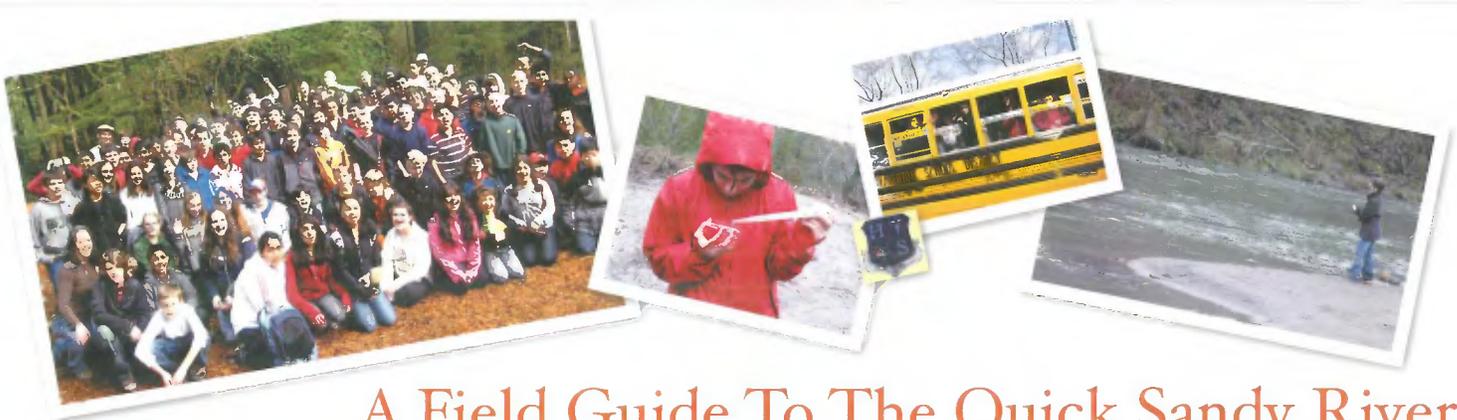




A Field Guide To The Quick Sandy River

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

ORANGE
VOLUME
TWO
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.

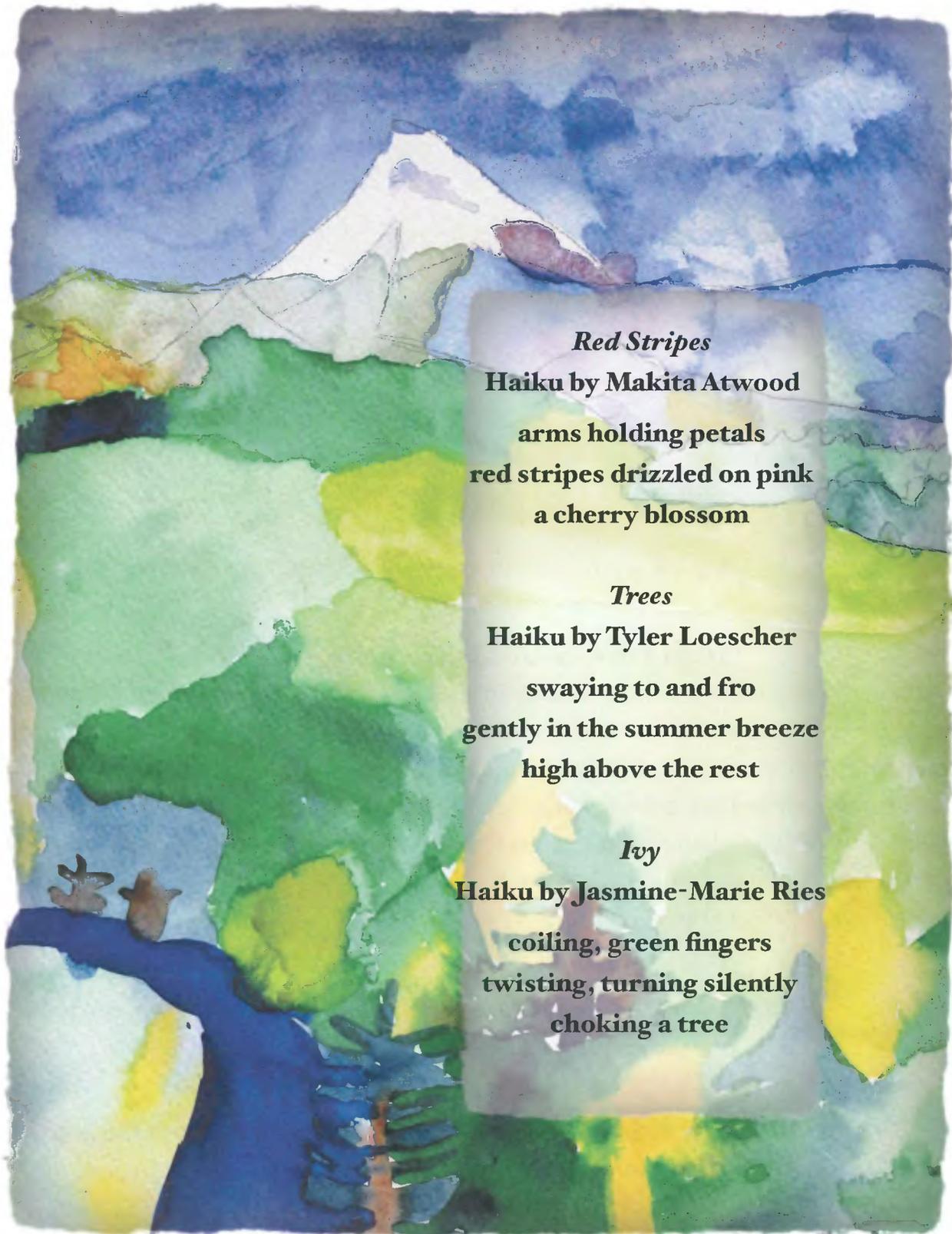
This measly bit of information about our field guide is just the introduction to explain the hard work behind the scenes of this field guide. Please keep reading and turning the pages to see how great all of our work turned out. *-Written by Zachary David Morello*

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

S T E L L A R J A Y
Scientific Name: Cyanocitta Stelleri
WATERCOLOR 11X14 • MAY 2011
HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY GRAYSON ABAN

HABITAT & SPECIES OVERVIEW

The Stellar Jay mostly lives in coniferous forests or town forest which are called agricultural areas They also live on the Rocky Mountains and are seen on low moderate elevations and rarely seen in San Antonio, Texas. A good way to spot Stellar jays is in picnic grounds since they are scavengers. They are most likely to be seen in areas like that with bits of food laying around so watch out if your having a picnic because they might try take a bite out of your sandwich.

THREE AMAZING ADAPTATIONS



The Stellar Jay uses its wings to fly. It's wings are blue to blend in with the sky so it won't be seen.

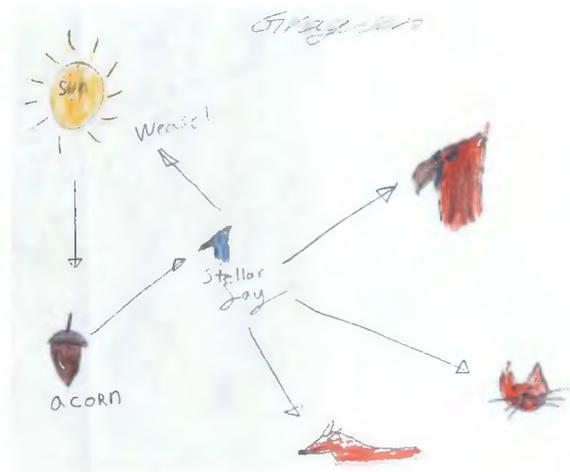
It uses its beak to pick up food and drives its food into the ground to store it for the winter.

The Stellar Jay uses its tail to help it turn while flying. Just like the wings, the tail is blue to blend in with the sky.

ENVIRONMENTAL IMPACTS

If humans take up all the forests Stellar Jays and other animals wouldn't be able to survive because they use mud from the ground and sticks and other stuff to make their nests. Most animals have gone extinct because of the hunting or cutting down of trees from humans which cause loss of homes no trees for stellar jay to build its nest in and they would be wide open to any attacks from hawks if they build nests on buildings.

FOOD WEB ILLUSTRATION



WATER QUALITY OF THE SANDY RIVER

The water quality of the Sandy River is healthy because of the macro invertebrates in the water. If the Sandy River has lots of macros, it shows it is healthy because these invertebrates won't live in unhealthy water. It also has good levels of turbidity, pH, and temperature. All of these factors add up to a very healthy river.

Y E L L O W P I N E C H I P M U N K

Scientific Name: Neotamias amoenus

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ARTWORK AND WRITING BY AMANI AHMED

HABITAT & SPECIES OVERVIEW

The Yellow Pine Chipmunk also known as *Neotamias Amoenus* has five black stripes on its back and is also a cinnamon/reddish sometimes it is grey and brown. The chipmunk is usually found in the U.S.A and Canada sometimes southern Yukon and western Quebec. They like shady forests/brushy areas in the yellow pine forests. Their predators are Hawks, owls, and mustelids.

THREE AMAZING ADAPTATIONS



Chipmunks have a good sense of hearing to sense danger.



Chipmunks also have sharp teeth and claws. they use their claws for digging and finding food

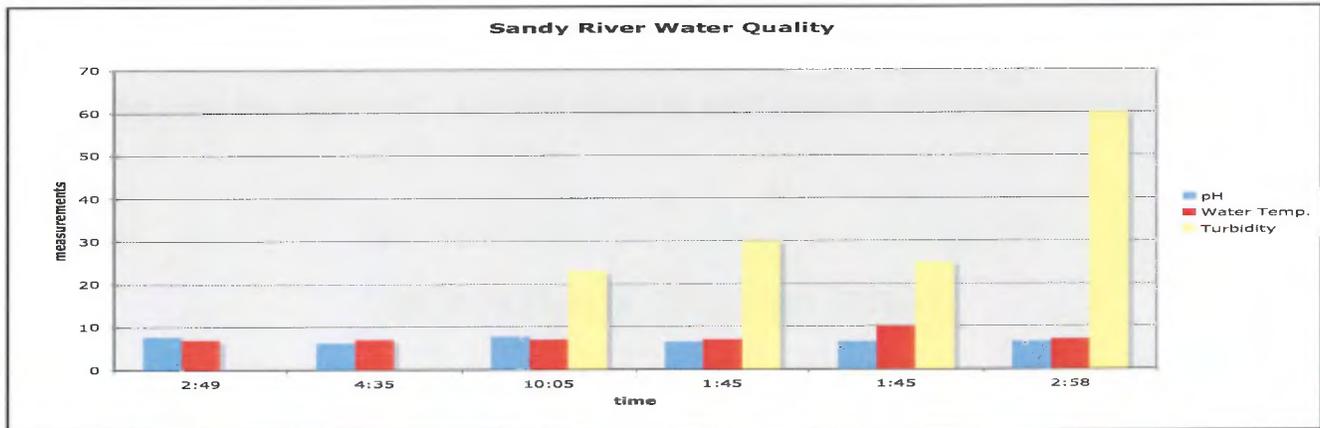
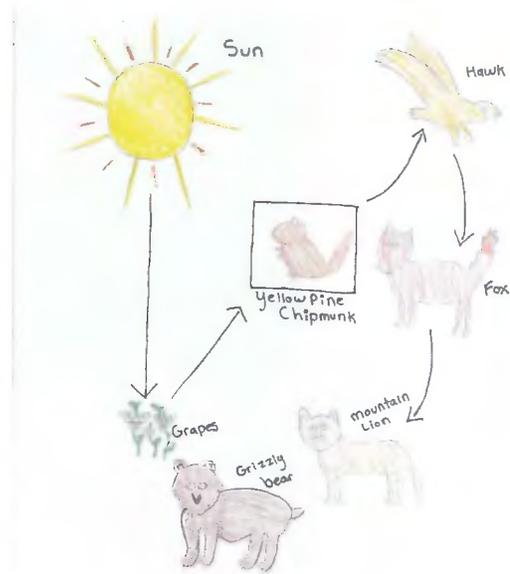


Chipmunks hibernate during the winter so they don't die of the cold.

ENVIRONMENTAL IMPACTS

Humans affect the Chipmunk by deforestation. This affects the Yellow Pine Chipmunk because they live in trees and every time someone cuts down a tree it affects their habitat. The Chipmunk is not endangered, but however we need to raise awareness that animals live in trees, not only Chipmunk! Pollution also affects the Chipmunk because they mistake it for food then they eat it and get sick! People should protect the Chipmunk because it could become extinct soon if we keep logging trees and polluting the Earth, Also Global Warming harms the Chipmunk by destroying habitats. This happens when Temperatures change dramatically. This is bad because they can't adjust to the climate.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

To indicate if the water is healthy or not you check for macroinvertebrates. If there are macroinvertebrates this means that it is a good chance that the water is healthy. If you find a stonefly this is super good indicator whether the water is healthy or not. When we went to Camp Collins we found macroinvertebrates this means the river is healthy.

Environmental Research conducted by: Amani Ahmed

S I L V E R H A I R E D B A T

Scientific Name: Lasionycteris Noctivagans

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Artwork and Writing By Alena Arounpradith

HABITAT & SPECIES OVERVIEW

Silver Haired Bats are mammals that live in Northern Canada into Southern Canada. They eat flies, Midges, Leaf Hoppers, and more that are in forested areas. They often prefer to be alone. They are also one of the slowest bats in North America. Two pups are born between June and July.

THREE AMAZING ADAPTATIONS



The bat's sharp teeth bite its prey and put it into its mouth.

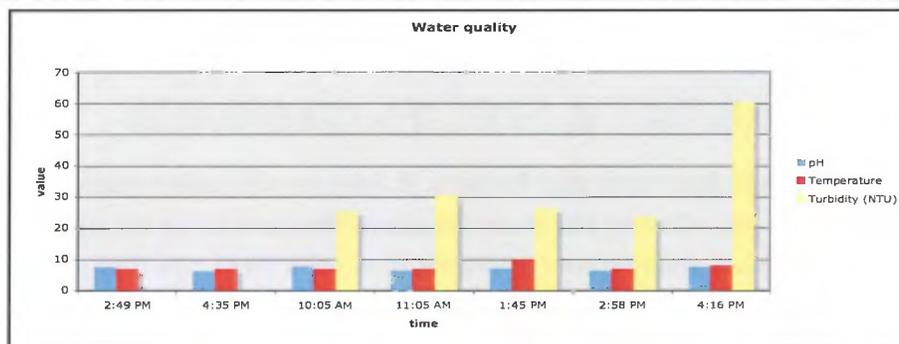
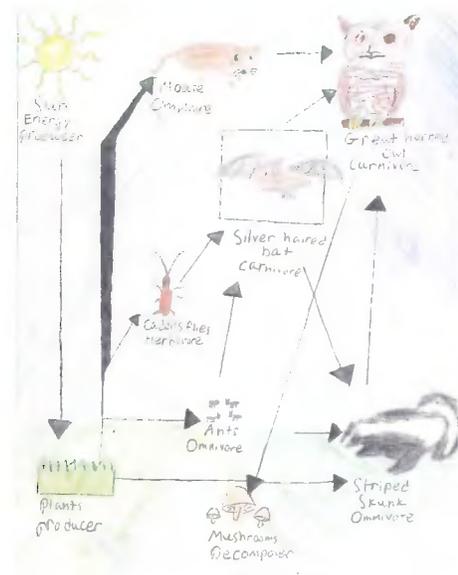
The tail helps the bat flies in the sky. The tail can also turn in a cup shaped basket to catch insects and the pups when they are born

The bat's 10-12 inches wings helps the bats fly in the sky.

ENVIRONMENTAL IMPACTS

The status of the Silver Haired Bat is that it is not an endangered or threatened species. But the Silver Haired Bat might be endangered in the future. Some human activities that might be a threat to bats in the future are clean cutting for development and roads. Logging and deforestation can also harm them because they are forest bats. Some companies are also killing bats in the wild and are selling them in glass frames as "art". All of these may be a threat to the Silver Haired bat in the near future.

FOOD WEB ILLUSTRATION



Water quality of the Sandy River

The water quality of the Sandy River is good because the pH and the water temperature are excellent, but the only reason why the water quality is not excellent is because the turbidity is bad. Also some conditions that may have affected turbidity is the rain because on the week when we tested the pH, the water temperature, and the turbidity, it rained a lot and the river was really high. I think the reason why the turbidity for 4:16pm, 60.4 NTU, is really high is because there was a lot of sand in the sample we took for turbidity at that time. Also, we found lots of macroinvertebrates like mayflies and stoneflies in the river too.

Environmental Research conducted by: Alena Arounpradith:

R E D - L E G G E D F R O G

Scientific Name: Rana Aurora

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ARTWORK AND WRITING BY Komran Behbehani-Escobar

HABITAT & SPECIES OVERVIEW

I read that a Red Leg frog has four toes and fingers. It lives in wet damp meadows, marshes, ponds, lakes and stream sides. During the rainy seasons they are occasionally found on land away from water. A little about adaptations and how they look like: the Red Leg frog is one of the largest frogs. Males are occasionally 7 cm, and females are 10cm. Humans are affecting their habitat and they are becoming endangered species. Red leg frog eats occasionally anything they can catch and fit in their mouth. They mainly eat invertebrates and other amphibians and mammals like mice.

THREE AMAZING ADAPTATIONS



The Red-legged frog has webbed feet so it can swim fast and efficiently, like flippers.

Most Red-legged frogs have brownish gray colors to camouflage against their predator. Their feet and underbelly are usually red.

These frogs can leap allowing them to catch prey easily despite their large size.

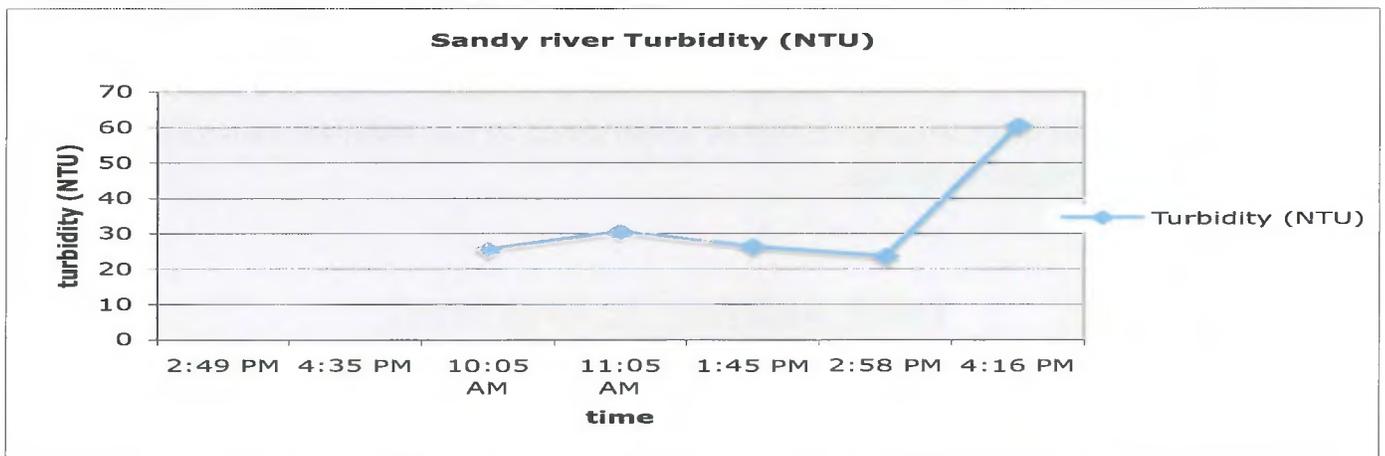
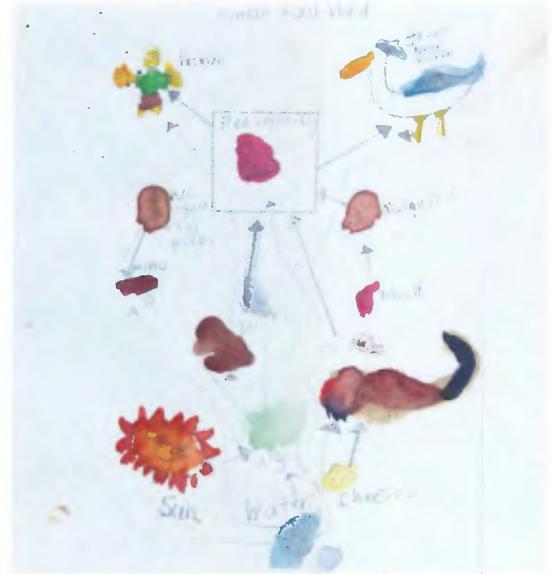
ENVIRONMENTAL IMPACTS

One of the main environmental impacts is habitat loss due to human invasion, increase in human population and human development.

The second main environmental impact is due to human consumptions, 80,000 red legged frogs were eaten a year by miners at a point of time.

The red-legged frog is an endangered species due to the harsh effects on them.

FOOD WEB ILLUSTRATION



The Sandy River is rich with macroinvertebrates and life. We found caddisfly, stonefly, and mayfly. These are indicator organisms that help determine that health of the river. We also collected data on the river and decided it was healthy because the pH levels, temperature and turbidity were all in healthy ranges.

C O M M O N N I G H T H A W K

Scientific Name: Chordeiles minor

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ARTWORK AND WRITING BY JARED DEVORE

HABITAT & SPECIES OVERVIEW

The Common Nighthawk, (*Chordeiles minor*) is a smaller, medium, jay-sized bird that is not actually a hawk. It lives in the U.S. in the summer only, and lives in the Caribbean year round. Its main nesting home is not trees, but open fields or grasslands. They eat insects that fly and are mainly seen flying around in rural or urban areas. It has excellent camouflage colors and its wings and chest are barred.

THREE AMAZING ADAPTATIONS



It has a large mouth with bristles to help it catch insects that fly.

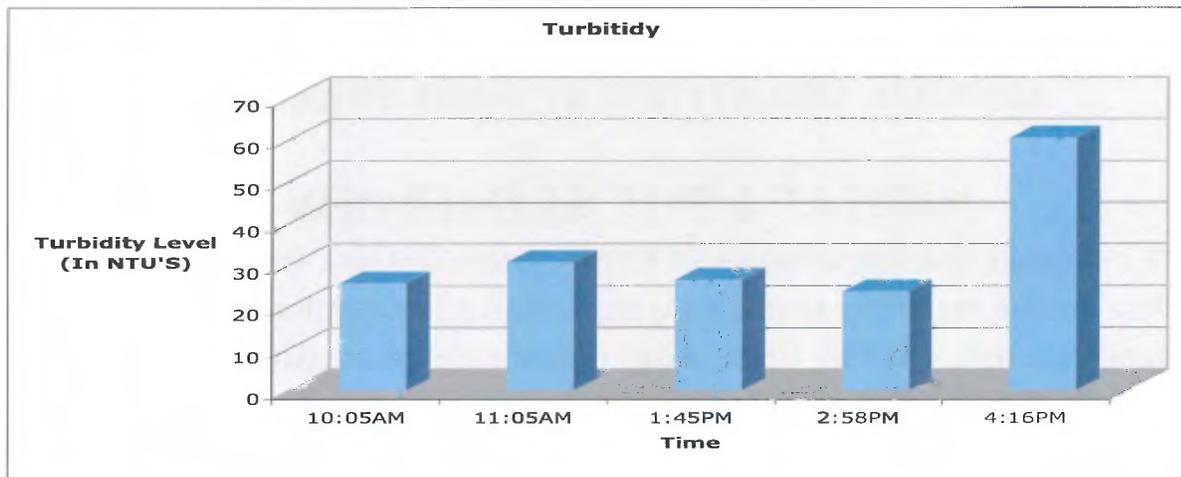
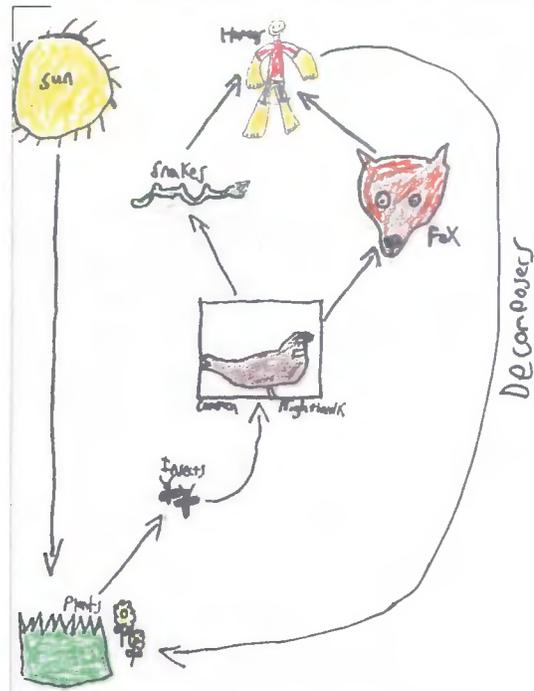
Their brown, grey, and black camouflage colors help them blend in to stay away from predators.

Its white wing bars and white chest bar help the bird warn predators.

ENVIRONMENTAL IMPACTS

The Common Nighthawk's population is good, but is slowly declining in some areas. The main reason it is declining is that city and farm pesticides are poisoning the birds. Some other reasons are road kills and gravel roofs. The reason why gravel roofs sometimes hurt them is because they sometimes nest on gravel roofs and the gravel hurts their feet. Also, the gravel does not only destroys their nest, but hurts them too.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

If the season was not spring, the turbidity would be lower because all the mud and soil particles washing down from the mountains mixed with the rain makes the water muddy and murky in the spring and increases turbidity. If it was summer, there is no snow on the mountains so the snow does not melt into dirty water to go into the river. Overall, the Sandy River is moderately healthy.

Environmental Research conducted by: Jared DeVore

N O R T H W E S T E R N O T T E R

Scientific Name: Lontra Canadensis

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ARTWORK AND WRITING BY JAMES EDWARDS

HABITAT & SPECIES OVERVIEW

Otters are mammals that live throughout Northwestern Ontario. Otters are also one of the smallest marine mammals that live no more than a few hundred yards from shore. Otters usually eat fish, crayfish, frogs, small rodents and birds. Otters sometimes live in lakes, ponds, ect and since they are powerful swimmers it makes them at an advantage in the water. Otters are between 3.1-4.5 ft for male otters and for females they are between 2.9-3.8 ft.

THREE AMAZING ADAPTATIONS



The otters webbed feet help it swim faster and it gives it more agility so then it can catch the food it wants to eat.



An otters teeth are sharp, so it makes it easy to kill the food it wants to eat or it makes it easier to eat.

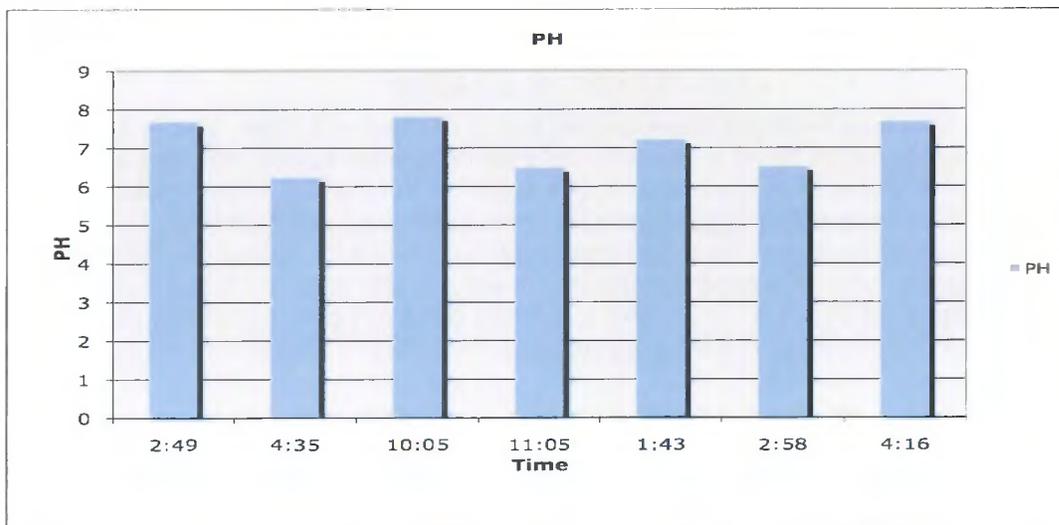
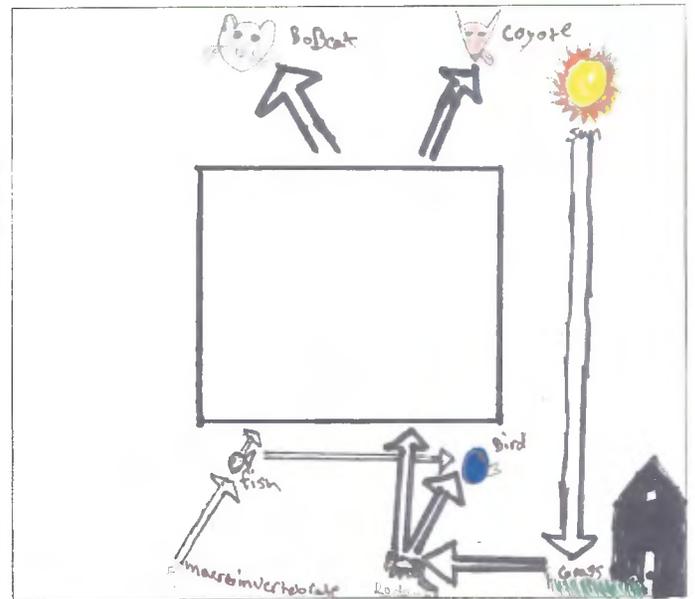


The otter's fur is thick which keeps it warm and there are little thick hairs under its fur which traps warm air to also keep it warm.

ENVIRONMENTAL IMPACTS

The otter is said to be threatened, because of pollution. Another reason is because humans are overhunting them. Humans are destroying the dams which are over flooding the water. Another reason is because we are also destroying their homes by cutting trees.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

The Sandy River is healthy enough for organisms like salmon to swim in or macroinvertebrates. Now the measurements that show that the rivers pH and water temperature are very healthy, but the turbidity level is higher than usual and can possibly harm fish, but the turbidity level didn't really affect the living organisms. Overall the Sandy River is healthy and has lots of organisms living in it.

Environmental Research conducted by: James Edwards

B A L D E A G L E

Scientific Name: Haliaeetus Leucocephalu

WATERCOLOR 11X14 • MAY 2011

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ARTWORK AND WRITING BY ARTURO GUTIERREZ BRAVO

HABITAT & SPECIES OVERVIEW

The Bald Eagle is an eagle that lives in North America that eats Fish, Rodents, Deer, Ducks and takes advantage of decaying flesh. The Bald Eagle builds its nest where there are fish and no human interference. When it sees a fish from its nest near a river or coast, it flies towards it at a speed of 30-35 M.P.H finally catching it out of the water with its sharp talons. When two Bald Eagles start a fight for defending and winning a territory, the event includes both of them claspng each others sharp and dangerous talons finally letting go when they're almost touching the ground. They build nests of a depth of about 2 ft and a width of about 5 ft big enough for their 3-3 ½ ft tall bodies and their weights of about 8-15 lb. The Bald Eagle used to be on the endangered species list because of humans. We used to hunt them but then we realized they were in trouble, so we stopped killing them in order to save them.

THREE AMAZING ADAPTATIONS

Bald Eagle eyes can see 4x farther than a human. A Bald Eagle could see a rabbit move from over 5,000 feet away!

The talons of a Bald Eagle are used to catch fish and are very sharp. They are also used as weapons in a fight.

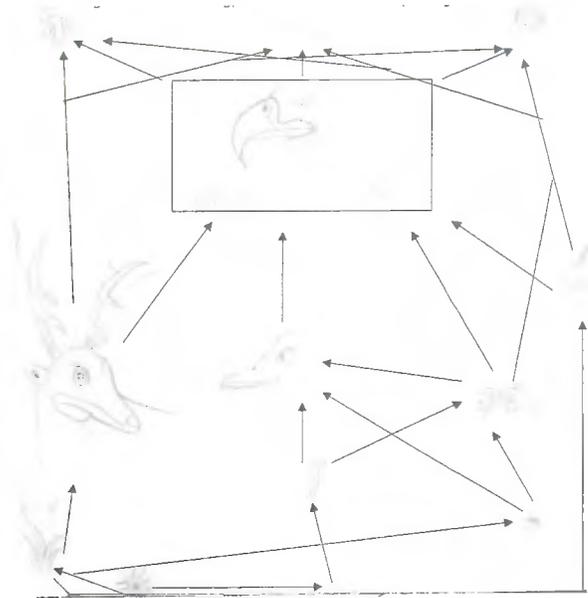
The beak of a Bald Eagle is used to rip through flesh in order to be able to swallow its food. Sometimes their beaks are also used as weapons in a fight.



ENVIRONMENTAL IMPACTS

Humans hunted the Bald Eagle before, but when they realized they were endangered, they stopped. The Bald Eagle got taken off of the endangered species list in 2007. The humans not just only hunted them they also destroyed their habitat such as cutting down trees. Once the Bald Eagle realized what was happening, the majority started building their nests in tall rocks instead of trees. When humans over fish, the Bald Eagles can't eat their favorite food: fish.

FOOD WEB ILLUSTRATION



Time	Water Temp.	P.H.	Turbidity
2:49 P.M	7	7.67	
4:35 P.M	7	6.72	
10:05 A.M	7	7.8	25.6
11:05 A.M	7	6.47	30.7
1:45 P.M	10	7.2	26.4
2:58 P.M	7	6.5	23.6
4:16 P.M	8	7.67	60.4

WATER QUALITY GRAPH OF THE SANDY RIVER

The macroinvertebrate populations for the Sandy River were at a fair level because the macros that are classified at an excellent level if present were 2 out of 3. There was also about more than half of the types of macros that are found in the water in the Sandy River. All this information means that the Sandy River is at an excellent health because even though it had horrible turbidity it still had good temperature, pH, and great macro-invertebrates population.

Environmental Research conducted by: Arturo Gutierrez

M O U N T A I N L I O N

Scientific Name: Puma concolor

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ARTWORK AND WRITING BY MATT HILL

HABITAT & SPECIES OVERVIEW

Mountain lions are carnivores that eat animals like rabbits, elk, and deer. A mountain lion does not like to share his/her territory. A male's territory is generally 100 miles, where as a female's territory is about 30–50 miles. They also give birth to live young and are sexually mature at 1½ – 3 years. They can live in rainforests and deserts, and from sea level to 10,000 feet above sea level. Mountain lions are classified as least concern; that means that they are the least concern of all endangered animals. Their range map is from the lower west of South America to the northwest of North America. Their size depends on the climate, but is generally 8 feet long.

THREE AMAZING ADAPTATIONS



A mountain lion can climb up and down trees with their retractable claws. This helps them stalk prey or pounce from above. Their claws also are retractable to help them run without damaging their claws.



Their fur helps camouflage by having brown fur, which is the same color as the trees in their environment, and keeps them warm. The fur is very thick and keeps them warm.

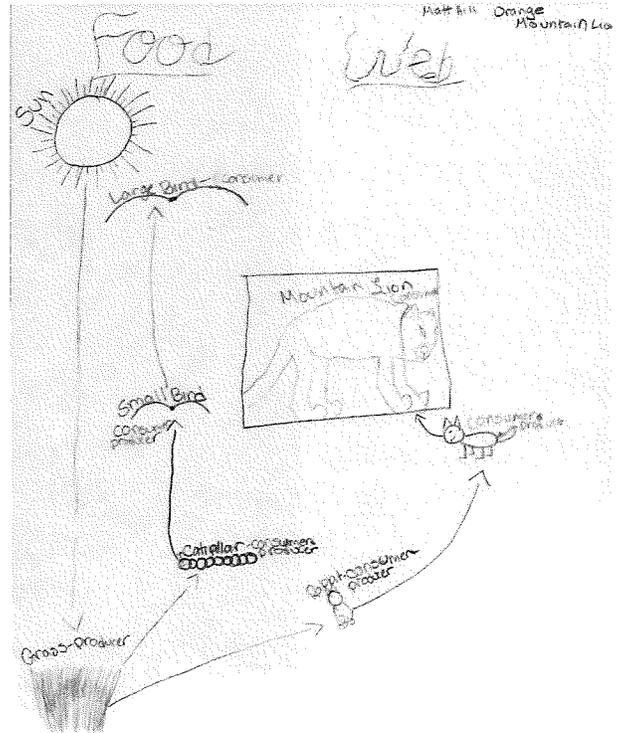


Mountain lions can jump off cliffs up to 17 feet high. This allows them to jump off cliffs in a pursuit. Without this adaptation, they might not be able to hunt the prey it does.

ENVIRONMENTAL IMPACTS

As mentioned, the mountain lion is considered a least concern. Pollution is polluting the air and the streams they drink from. Poaching is also an issue. They are getting hunted to extinction. The last issue is deforestation; all their trees are being cut down. If humans do not do something to protect them, soon they will go extinct!

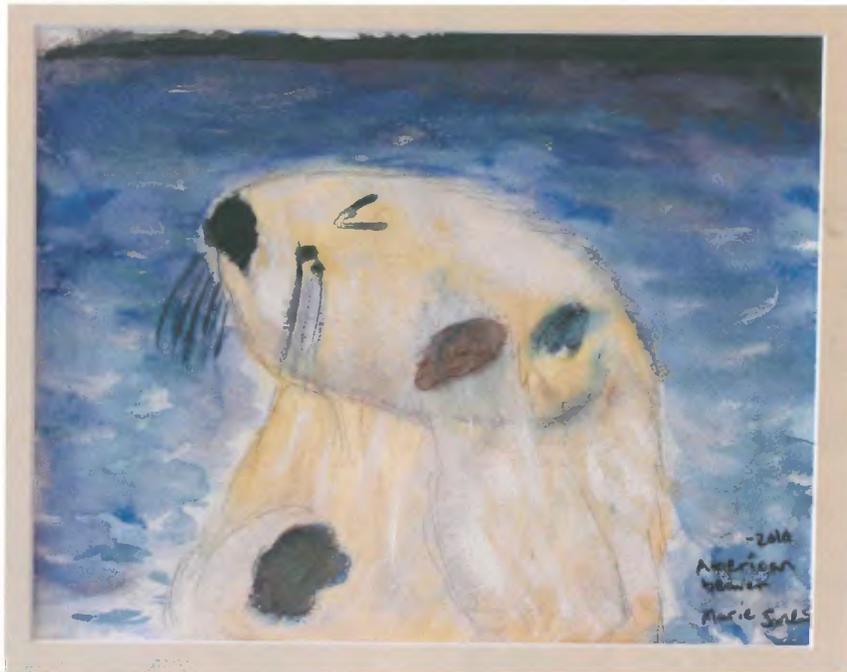
FOOD WEB ILLUSTRATION



A M E R I C A N B E A V E R

Scientific Name: Castor Canadensis

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ARTWORK AND WRITING BY MARIE JONES

HABITAT & SPECIES OVERVIEW

Beavers can get up to 110 cm tall. Beavers can also be heard a mile away when they hit their rubber tail on the water. Their tails can get up to 6 inches wide. You can find them throughout America you can sometimes find them by a lake, river, or a pond. The size of their family is 4 beavers to 8 beavers what a big family/ (colonies). Beavers can live up to 24, years they live so long to make the water safe. They have webbed feet to help them swim in the harder water if the dam breaks. They can stay underwater for 15 min and they can swim for 4-5 minutes.

THREE AMAZING ADAPTATIONS



The beaver's teeth when they are underwater their teeth. Hold the branch so they won't lose the branch, when they go under water and their teeth can cut through a whole tree over time when they get bigger.



The beaver's sense of smell is their eyes and ears because their hearing and sight is so bad they can't hear or see the predators so they have to smell out the predators but they can see under water so they don't hit anything.

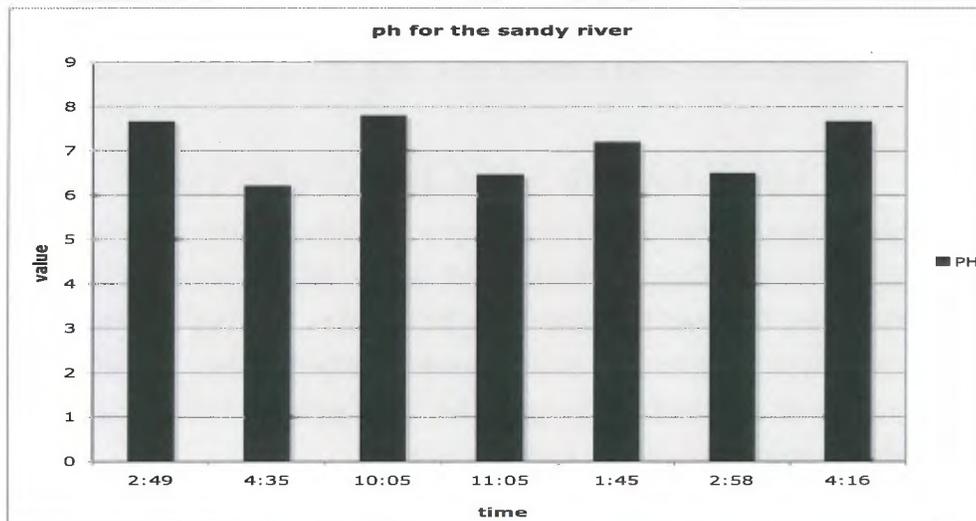
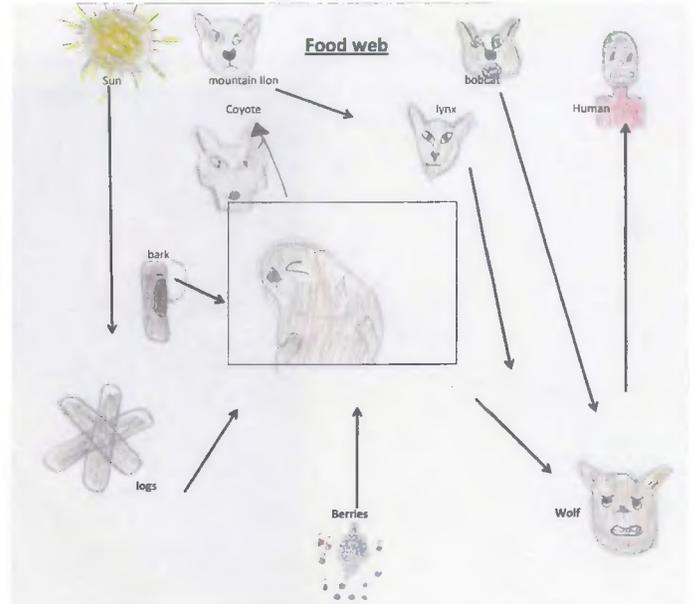


Beavers have webbed feet to help them swim fast to get away from hunters and predators they can help keep the wood still when the eat it and the feet don't help them on land but in water they are very helpful.

ENVIRONMENTAL IMPACTS

First, humans are hurting the beavers, because they are getting rid of the dams. By taking out the dams it sometimes it kills some of the beavers and their colonies. This sometimes results in risings water levels and can lead to a decline in the fish populations due to the water flow. With the flow of the water at a higher speed, it makes the fish hurt themselves on the rocks.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

Macroinvertebrates some are good and some are bad. The fish in the water will eat the invertebrates. If you find a worm the water is bad. If you find a stone fly the water may be good. We found out the quality of the water by its temperature, it's pH, and the turbidity of it. The temperature was around 7c. The turbidity was high we knew it would be because of the flood that had happened. The pH was around 6 – 7ph. My thought was that the Sandy River was healthy but I was wrong. Due to the flood it made the river unhealthy.

Environmental Research conducted by: Marie Jones

GRAY WOLVES

Scientific Name: Canis Lupus

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ARTWORK AND WRITING BY RYAN KENNEDY

HABITAT & SPECIES OVERVIEW

The Gray wolf also known as the Wolf is the largest member of the canine family. Gray wolves range in color from brownish Gray or black to all-white. As the ancestor of the domestic dog. The Gray Wolf resembles German Shepherds or Malamutes. Wolves are making a comeback in the Great Lakes, Northern Rockies and Southwestern United States. In history, Gray Wolves have the largest range of any land mammal, other than people. They have lived in all habitats in the Northern Hemisphere except for tropical forest.

THREE AMAZING ADAPTATIONS



Wolves have two fur coats. The undercoat is thick and downy like wool and acts as insulation to trap air to help keep the wolf warm. These hairs are coarse and hollow. This gives another layer of insulation against the cold and aids in repelling rain and snow.



Wolves have extremely well developed senses. They can hear rodents moving under heavy snow, and other wolves howling from several miles distance. They can smell prey more than a mile away.



Wolves have very large heads. Their necks are quite small for as big as they are. They have narrow shoulders and a narrow rear end. This also helps them to accelerate fast. The wolf's head is longer, wider and generally larger than a large dog. They have 42 teeth. The jaw pressure of the wolf is double that of a large dog.

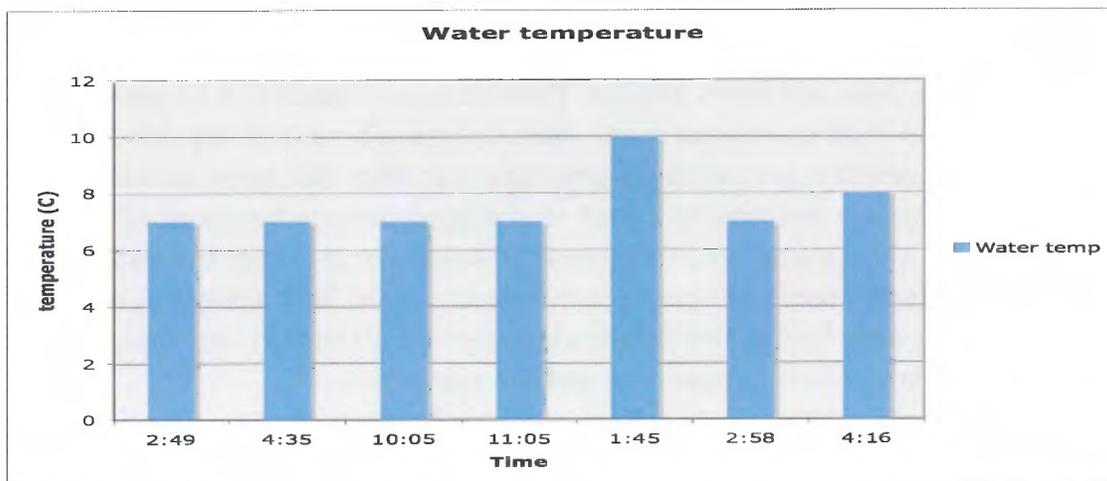
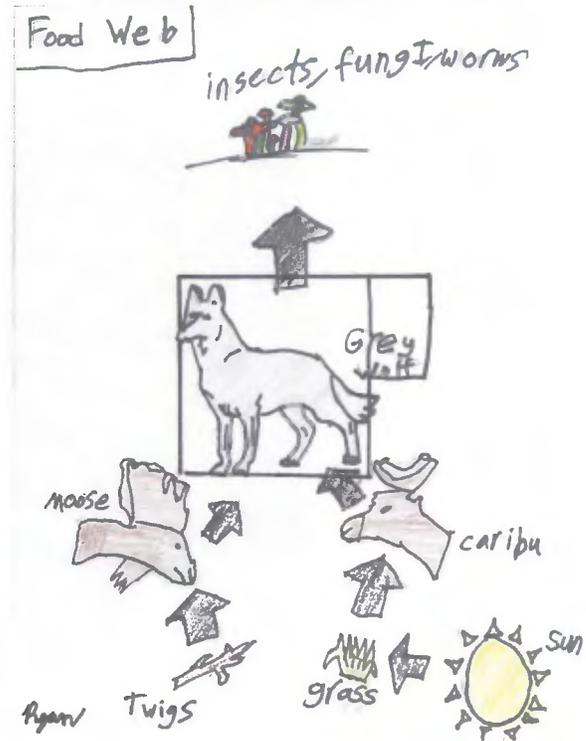
ENVIRONMENTAL IMPACTS

The most common cause of death for wolves is a battle with people over livestock losses. While wolf prey on livestock is fairly uncommon, wolves that do prey on them are often killed to protect the livestock. However, there are people trying to develop a way that will allow the wolves to live and reduce the chances of a wolf attacking livestock. These methods include fencing livestock, lighting, alarm systems and removing dead or dying livestock that may attract carnivores like wolves.

Another serious threat is human invasion into wolf territory, which leads to habitat loss for wolves and their prey species.

In general, the greatest threat to wolves is people's fear and misunderstanding about the species. Many fairy tales and myths tend to misrepresent wolves as evil, dangerous creatures.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

The Sandy River is healthy but it is not the best and it is not the worst. The temperature is fine because it is lower than 25 if it was higher then for a little while the fish would be fine but over time the fish can die. It looks like the pH level is good because it is over 6.0 if it was fair it would have to be over 5.5 but under 5.5 would be very acidic or poor it will be impossible for the fish to survive if it is under 5.5.

Environmental Research conducted by: Ryan Kennedy

W O L V E R I N E

Scientific Name: Gulo gulo

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ARTWORK AND WRITING BY BARRON LE

HABITAT & SPECIES OVERVIEW

Wolverines live in Europe, Asia, and North America. Their life span is about 7 to 12 years. They live in the wild and can be found in dens, amongst roots, rocks, and sometimes they dig into snowdrift. Wolverines are known to be very shy, even someone who lives near them may never see a wolverine ever. Wolverines' diet is an omnivore and they have been seen digging through burrow to eat hibernating animals. They are also a bit vegetarian and love berries and plants in the summer season. They live in frequent remote boreal forest, taiga, and tundra in the north latitude. Male wolverines defend territory up to 620km (385 miles) while female have territory between 130-260km(81-162 miles), The wolverines have terrible eyesight and have to hunt in an ambush type of way.

THREE AMAZING ADAPTATIONS



The Wolverines big, furry feet act as snowshoes in the winter, allowing the wolverine to bounce along on the top of the snow to chase caribou, moose, or large animals. The prey exhausts itself, while the wolverines can still move quickly.



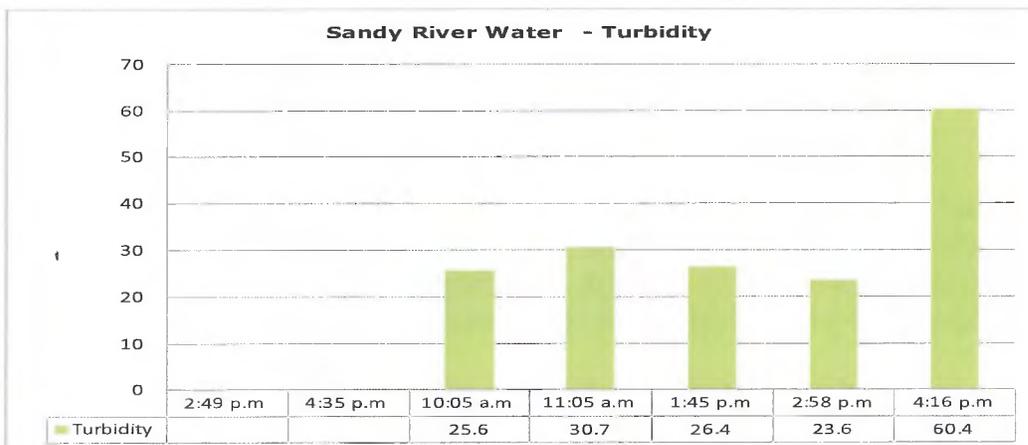
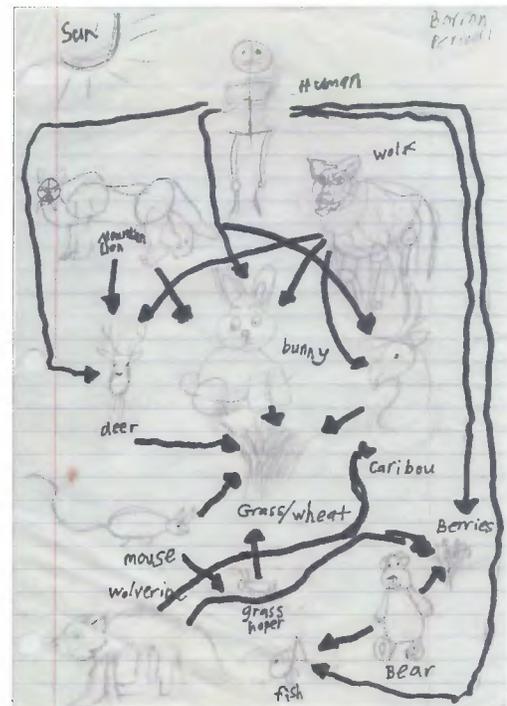
Wolverines have extremely powerful jaws that can crunch through frozen meats and bones.

They have long dense fur that doesn't retain much water making it very resistant to frost.

ENVIRONMENTAL IMPACTS

Wolverines are becoming very vulnerable because of climate temperature going up. Humans are destroying the arctic tundra where the wolverine lives. Global warming is making the ice melt, which impacts how female wolverines raise their young. People hunt, trap, and control rabies that make the population of wolverines decline.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

In my conclusion, Sandy River water is at a decent stage at this time because of its excellent pH level, but the turbidity is a concern. To keep Sandy River healthy, we need to clean up and keep its turbidity level below where it's at today. Otherwise the sediment will kill the organisms in the river.

Environmental Research conducted by: Barron Le

F I R E W E E D

Scientific Name: Epilobium angustifolium

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



ARTWORK AND WRITING BY BRIAN LILES

HABITAT & SPECIES OVERVIEW

Fireweed is a 6-foot tall plant that is a pinkish lavender color. It lives in many areas such as, burned forests, meadows, thickets and grasslands. They mainly live below tree line in open spaces so they can get the sun they need. They like soil moist to dry. This plant is an elongated plant that has 3 to 6 petals in a cluster.

THREE AMAZING ADAPTATIONS



This plant is often abundant in wet calcium to slightly acidic soils in open fields, pastures, and particularly burned over forests.



This plant colonizes quickly in open areas with little competition, such as sites of forest fires and forest clearings.

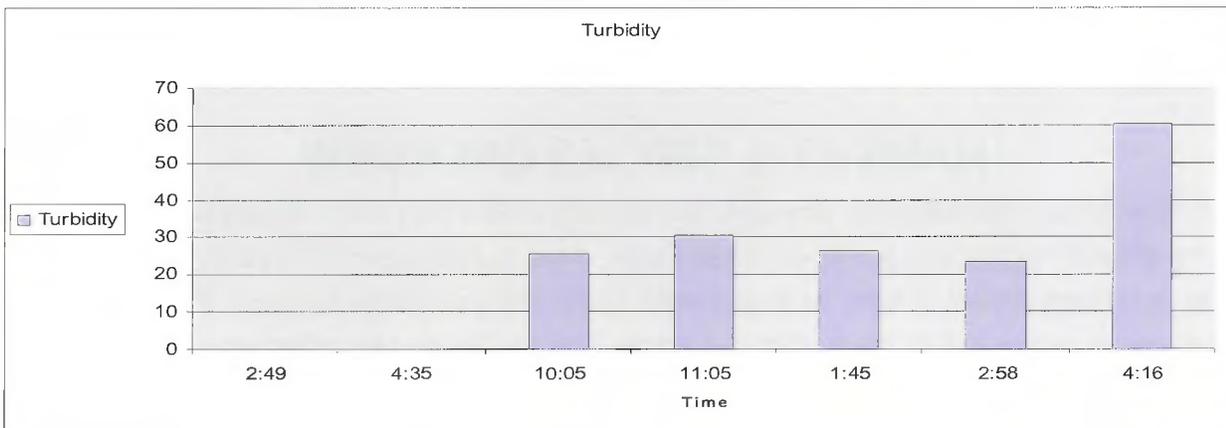
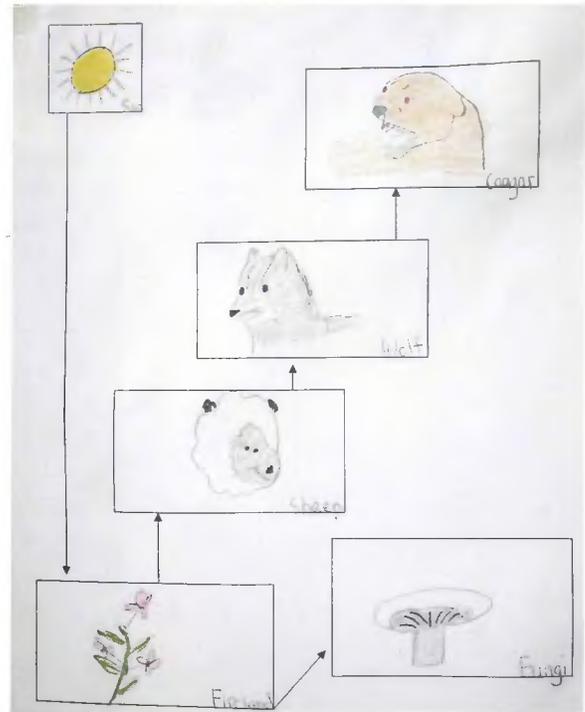


Most plants grow as long as there is an open space and plenty of light, as trees and brush grow larger the plants die out but the seeds remain usable in the soil, then when a new fire or another disturbance occurs the seed will grow up and fertilize.

ENVIRONMENTAL IMPACTS

Humans are logging forests causing fire, when fires occur Fireweed grows and can either get eaten by bacteria, fungi or sheep. Wolves then eat sheep, and then cougars eat wolves.

FOOD WEB ILLUSTRATION



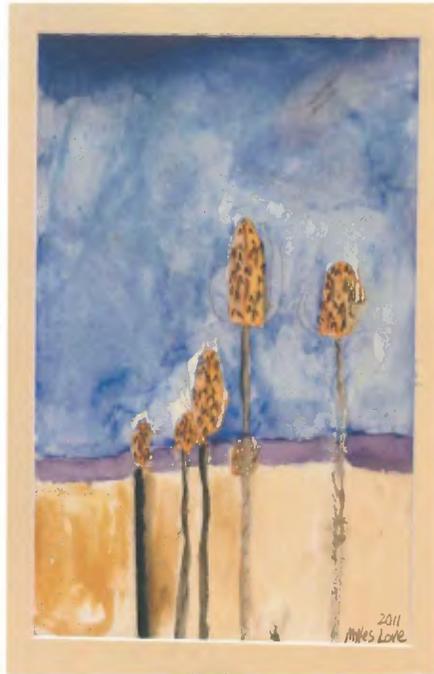
WATER QUALITY GRAPH OF THE SANDY RIVER

When we went on a field trip to the Sandy River we did some tests to figure out how healthy is the Sandy River? We measured ph, turbidity, and water temperature. The healthy range for pH is 7.0-8.0. The ideal ranges for turbidity is 15.0 and lower. For aquatic life a water temperature of about 7°c is good. When we measured the ph we measured it 7 times over two days. The results were 7.67, 6.22, 7.8, 6.57, 7.2, 6.5, and 7.67. Most of that time we got a healthy range. We measured turbidity 5 times. We got 25.6, 30.7, 26.4, 23.6, and 60.4. We did not get a healthy range as 60.7 is way out of reach. When we measured water temperature we measured 7°c four times, then 10°, then 7°, then 8°. It is a decent range. I think that the Sandy is healthy for most aquatic life, but not for us humans. Environmental Research conducted by: Brian Liles

C O M M O N T E A S E L

Scientific Name: Dipsacus

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



ARTWORK AND WRITING BY MYLES LOVE

HABITAT & SPECIES OVERVIEW

The common Teasel can adapt to any soil, but usually where it is rainy. Because of this, it prefers to grow in sunny but damp or moist areas. Also, it can grow in "disturbed" areas like a roadside or stream banks. It lives in abandoned fields and roadsides because it's a weed. Even though it grows in the U.S.A, it's native to Europe. The leaves on this plant are wrinkled and range from purple to white. This plant can grow up to 6' in maturity.

THREE AMAZING ADAPTATIONS

Teasels have a cup like top that will drain rainwater on its stem to keep off sap sucking bugs.

The Teasel can live in almost any soil, so it's considered a weed, but that means it can live in almost any biome.

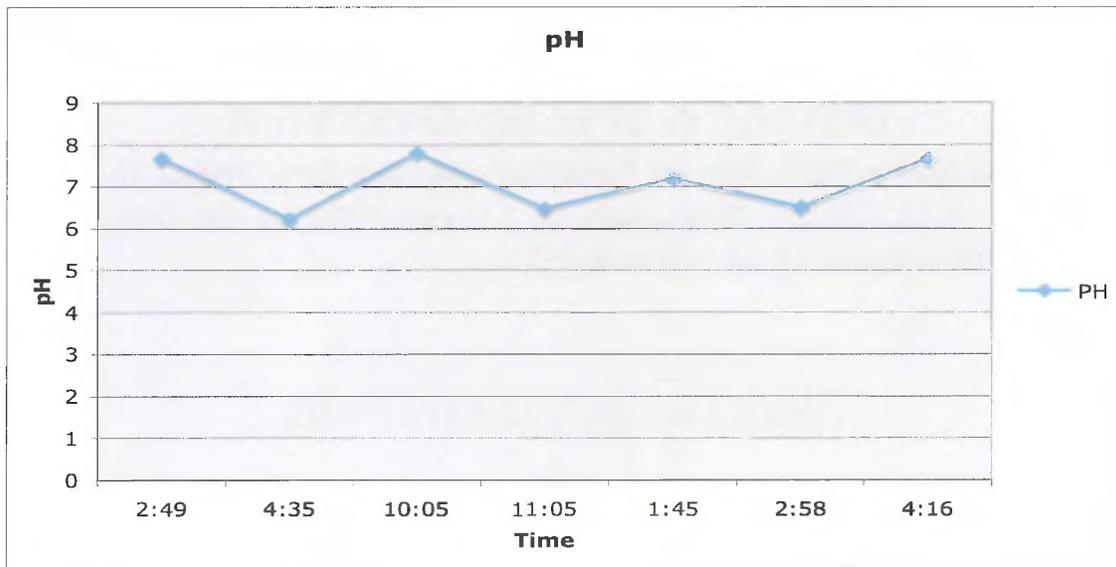
When the Teasel dies, it plants seeds. It can plant up to 2,000 seeds. It's easy to have seeds for the teasel.



ENVIRONMENTAL IMPACTS

My common Teasel is a common plant. The way humans' impact it is by giving it a home. This is because it lives in disturbed places. Humans also use the common teasel for a cure for Lyme disease.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

The water temperature is in a healthy range; the pH is in a healthy range, but turbidity is in an unhealthy range. Coming to a conclusion, the water quality of the Sandy of River is moderately healthy. Some things that may have affect these measurements is the sudden high change of turbidity of 23 to 60.

Environmental Research conducted by: Myles Love

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

Scientific Name: Progne subis

WATERCOLOR 11X14 • MAY 2011

HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY JOSE ALEJANDRO MEDINA-HERNANDEZ

HABITAT & SPECIES OVERVIEW

Martins catch their food in flight. They eat butterflies and other flying insects. They have an average wingspan of 15.7 inches. They usually lay 1-8 eggs. They live near lakes and ponds. Purple Martins migrate all the way to Brazil.

THREE AMAZING ADAPTATIONS



Purple martins have a long stiffened tail and long curved talons to cling vertically to the trunk of the tree.

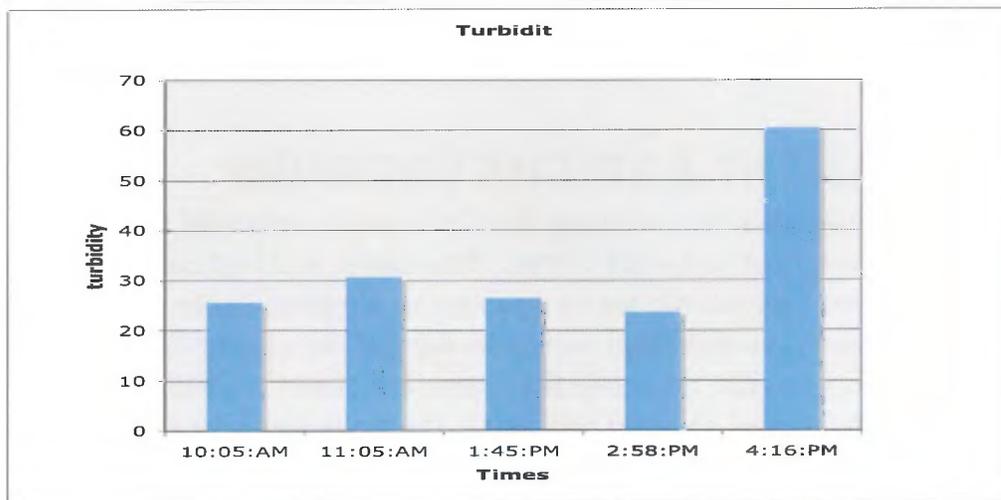
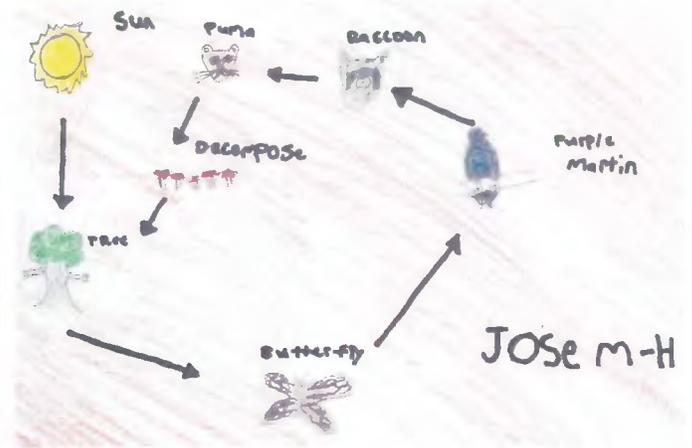
Martins nest in old nest holes excavated by woodpeckers. Tree nesting martins are only found in western, north America, Arizona, New Mexico, Colorado, Utah, California, Oregon, Washinton, and British Columbia.

Alula is a small group of feathers on the first "finger" (at the bend) of the wing. Their function is to reduce turbulence and drag. They assist with breaking and steering. Purple Martins have three Alula feathers on each wing.

ENVIRONMENTAL IMPACTS

Humans do not affect my organism in a negative way. People actually have colonies of them. They also help breed them. Also some people use bird calls so the purple martins can eat the insects. Martins eat flying insects only like mosquitos.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

Based on the collected data, the health of the river is moderately healthy. It could be excellent, but the turbidity is somewhat high, so it's moderately healthy. One thing I can confirm that change the river's health is the weather. It's highly likely and obvious that when it was rainy a lot it changed the turbidity. The turbidity was changed by whether because, As rain drops in it gets higher, and the turbidity is not that stable. Also there was sand in the device we used to measure the turbidity. so the macroinvertebrates help the river by the type they are. Some can tolerate good water quality some can tolerate bad water quality.

Environmental Research conducted by: Jose Medina

H O A R Y B A T

Scientific Name: Lasiurus Cinereus

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



ARTWORK AND WRITING BY EDUARDO MORALES

HABITAT & SPECIES OVERVIEW

The Hoary Bat likes to live in wooded areas and evergreen forest and is rarely seen. The Hoary Bat also likes to sleep in really dark places that have a ton of trees. They can fly at a high speed when they are trying to escape from predators. They can not see so they have to use echolocation to know where they are going. Hoary bats are nocturnal so they sleep during the day and like to hunt for food at night. They are found around southern Canada, the Pacific NorthWest, and Hawaii. Its body length is 4" to 6" long with a wingspan up to 16". Its ears are short and round. The hoary bats have light brown fur with a pale collar under the chin.

THREE AMAZING ADAPTATIONS



The Hoary Bat is nocturnal . This allows the Hoary Bat hunt its prey easily because the other animals are asleep.

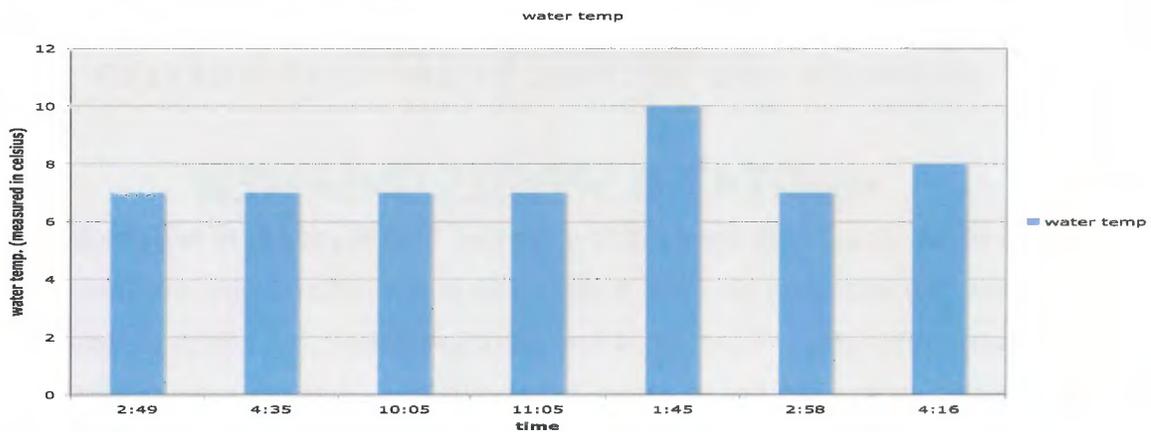
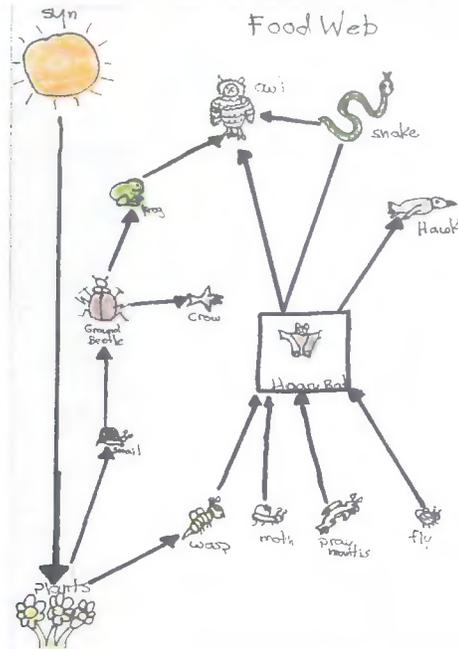
The Hoary Bat uses echolocation. The Hoary Bats use sound to fly and locate themselves.

Speed is another important adaptation. They can fly up to 15 mph when trying to escape other predators or other dangers to them by flapping its big wings

ENVIRONMENTAL IMPACTS

The Hoary Bats status is not endangered and is still populating. Humans affect the Hoary Bats when people go logging and chopping down wood. They are affected when people chop down trees some of the Hoary Bats homes get destroyed.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

From looking at all the data the river looks really healthy. The water temperature is at a good temperature, not too hot or warm for the fish, and the turbidity and pH were at a good level. The turbidity was far off the scale, so I think that the Sandy River has some good health, but not great health. Also in the water we found a lot of macroinvertebrates in the water. And since there are macroinvertebrates the salmon have something to eat, so since the macroinvertebrates live in the water I think that the Sandy River is at a good health.

Environmental Research conducted by: Eduardo Morales

D O U G L A S F I R

Scientific Name: Pseudotsuga menziesii Franco

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



ARTWORK AND WRITING BY ZACHARY MORELLO

HABITAT & SPECIES OVERVIEW

This organism is the Douglas fir tree and is a conifer. It is abundant in the northwest coast of America and has one inch long needles. It also lives in many Northwest mountain ranges such as the Rocky Mountain Range. This tree is has a straight trunk and can grow over three hundred feet in height. It also can live in dry to moist climates. Humans may impact this organism by cutting them down for lumber use. Like all trees, the Douglas fir absorbs sunlight, water and carbon dioxide for food. These trees grow best in 5-6 pH soil.

THREE AMAZING ADAPTATIONS



Douglas fir tree bark can resist fire. This is extremely helpful Douglas firs because of frequent forest fires.



Douglas fir trees have adapted to grow tall in forests. It helps them by collecting sunlight that would normally be blocked by overshadowing trees, as it is shade-intolerant.

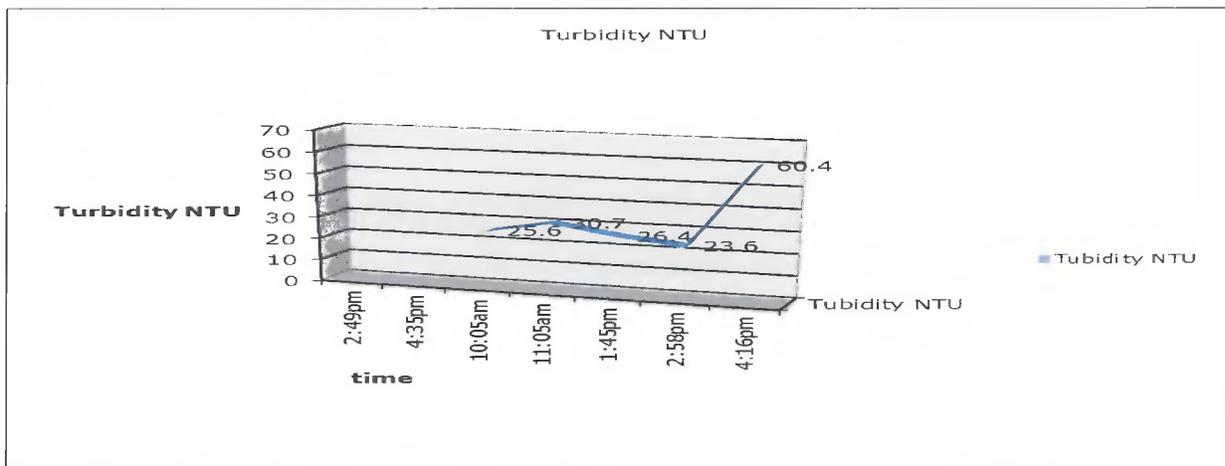
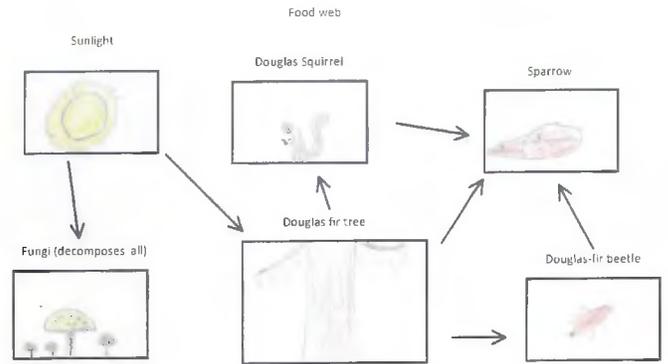


Douglas fir tree cones may travel up to 110 feet away from the mother tree. This helps them by making them more abundant and have more space to grow than other trees.

ENVIRONMENTAL IMPACTS

The Douglas fir tree is used for many purposes including lumber. It is one of the most popular Christmas trees and are imported from Oregon. Despite logging and deforestation, Douglas firs are well protected so they remain abundant and a major lumber source.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

For turbidity, the readings were not so good, normal readings are 0-10 NTUs (Nephelometric Turbidity Units.) The results from our readings were high and erratic. On the first day we could not measure because of a nonfunctioning meter but the final results were 33.34 NTUs. In the last test it read almost double than all other reading, so it may not be totally reliable. The turbidity readings were not surprising because of the large amount of sediment in the Sandy River due to the recent rainfall. I think that pH levels and water temperature are excellent for supporting a healthy river but turbidity levels were way over normal. I think this is because the Sandy River has a lot of sand, affecting turbidity in addition to the fact that it has been a very rainy season.

Environmental Research conducted by: Zack Morello

B L A C K - H E A D E D G R O S B E A K

Scientific Name: Pheucticus melanocephalus

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



ARTWORK AND WRITING BY ANIKA OLIVO

HABITAT & SPECIES OVERVIEW

The black-headed grosbeak is a medium-sized songbird that lives in the American West. It lives in the western half of the US during breeding months in the summer. It lives in Mexico all year. They eat seeds, fruit, and insects and is one of the few species that can eat the poisonous monarch butterfly. Their nests are thin to ventilate the eggs. Sometimes, the eggs are visible from the bottom of the nest.. The male grosbeak has an orange body with a black head and black and white wings. The females are dull brown. Their beaks are large, thick, and cone-shaped. A group of black-headed grosbeaks is called a "gross."

THREE AMAZING ADAPTATIONS



The nest of the black-headed grosbeak is so thin you can see the eggs from the bottom. This ventilates the nest.

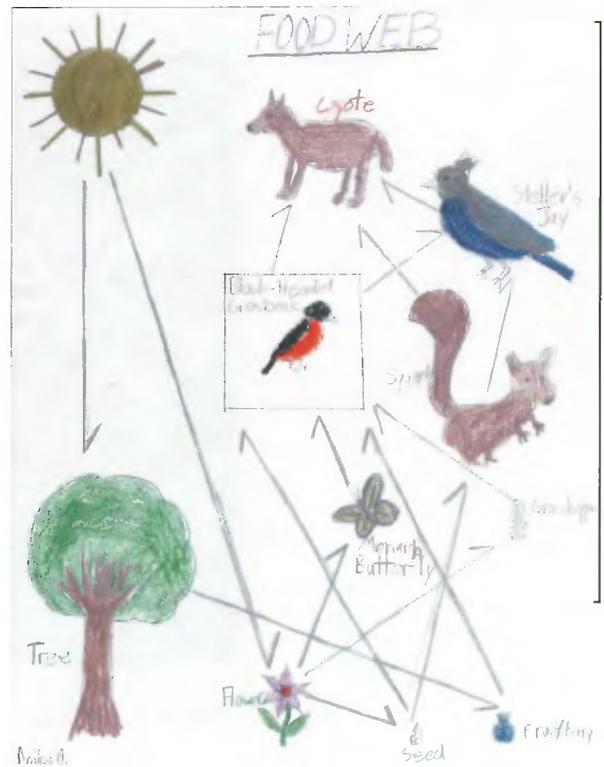
The black-headed grosbeak's beak is large, thick and cone-shaped. Their beak helps them eat seeds.

Male black-headed grosbeaks have very bright orange and black plumage. The bright feathers on the males help them attract mates.

ENVIRONMENTAL IMPACTS

The black-headed grosbeak is in the middle of the food chain. It eats some insects, such as grasshoppers and monarch butterflies. They are consumed by coyotes and other animals not shown here. The black-headed grosbeak also eats fruit and seeds. They come from plants such as flowers and trees, which make energy from the sun. Without the sun, there would be no life. The seeds and fruit are eaten by squirrels, and the energy from the squirrel goes to the Steller's jay. The Steller's jay consumes energy from fruit and seeds as well, along with small rodents and the eggs of the black-headed grosbeak. The Steller's jay consumes energy from fruit and seeds as well, along with small rodents and the eggs of the black-headed grosbeak.

FOOD WEB ILLUSTRATION

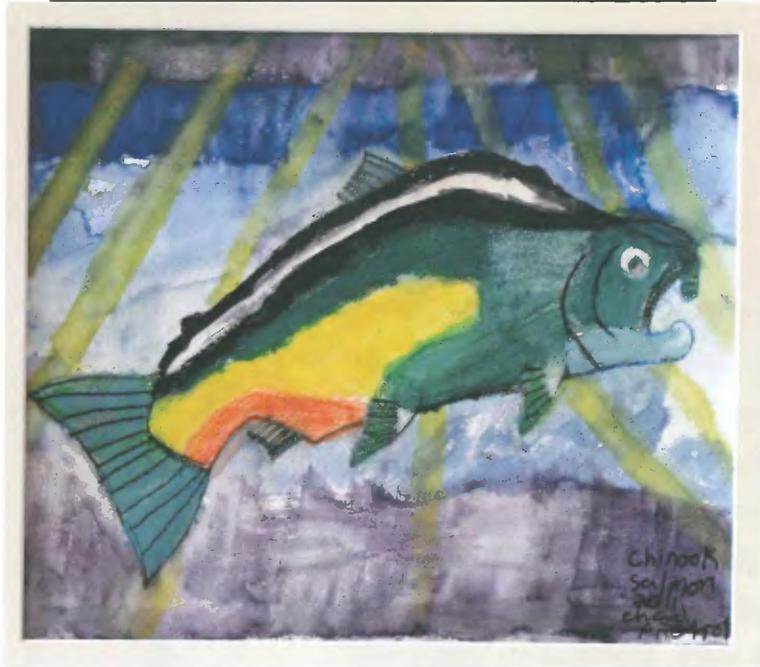


C H I N O O K S A L M O N

Scientific Name: Tshawytscha

WATERCOLOR 11X14 • MAY 2011

HEALTH & SCIENCE SCHOOL • 6TH GRADE



ARTWORK AND WRITING BY CHAD PIETROK

HABITAT & SPECIES OVERVIEW

The Chinook salmon is found mainly in the Pacific Ocean, in Asia's waters, between San Francisco Bay and north of the Bering Straight. They will spawn in a stream with gravel at the bottom and will only do this once in a lifetime. They can grow up to 50 pounds and start to mature at 36 inches and 30 pounds. They can get up to 56 inches long and get up to 10 years old. The salmon population is rapidly dropping because of dams, overfishing, kill and release, and pollution.

THREE AMAZING ADAPTATIONS



Skinnny body: This helps the Chinook salmon swim through the water faster. This helps the Chinook salmon when predators are gaining speed on the Chinook salmon, it can speed through the water even faster to escape.



Rugged fins: This helps the Chinook salmon swim through the water faster and get bursts of speed at the right time. So it can escape the predator when it is about to get the Chinook salmon when it is not moving fast.



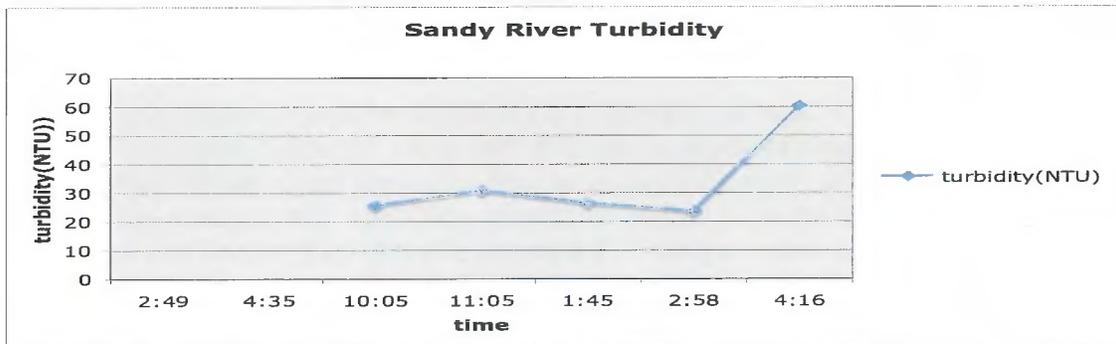
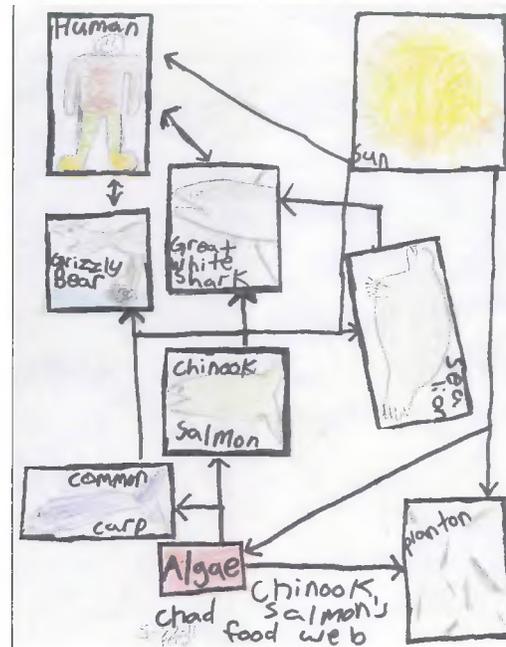
Lateral line: This utilized line system allows the Chinook salmon to sense a predator. This system is made up of many hair cells that can detect the slightest movement in the water. This helps the Chinook salmon by that the predator is trying to spy the Chinook salmon then the Chinook salmon will know.

ENVIRONMENTAL IMPACTS

Status: Most Concern

The Chinook salmon is affected on humans in many ways. One of the ways is that people overfish and/or kill and release which is kill it then put it back in the water. The two major ones are dams because they block fish from going upstream then they can't reproduce, and that people pollute the air and water so that it gets into salmon's gills and can make them not healthy.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

Our average measurement that we got for water temperature was 7.6 degrees Celsius, which is very good for the organisms that live in the Sandy River. Our average measurement that we got for pH was 7.08, which is very good for the organisms that live in the Sandy River. Our average measurement that we got for turbidity was 32 NTU, which is not good. Overall I think the water is pretty decent because the turbidity is very poor; there was sand in the sample for the last time but the other two (pH, and water temperature) were pretty good.

W E S T E R N S C R E E C H O W L

Scientific Name: Otis kennicotti

WATERCOLOR 11X14 • MAY 2011
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ARTWORK AND WRITING BY JASMINE-MARIE RIES

HABITAT & SPECIES OVERVIEW

The Western Screech-Owl (*Otus kennicotti*) is a carnivore who eats mostly rodents, amphibians, reptiles, other birds, and even other raptors. The most common place the Western Screech-Owl lives in forests, riparian forests, woodlands, and large gardens in suburban areas. Western Screech-Owls are 8-9 inches in length, and their wing span is about 18-24 inches. These screech owls weigh about 5-9 ounces, slightly larger than the Eastern Screech-Owl. Females may nest in abandoned woodpecker holes, and may lay about 3-4 eggs.

THREE AMAZING ADAPTATIONS



The Western Screech-Owl has long sharp talons and rubbery skin under their talons to help grip their prey.



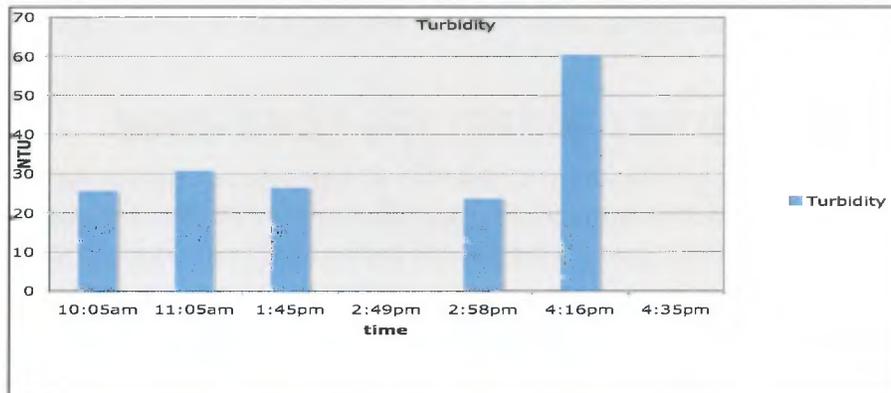
Owl eyes can see twice as much as humans can in the dark and can see tiny movements in the shadows. An owl can see a mouse move one inch from over 100 feet away.



The Western Screech-Owl's ear tufts, whiskers around the Screech Owl's beak and its tree bark patterned feathers help it blend in with its surroundings.

ENVIRONMENTAL IMPACTS

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

The water temperature ranged from 7–10 degrees, this level of temperature was very healthy. The macroinvertebrates we found were fairly healthy, the only thing that threw us off was the turbidity, because there was a lot of mud from the Sandy River flood and the high amounts of rain fall. The turbidity ranged from 20–60 NTU, this was not the healthiest amount of sediment, this occurred because of the Sandy River flood and heavy amounts of rain. Finally, the pH level ranged from about 6–8. Overall the health of the river was pretty healthy, but the turbidity was most likely muddy from the higher amounts of rainfall.

Environmental Research conducted by: Jasmine Marie Ries

E A S T E R N F O X S Q U I R R E L

Scientific Name: SCIURUS NIGER

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



ARTWORK AND WRITING BY Andrew Stevens

HABITAT & SPECIES OVERVIEW

Eastern Fox Squirrels are native to the eastern US, and they are omnivorous. They can eat anything from nuts and berries to eggs and snakes, and their environment really reflects their diet. They live mostly on the ground, which is why they can eat snakes. These squirrels are also the largest of all squirrels in the world.

THREE AMAZING ADAPTATIONS



Sharp, curved claws help the Eastern Fox Squirrel climb trees and fences. They may also use them to fight.



Sharp teeth help them fight and crack open nuts. They also make it easier to crack open nuts.



Powerful hind legs let the squirrel jump up to 15 feet!

M A Y F L I E S

Scientific Name:

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



ARTWORK AND WRITING BY JON STEWART

HABITAT & SPECIES OVERVIEW

Mayflies have six legs, the thorax appears divided so they can have a whole body, except for the thorax. There are a lot of mayflies in the world. There are 2,500 mayflies in the world. Mayflies make eggs. Mayflies are emhemeroptera and they all come in different sizes. Some are small, medium, and large and most mayflies are medium.

THREE AMAZING ADAPTATIONS



A mayfly's wings are very big and thin and all of the mayflies in the world are yellow winged.



The mayflies eyes are very tiny. Their eyes are as big as a baby turtle's eyes.

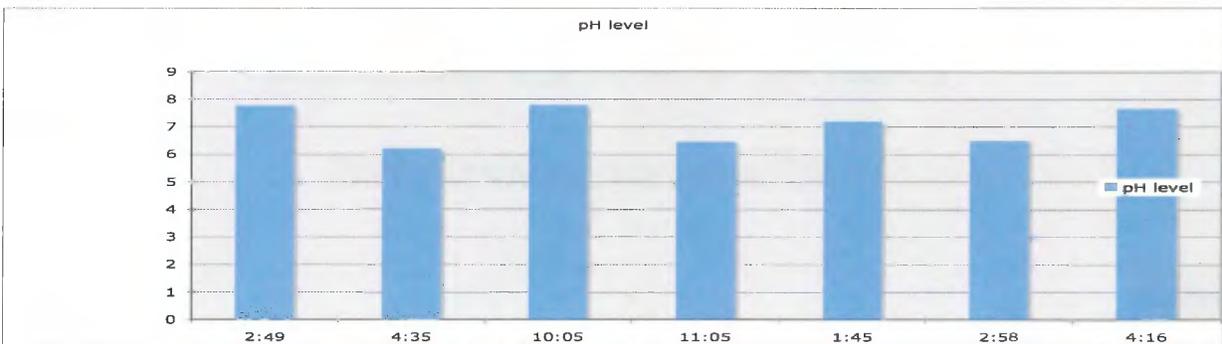


A mayfly's legs are as small as a branch but their legs are white and they are long and thin legs.

ENVIRONMENTAL IMPACTS

Mayflies have a big appetite. They can eat small bugs or just bugs. They can eat lady bugs, ants, and spiders and so on. When mayflies go to sleep they always sleep on branches outside on trees.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

These three quality samples are important because they help determine the health of the habitat of fish and animals in and out of the water. The pH levels were good, near 7. The temperature of the water was very good. The turbidity of the water was not very good since it was full of particles. The river had lots of rocks, gravel and dirt.

After taking measurements of the water quality of the Sandy River we determined that the river habitat was decent but could be better. On a scale of 1 through 10 (1 being unhealthy, 10 being most healthy), I would rate the river at a 7. So overall the water quality was good.

Environmental Research conducted by: Jon Stewart

R U F O U S H U M M I N G B I R D

Scientific Name:

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



ARTWORK AND WRITING BY Naomi Tellez Mldonado

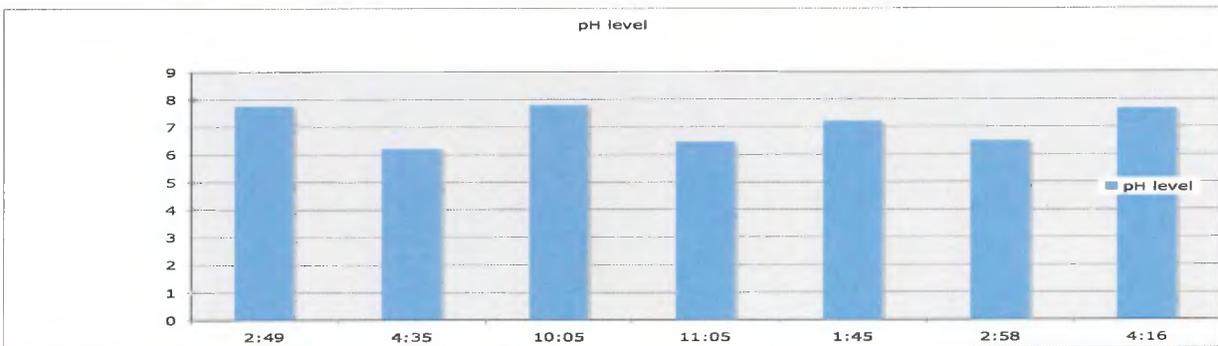
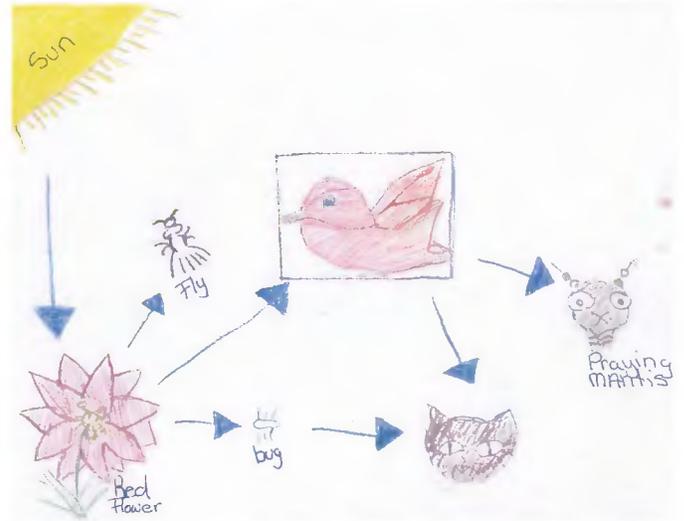
HABITAT & SPECIES OVERVIEW

THREE AMAZING ADAPTATIONS



ENVIRONMENTAL IMPACTS

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

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S H A R P S H I N N E D H A W K

Scientific Name: Accipiter striatus

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



ARTWORK AND WRITING BY ETHAN UEHARA

HABITAT & SPECIES OVERVIEW

My organism is the Sharp Shinned Hawk. One thing that amazes me is that they reuse old cooper hawk nests. Cooper hawks also happen to be their rivals in the areas that they live in. The hawks chase them off their territory and are very territorial. They only live in North America and do not migrate. They eat mice and small birds but prefer the birds. The female hawk is twice the size of the male.

THREE AMAZING ADAPTATIONS



Sharp talons

The hawk uses talons to grab prey like mice and small birds. It also uses them to grab onto trees for stability.



Camouflage

It helps the hawk blend into the environment. It also helps them sneak up on prey and avoid enemies.



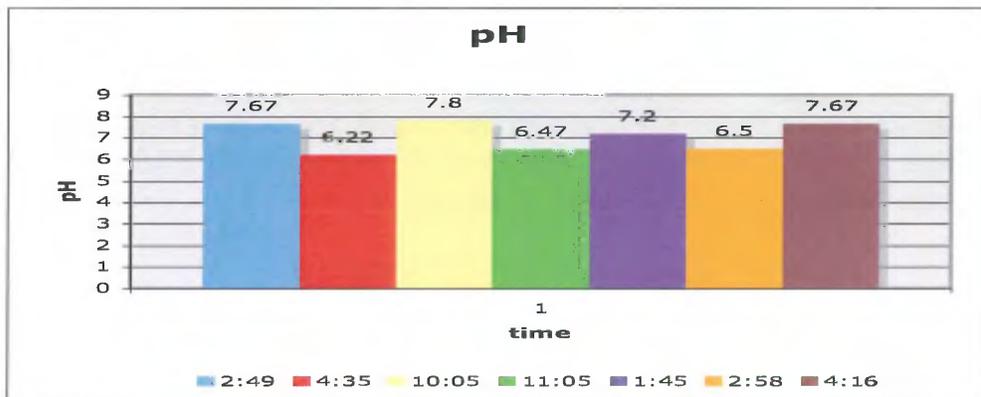
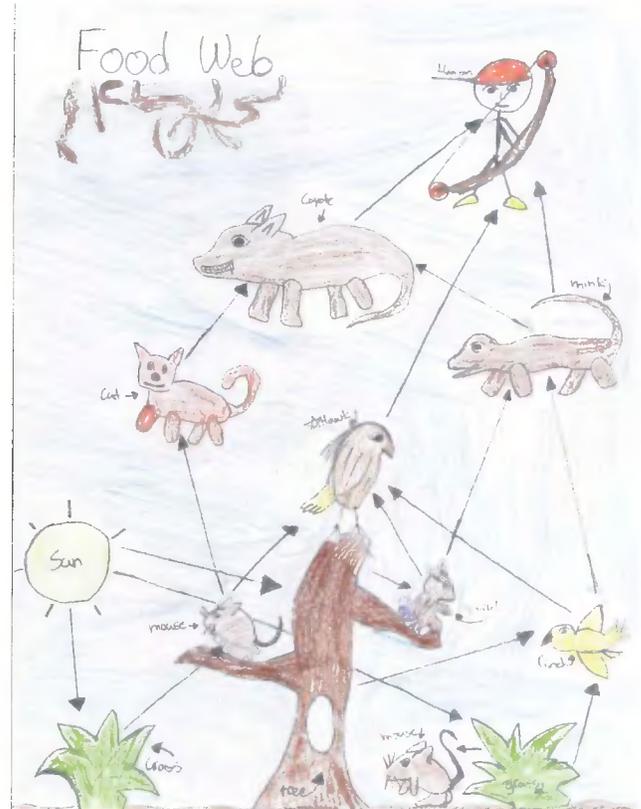
Re-use

The Sharp Shinned Hawk reuses old cooper hawk nests. It gives them more time to hunt, instead of spending their time on making nests.

ENVIRONMENTAL IMPACTS

My species is currently thriving and is of least concern because deforestation may kill their habitat but also give them more areas to hunt in. Without homes and people my species would die because they need the bird feeders to help hunt.

FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

The pH stayed in a healthy range. It was between 6.22 and 7.67. the perfect range should be between 6 and 8, so that was good. The turbidity stayed between 23.6 and 60.4 it fluctuated a lot because the rainfalls have caused erosion that pushed more sand into the river. The water temperature was normal it was always between 7c and 10c.

Environmental Research conducted by: Ethan Uehara

P A C I F I C S L O P E
F L Y C A T C H E R

Scientific Name: Empidonax Difficillis

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



ARTWORK AND WRITING BY LORISSA YUEN

HABITAT & SPECIES OVERVIEW

Pacific-Slope Flycatchers mostly live in coastal regions of western North America in coniferous, deciduous, Douglas fir and redwood forests. They eat almost all flying insects and some seeds and berries. They are virtually identical to the Cordilleran Flycatchers. In the winter they migrate to Mexico. Its call can vary slightly in different regions.

THREE AMAZING ADAPTATIONS



A Pacific-slope flycatcher can wait on a perch and when it sees a flying insect it will chase it without any effort. It's very **fast**.



This bird is very hard to see because its **colors** blend in with the trees and the colors of the forest.

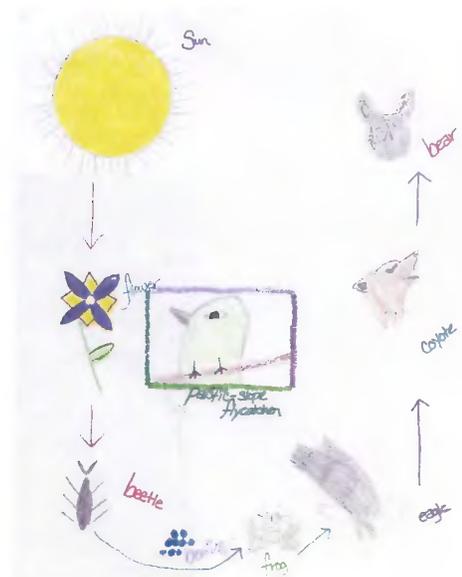


It has really good **eyes** and **ears** because it can smell and hear prey from far away.

ENVIRONMENTAL IMPACTS

The Pacific-Slope Flycatcher is listed as least concerned right now. The global population is currently about 8,300,000. It is not believed that the population will decrease that much in the next decade. But because of the effects of global warming it could affect them very fast. Also pollution, destroying their habitats, and humans feeding them stuff they can't eat are also ways they could become extinct fast. Hopefully as humans we can try to stop that because we don't want to lose these awesome animals.

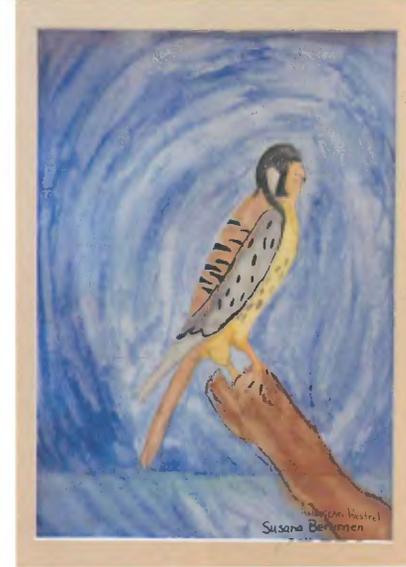
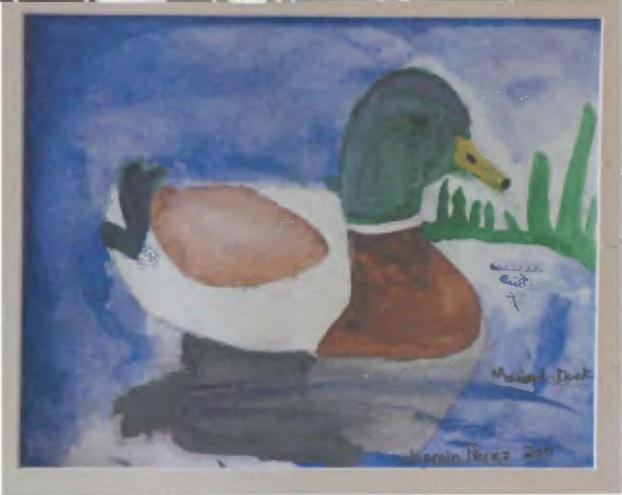
FOOD WEB ILLUSTRATION



WATER QUALITY GRAPH OF THE SANDY RIVER

Depending on what macroinvertebrates are in the water can help determine the health of the Sandy River. When we went to Camp Collins we found mostly all macroinvertebrates that you would find if the water were healthy. Also another way to determine if the water is healthy is the pH and turbidity. The turbidity was 33.4 and the ideal range is 0-10. It was bad because it was flooded. The pH was 7.4 and the ideal range is 7.4. Based on our findings the Sandy River was healthy.

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