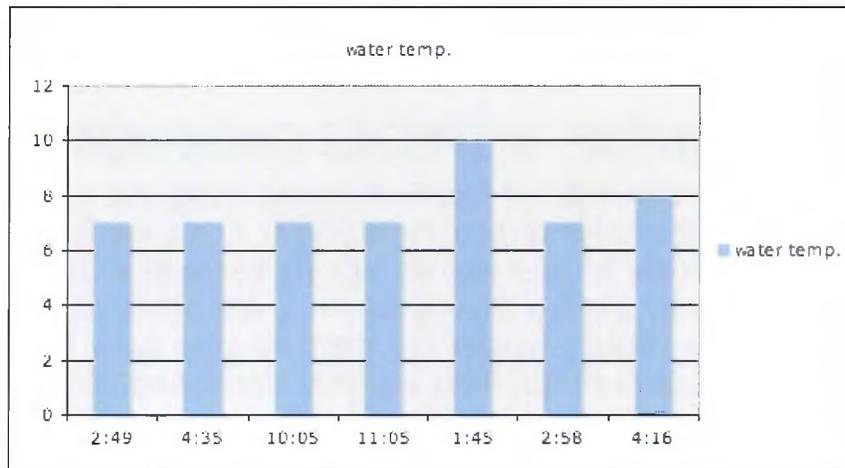
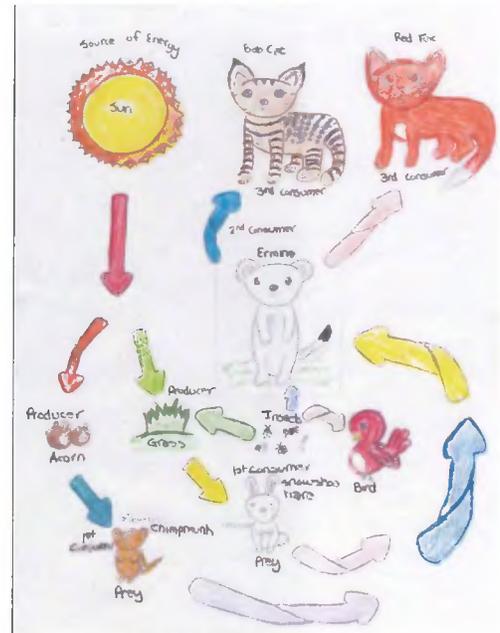


The Ermine is a carnivore since they have **sharp teeth** it helps them to catch larger animals than themselves.

ENVIRONMENTAL IMPACTS

Through out the world, pollution in habitats is harming the environment of animals. The Ermine status is the least concern right now, they are not endangered at all. People used the ermines white coat to make trimmed coats or stoles. They also are trapped by humans through out the world and they are kept at home as a pet. Why humans trap Ermine is because they help to control pest population of rodents such as mice or rats. This may be harmful to humans.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

During the stay at Camp Collins, we measured different qualities of water on the Sandy River such as, water temperature, pH, and turbidity. Water temperature was a range of 6–7 and was a good level. This is important because if the water is too warm or too cold it makes it hard for the fish to breathe. The pH was around 7–10 and the water was pure, if the water is too basic or acidic organisms will start to die. Turbidity is important because if the level is too high the sediment will build up in the water, and may cause of no results of macros. Also in the river we found caddisfly and mayfly macroinvertebrates. This qualified that the river is healthy.

F L Y I N G S Q U I R R E L

Scientific Name: Gla

WATERCOLOR 11X14 • MAY 2011
HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY HANSIKA RAU

HABITAT & SPECIES OVERVIEW

Flying Squirrels live in the forests of North America. They live up to six years in the wild. They make nests out of abandoned woodpecker holes made in conifer trees. Flying Squirrels glide from tree to tree but do not fly because it saves energy to glide. Though they save energy by gliding, Flying Squirrels are not capable of powerful flight like birds or bats so it is slightly harder for them to stay away from their predators. Flying Squirrels are blind at birth but have a highly developed sense of smell.

THREE AMAZING ADAPTATIONS



Flying Squirrels **eyes** are noticeably larger than other squirrels eyes. Their eyes allow them to see in the dark. By being able to see in the dark, Flying Squirrels can protect themselves from their predators.



In the winter, Flying Squirrels **den** with up to twelve other squirrels to stay warm. Flying Squirrels den with twelve or more other squirrels because the heat that their bodies generate will last longer.

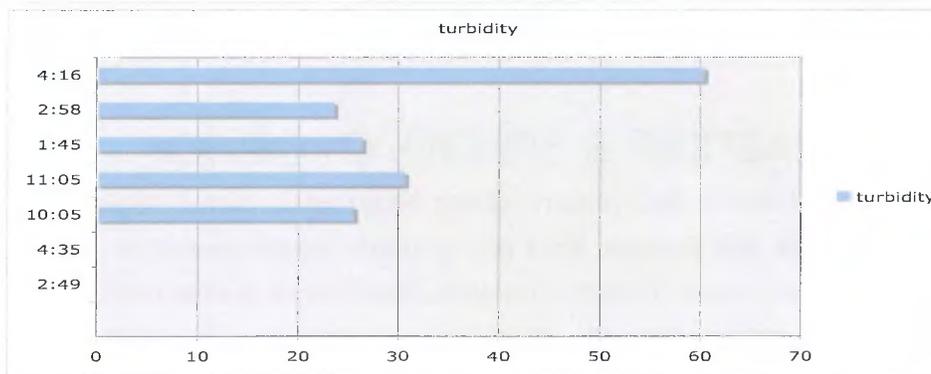
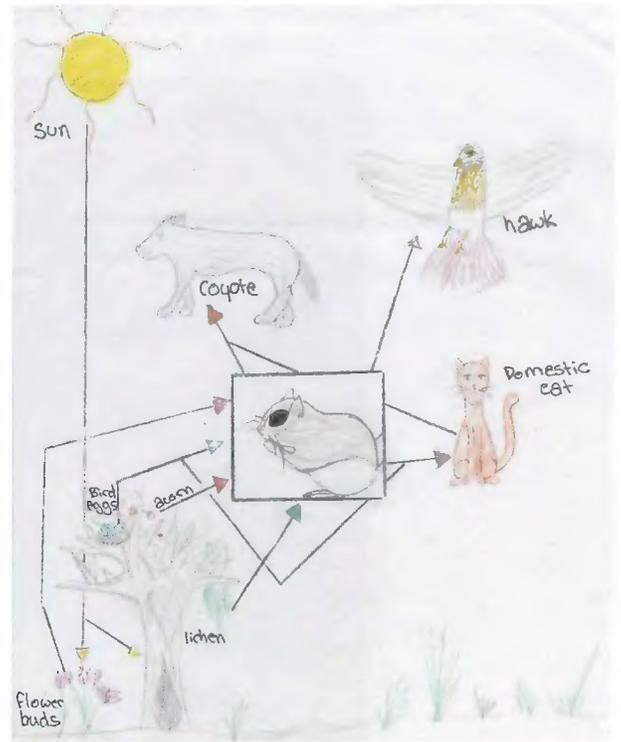


Flying Squirrels have sharp **claws** that help the squirrel to grab on to things and to get a good launch for when they glide. Because they don't retract, the Flying Squirrel is able to react to a sudden landing faster.

ENVIRONMENTAL IMPACTS

Flying Squirrels are being impacted by humans. When we cut down trees we destroy their habitats and if we destroy their habitats they will have nowhere to live. Flying Squirrels depend on trees for a big part of their survival. Destroying trees doesn't only effect their homes but also the things that they depend on. Humans also litter and if a Flying Squirrel finds the trash and eats it thinking it is food then they could die. When humans enter their environment we frighten them or put them in to shock causing them to die. When a Flying Squirrel dies it's young might not be able to survive. Many other squirrel species are facing the same problems. And humans are a big cause of extinction. Flying Squirrels are not prone to extinction as much as other animal species.

FOOD WEB ILLUSTRATION



WATER QUALITY OF THE SANDY RIVER

We wanted to test the water quality of the Sandy River. We tested for pH, water temperature, and turbidity. Another indicator of the water quality was the different macroinvertebrates that lived in the water. The amount of macros that we found told us that the water could sustain life. For this project we first tested the pH level of the water. We got an average result of 7.07. Next we tested the water temperature and got an average result of about 7° Celsius. Last we tested the turbidity to get an average result of 33.34 NTU. The turbidity of the water is not very good; there is a lot of sediment in the water. In all the water quality of the Sandy River is pretty good based on the different measurements we observed.

D E E R F E R N

Scientific Name: Blechnum Spicant

WATERCOLOR 11X14 • MAY 2011
HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY TRAESON RINELL

HABITAT & SPECIES OVERVIEW

The Deer Fern is found in the western states (starting in Idaho) regions of North America, and some grow in Asia and Europe. This plants main growth period is in the spring and summer, and they are evergreens in most climates. Deer Ferns prefer moist shaded habitats, like in deep woods. They also prefer well-drained, nutrient rich soils. They can also grow on decomposed organic material, for example, a fallen tree. When growing /fully grown, they are 8–20 inches tall, and about 3 feet wide.

THREE AMAZING ADAPTATIONS



One of the Deer Ferns few adaptations is their spores. Their spores are basically their seeds. They get rid of their spores before winter, and they don't come back.

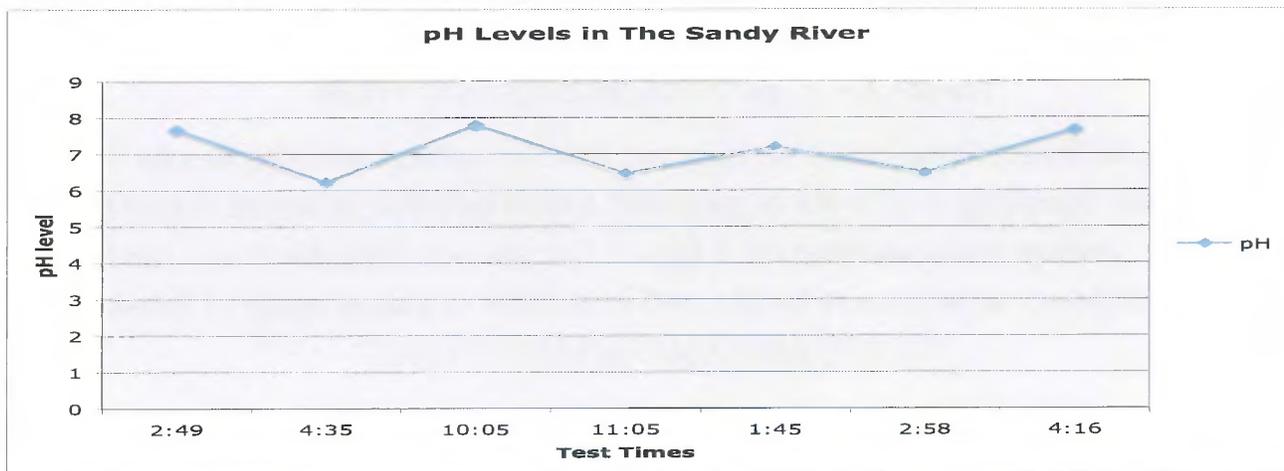
Another adaptation of a Deer Fern is their adaptation to the shade. They have adapted to the shade and they do not need much sun. Usually, they prefer shaded habitats, from partly shaded to living in complete shade.

A third adaptation of this plant is diet. This fern relies dominantly on water, because they live in the shade.

ENVIRONMENTAL IMPACTS

The Deer Fern is anywhere between common and highly common in its habitats. One way humans can affect this fern is if there was any water pollution, and the fern "drank" it. This can also affect the food chain, if a deer or goat eats the fern, they can get sick, and maybe die, or another animal would eat a sick animal, and so on. Humans can also, possibly, if not naturally, create small forest fires. The small burnt areas provide easy access to let other ferns grow, so ferns may release their spores then, and repopulate that area with Deer Ferns.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

In conclusion, the Sandy River is overall moderately healthy. The pH levels and water temperatures were within a healthy range and was very healthy. The turbidity levels, however, were too high and way out of a healthy range. This may have been because there was a lot of rainfall during the testing days. If there had been less/no rain, then turbidity levels would have most likely been within a healthy range.

Environmental Research conducted by: Traeson Rinell

O S P R E Y

*Scientific Name: *Pandion Haliaetus**

WATERCOLOR 11X14 • MAY 2011

HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY Joey Sacco

HABITAT & SPECIES OVERVIEW

Ospreys live in forests near water so they can fish. Its habitat includes Russia the united states. Specking of fish the osprey eats a 99% fish diet! When its hunting it hovers over shallow water wafting for a fish. if fish are not available it will hunt small mammals. Ospreys usually mate for life and only mate in a area north of Russia.

THREE AMAZING ADAPTATIONS



1. The digestive tract has become able to suffice and receive enough nurturance from a diet composed only from fish



2. The claws have developed opposable claws to grip their prey and other things so they can carry them far distances.

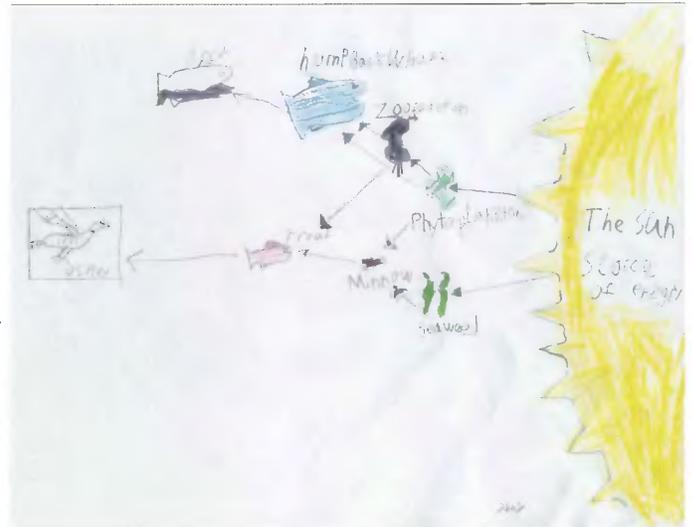


3. Ospreys have well adapted eyes so they can see far underwater from high up in the sky to see fish deep in so they can hunt efficiently.

ENVIRONMENTAL IMPACTS

The Osprey is categorized least concern. It is not declining fast and its habitat covers 3.7 million square miles. The Osprey bird is doing well now, but back in the 1950's they were in decline due to DDT use. It was weakening their eggs and killing the babies. But since the ban of DDT osprey is not suffering. They are not bothered by deforestation because they will make nests in manmade structures.

FOOD WEB ILLUSTRATION



WATER QUALITY OF THE SANDY RIVER

Water Quality

We measured characteristics of water quality on the Sandy River. These measurements included pH, water temperature, and turbidity. pH is a measurement of how acidic or basic a substance is; if the water has too high or low pH organisms will die. Water temperature governs how much oxygen is in the water. Turbidity is a measurement of how many suspended particles are in the water. If the turbidity is too high they no life can survive. The range for turbidity was 23.6 to 60.4 NTU, a good turbidity range is 0-10 NTU. the turbidity was high. The range for water temperature was 7-10 Celsius. A good range for water temp is below 25 Celsius. The water temperature was within a healthy range. The range for pH was 6.22-7.8. a good range for pH is 6-8.

In my opinion, the Sandy River had a fair water quality but it could have been better. Overall, this is a healthy river that can support most aquatic organisms.

G R E A T B L U E H E R O N

Scientific Name: Adrea herodias

WATERCOLOR 11X14 • MAY 2011
HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY ALYSSA SPIRES

HABITAT & SPECIES OVERVIEW

The Great Blue Heron is found in Alaska, Canada, the U.S, and Mexico. Its large wings (wingspan 66-79 in.) help it fly place to place. The Heron likes nest in trees or bushes, but will always be close to bodies of water. They need the water to catch fish, which is what they primarily eat. Sometimes, if fish is not a possibility, they would catch mammals, amphibians, and reptiles, such as turtles, shrimp, crab, insects, rodents, and even small birds. With that adaptation, the conservation status shows that they are a least concern. That means that they are not in the state of themselves being threatened, becoming extinct, or even extinct. The bird is tall and thin. Stalking with their long skinny legs, they are graceful in their own way. Also, their call is a harsh croak. They will use that harsh croak to mate, but they will also use it for territorial reasons.

THREE AMAZING ADAPTATIONS



The Great Blue Heron lives near bodies of water. They get to catch their favorite food, fish. We all know that fish live in the water. To catch the fish, they have to be able to get in the water, swim, and dive. Luckily to their adaptations, they're able to float, paddle, and bob their head into the water. Now they can feast on their favorite meal.



A Great Blue Heron is one of the thousands of birds that migrate. They fly to one place, make their home, and then leave to go to another area and the cycle starts all over again. They are able to adapt to their new surroundings.

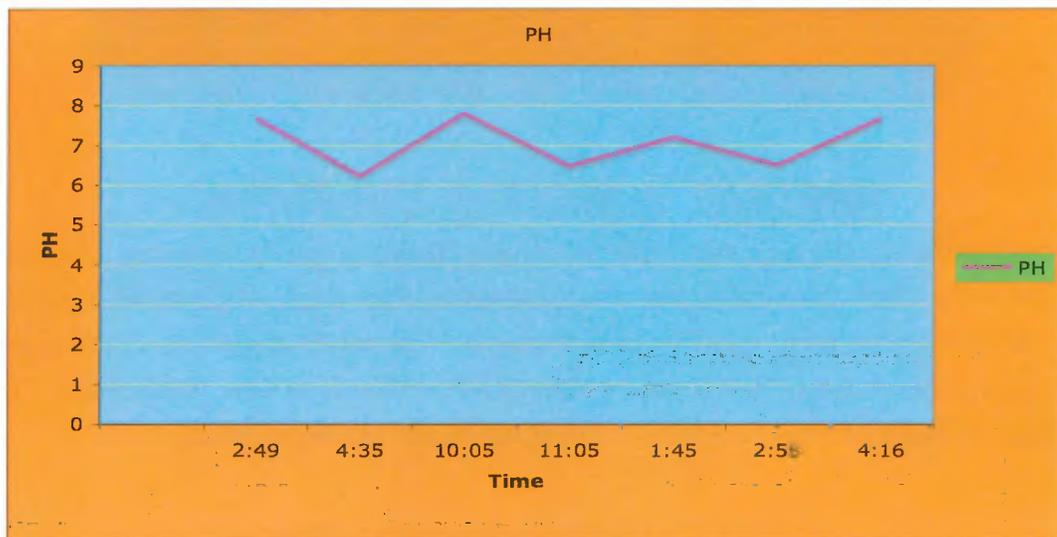
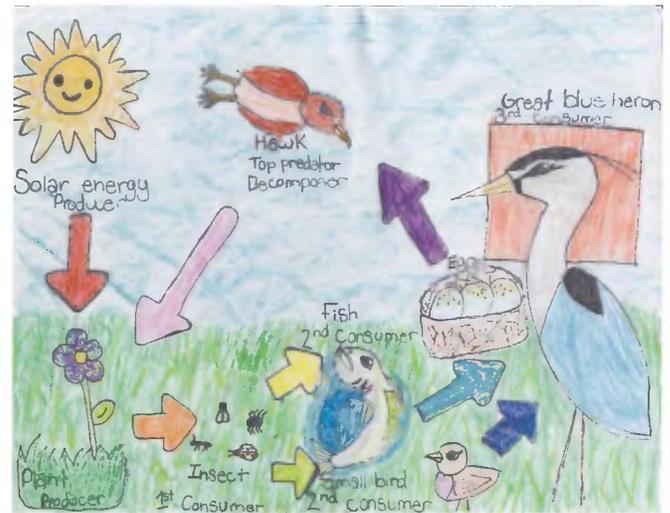


Great Blue Herons primarily eat fish. Sometimes if they can't catch, or there's not enough fish, they will eat other things. They will catch turtles, shrimp, crab, insects, rodents, and even small birds. That wide variety helps them survive and not die from starvation

ENVIRONMENTAL IMPACTS

Humans decrease species populations around the world. We log, pollute, over fish, over hunt, build dams. All of that destroys animal habitats. The Great Blue Heron is not affected by this. Their environment supports their life. What they have in the area helps them stay healthy. The species status tells me that they are a least concern.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

The 6th grade of HS2 went on a trip to Camp Collins, near the Sandy River. When we went to the Sandy River, we studied PH, water temperature, and turbidity. I learned that if the PH is too high, the fish can't live because of the high base or acidic levels. Also fish and other creatures might die if the water is too cold or too hot. Lastly, organisms can't breathe if the turbidity is too high because the sediment builds up in the water and blocks them from breathing.

In conclusion, I would say the results are OK. I graded the overall health between good and excellent. I bet that if we went to do the test again, when it's not raining so hard, we could have totally different results. At the Sandy River, I had fun testing the river and would like to do the activity again. I got the chance to see what scientists do when they check the health of the river.

M A I D E N H A I R F E R N

Scientific Name: Adiantum Pedatum

WATERCOLOR 11X14 • MAY 2011

HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY: ZVENA TRUONG

HABITAT & SPECIES OVERVIEW

The Maidenhair Fern is a 12 inch fern, that is usually found in South America, Eastern Asia, and North America. They are distinctive in appearance, with dark, often black stripes and ridges, with bright green, often gently cut leaf tissue. The highest species diversity grows in the Andes in South America. High diversity also occurs in Eastern Asia, with nearly 40 species in China. Species native to North America are unique, yet closely related.

THREE AMAZING ADAPTATIONS



Photosynthesis helps the plant get energy, and also filters out the bacteria from the plant.



Most of the plants in nurseries are reproduced vegetatively as it is a faster mode.

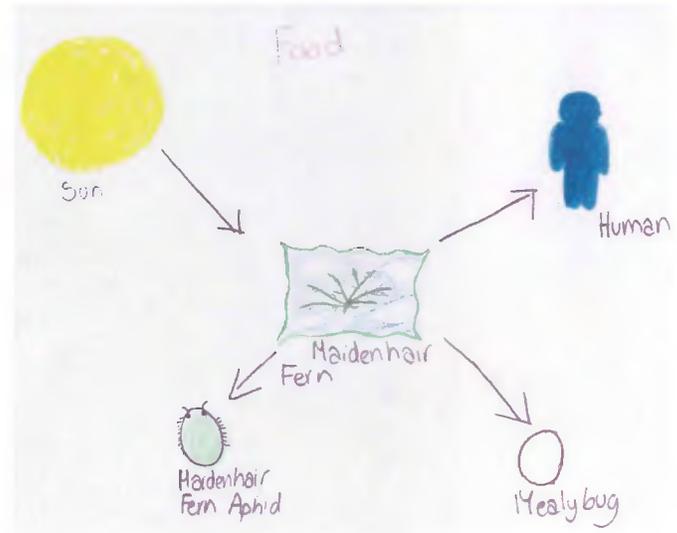


The small divided leaves of the fronds on a maidenhair fern roll under at the ends to protect the spore.

ENVIRONMENTAL IMPACTS

Unfortunately, deforestation has killed many ferns. But thankfully, there are many species of the Maidenhair Fern. Ferns are usually destroyed in gardens because of aging and sometimes the color of the leaves turn dirty yellow. The Maidenhair Fern relies on the sun and water. Deforestation has to discontinue for the sake of the Maidenhair Fern and for the sake of other plants.

FOOD WEB ILLUSTRATION



Sandy River Water Quality Data

Time	Turbidity	pH	Water Temperature
2:49 P.M.		7.67	7
4:35 P.M.		6.22	7
10:05 A.M.	25.6	7.8	7
11:05 A.M.	30.7	6.47	7
1:45 P.M.	26.4	7.2	10
2:58 P.M.	23.6	6.5	7
4:16 P.M.	60.4	7.67	8

WATER QUALITY CHART OF THE SANDY RIVER

Our water testing showed that in the area of pH, a range of data from 6.22 - 7.8, with an average of 7.08. The average pH showed that the pH is close to neutral, but closely basic.. The data shows that the river pH changes and sometimes goes beyond what healthy water is. Water temperature data averaged at 7.57°C. The water temperatures only change by a few degrees in the afternoon. Turbidity ranged from 23.6 - 60.4 NTU, with an average of 33.34 NTU. These results are way above the standard (0-10 NTU) for a healthy river. These results may be occurring from heavy rain that has recently been showing up on those days.

Overall the Sandy River is in good health but the turidity and pH has tiny flaws.

H E R M I T T H R U S H

Scientific Name: Catharus guttus

WATERCOLOR 11X14 • MAY 2011

HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY Sebastian Velazquez

HABITAT & SPECIES OVERVIEW

The hermit thrush lives in the forest. And they can lay up to five eggs and the color of the egg is light blue. Grive solitaire is how you say Hermit Thrush in french. The Hermit gose to the North to breed. And the Hermit Thursh eats insects and other arthropods. And they migrate to the NorthEast .

THREE AMAZING ADAPTATIONS



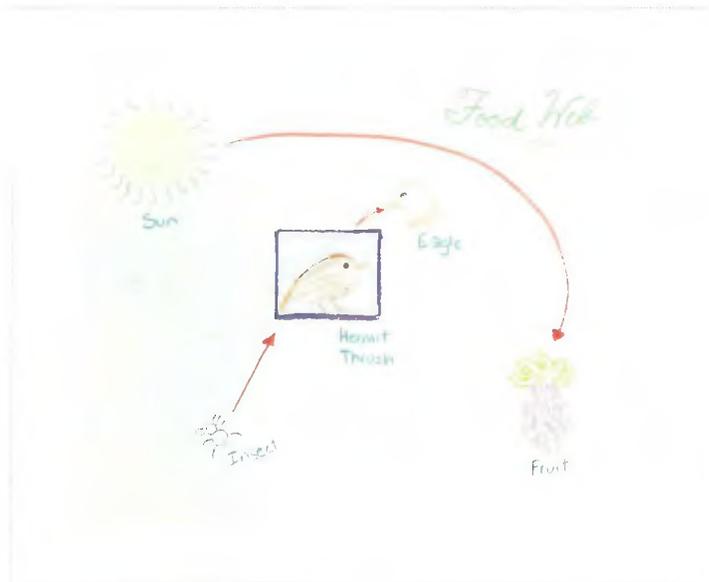
The beak can break and grab stuff like insects and branches for their nest or something like that.

THE CLAWS ARE USED FOR MANY THINGS, LIKE TO GRAB ONTO A TREE BRANCH, OR MAKE A NEST

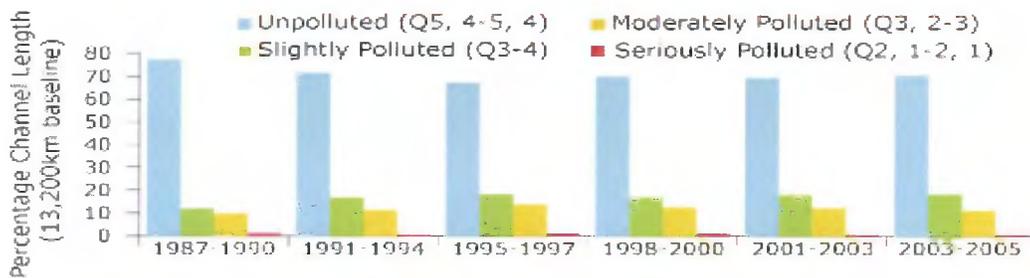
THE WING SARE USED FOR FLYING AND WHEN ONE OF THE WINGS ARE BROKEN THEY HAVE TO WAIT A WHILE SO THEY CAN FLY

ENVIRONMENTAL IMPACTS

The Hermit Thrush live on trees and humans are cutting them down. But sometimes they stay on the ground. And sometimes they cut them down when the little baby birds are in the nest or when they are still in the egg. When humans cut down trees its called deforestation.



WATER QUALITY GRAPH OF THE SANDY RIVER



On March 28, 2011 to April 2, 2011, our whole 6th grade visited Camp Collins. Which is located right next to the Sandy River/Quickand River. There, we studied the pH, Turbidity and Water Temperature. The pH had an average of 7.08. The water temperature was averaged at 7.57 Celsius, and the turbidity had an average of 33.34 NTU.

This information tells us that the Sandy River is in pretty good shape. The quality isnt too bad, or too good. Its average. These graphs will tell us how the river is doing.

These results may be occurring because of the heavy rain that has been showing up. Overall, the Sandy River has good health but the turbidity and pH are a little high.

T A I L E D F R O G

Scientific Name: ascaphus truei

WATERCOLOR 11X14 • MAY 2011
HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY BEN WASSON

HABITAT & SPECIES OVERVIEW

The Tailed Frog is a primitive frog species and has a tail. The Tailed Frog lives in clear cold mountain streams around Mt Saint Helens, Oregon and New Zealand. They live in old growth forests. When we cut down trees, frogs die. These frogs are omnivores, they eat insects, snails, and they eat conifer pollen. It takes 1 to 4 years for tadpoles to mature.

THREE AMAZING ADAPTATIONS



Tail: Only males have a tail. They use their tail to mate after attracting a female.



Mouth (Tadpole): The tadpole lives in fast moving water so it uses its suction-like mouth to grip the bottom.

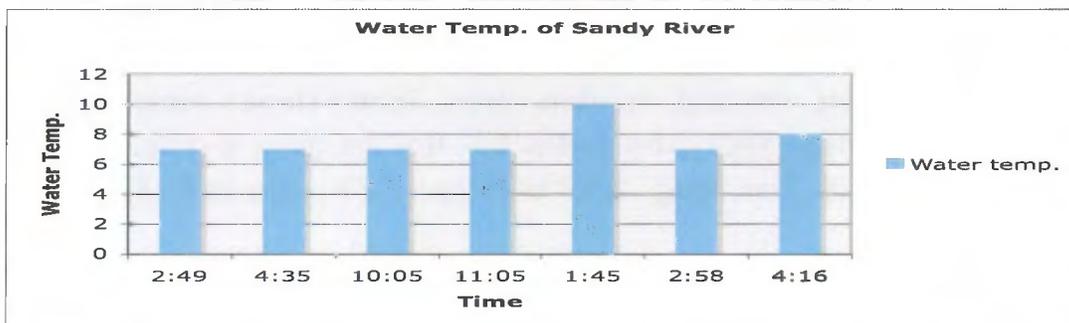


Skin: The tailed frog has very reduced lungs so it usually gets oxygen through its skin.

ENVIRONMENTAL IMPACTS

There are many things that humans effect the environment. Pollution, poaching, overhunting, invasive species, dams, overfishing, and deforestation are always giving animals a hard time. Logging and dams effect the tailed frog because it is destroying their habitat. Frogs will starve because the food will dissapear with the logging.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

If certain macros are found we can tell how healthy a river is. In the Sandy River we found a bunch of macros like mayfly, caddisfly, and stonefly. Those can only survive in a healthy river so the Sandy is healthy. We can also see the water quality by measuring the turbidity, water temperature, and pH. For turbidity, we found these levels: 25.6, 30.7, 26.4, 23.6, 60.4 NTU. Those are good levels except for 60.4. Most of the pH was 7. That is very good. The temperature was also healthy. Measuring these we found that the sandy river is a healthy river. It has good water quality.

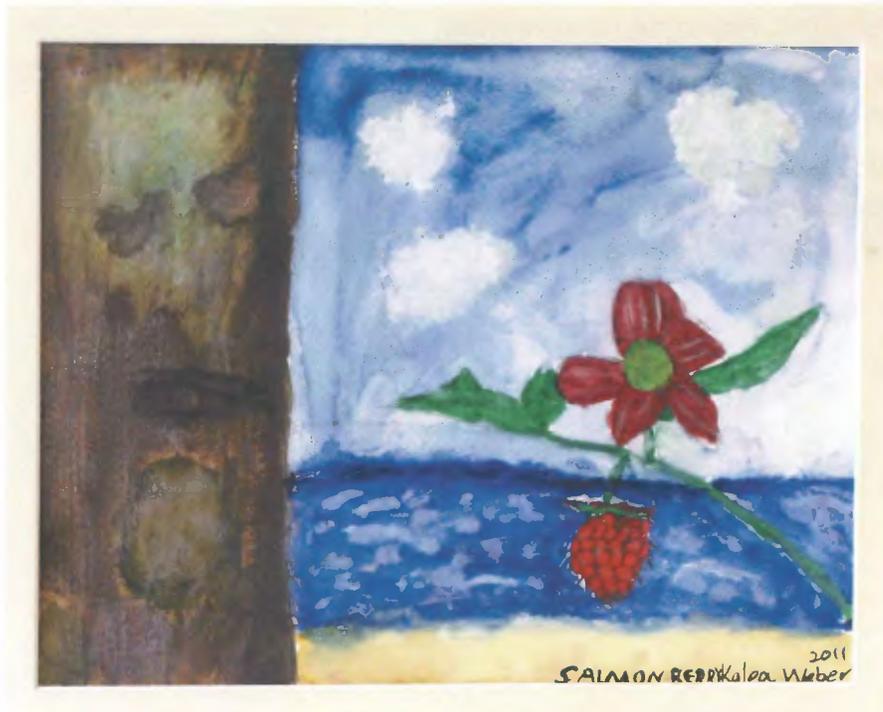
Environmental Research conducted by: Ben Wasson

S A L M O N B E R R Y

Scientific Name: Rubus Spectabilis

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ARTWORK AND WRITING BY: Kalea Weber

HABITAT & SPECIES OVERVIEW

The Salmonberry is a raspberry like plant that lives in wet woods under Red Alders. They prefer coastal forests, wetland, riparian, forest, forest slopes, meadows/grassland, and rocky areas. On average they grow 1-4m. tall, flowers grow 2-3cm. in diameter, and berries grow to be 1.5-2cm. long. A lot of things eat it such as birds, mammals, and humans.

THREE AMAZING ADAPTATIONS



Most of the underground parts of the plant (roots and seeds) stay unharmed during a fire. This helps the plant grow back soon



New growths are often prickly to keep birds and mammals from eating them. This helps the plant from losing all new plants.

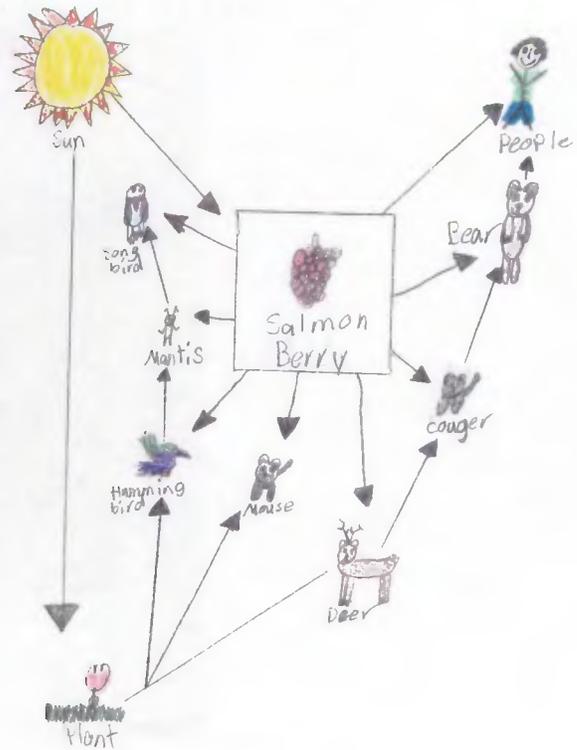


The flowers bloom from March to June, being a very important nectar source for bees, butterflies, other insects, and humming birds

ENVIRONMENTAL IMPACTS

Although the Salmonberry is not endangered, it is slightly impacted by humans. One of the ways the Salmonberry is impacted by humans is by logging. The Salmonberry lives under Red Alders, which are being logged. Another way the Salmonberry is impacted is by damming because they also live by rivers and streams. When they dam up the river or stream they live by, it can either flood them or dry them out.

FOOD WEB ILLUSTRATION



WATER QUALITY OF SANDY RIVER

Based on my research, the Sandy River is healthy. The pH ranges from 6-7, which is normal. The water temperature was 7-8, jumping once to 10 degrees. And last but not least, the turbidity. The turbidity was not tested the first two times, but after that, it stayed mostly between 20-30, jumping once to 60 because of extra sand caught in the bottle. Altogether, the Sandy River is pretty healthy, considering its recent flood. This is all based on research by my classmates and me.

Environmental Research conducted by:Kalea Weber

GRAY WOLF

Scientific Name: Canis Lupus

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ARTWORK AND WRITING BY SPENCER WISEMAN

HABITAT & SPECIES OVERVIEW

The Gray Wolf, also known as *Canis Lupus* is a very magnificent creature. It can live in almost any climate but lives in the northern areas of countries. When it is in a hot climate it sheds its fur, and when it is cold they keep their fur and survive forty degrees below. The Gray Wolf when hunting is not a picky eater which makes it successful. They can run about 34–38 mph and they have good night vision which is great for hunting at night.

THREE AMAZING ADAPTATIONS



Gray wolves' ear is kind of a pointy and large. It can hear a frequency of 26 KHz.



The gray wolves' jaw helps them get a good grip on its prey while it crushing it with a force of 1500 lbf.

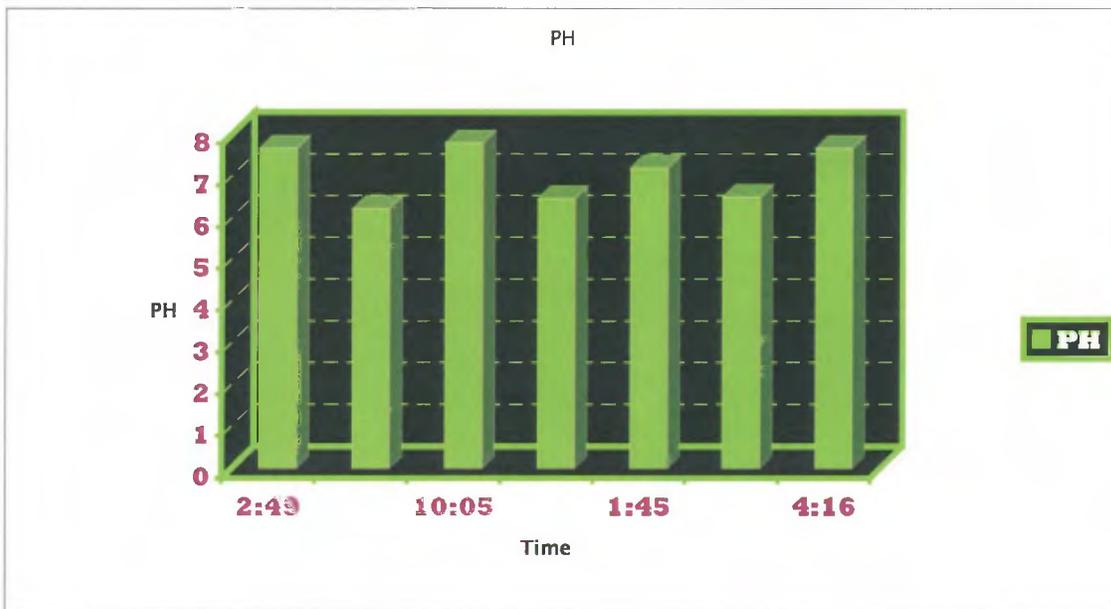
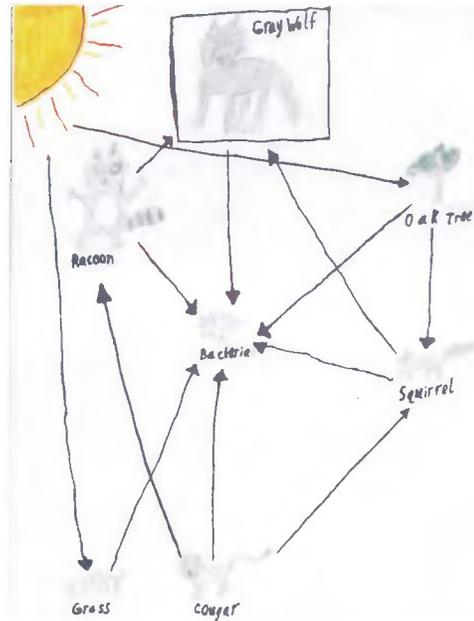


The gray wolves' paw is great for getting traction in the snow while chasing its prey.

ENVIRONMENTAL IMPACTS

The Gray wolf's population in the southern part of countries is decreasing because of hunting. They are also affected by global warming which cause them to move north or stay and shed a bunch of their hair. Every day we are building different houses or buildings, which is taking their homes and destroying their habitat. Gray wolves are getting confused for where their home is and they are coming where we live which is causing them to die.

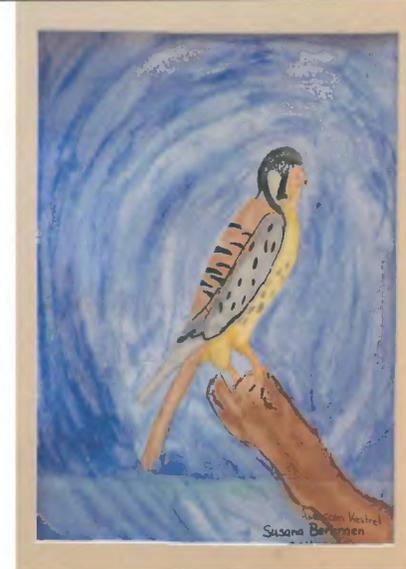
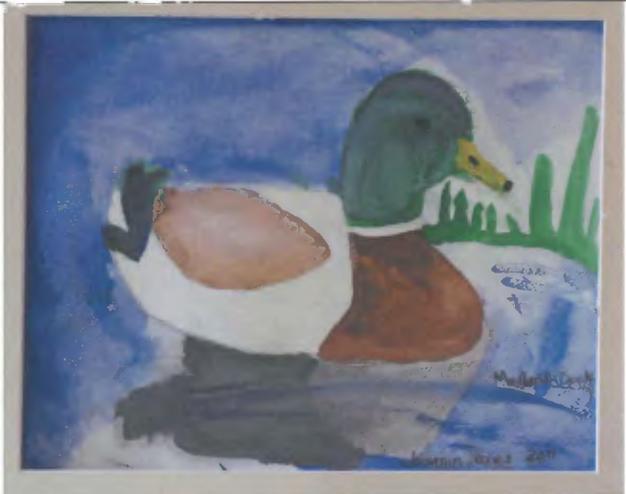
FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

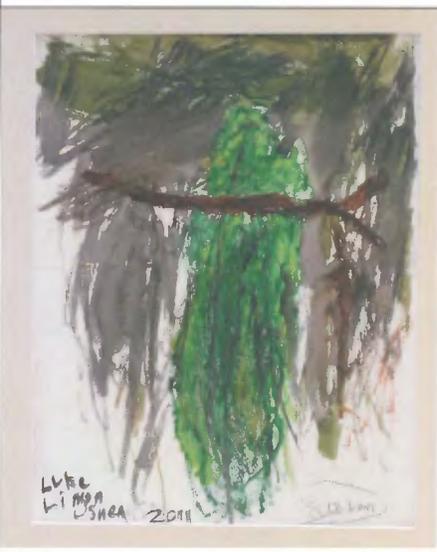
The Sandy River is very healthy judging by the amount of macro invertebrates. I remember finding all these types of macros like; stone flies, caddis flies, may flies, water beetles, and under water worms. One thing I noticed is that we were catching a different macro every minute.

Environmental Research conducted by: Spencer Wiseman



Jose Espinoza
Jazmin Perez
Kevin Williams

Orion Webster
Susanna Beruman
Nicolas Stewart



Darjon McCully-Massic
Jazmine St. Clair
Taylor Heiden

Sean Gilbert
Sopheaj Carlson
Luke Limon



Juan Vasquez Pasqual



Jose Sanabria