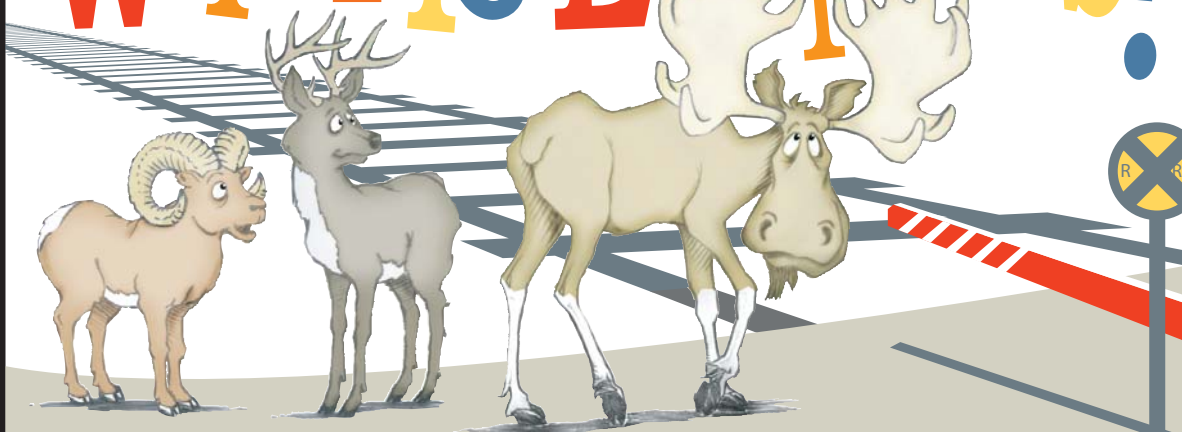


# Wildlife Express!



Volume 18

Issue 8

April 2005



# Let's Look at...

## the Mormon Cricket

You're hiking along a trail in the foothills of southwest Idaho, and you notice movement in the bushes. Out jumps what looks to be the largest grasshopper you've ever seen. Your first thought might be, "Man, what are these grasshoppers eating? They're huge!" More and more of the bold bugs make their way on to the trail. Your next thought might be, "Man! I need to get moving!" Not to worry, these large bugs won't eat you, but they may eat their "brothers" that you stepped on!

The common name of the insect you're seeing is Mormon cricket. It is not a grasshopper or a cricket. It is a katydid. Grasshoppers, crickets and katydids are all related but scientifically are classified differently. Mormon crickets have the scientific name of *Anabrus simplex*.

These large, flightless insects can be found throughout western North America. The dark brown-to-black insects are about the size of an adult's thumb. They have long hind legs that help with crawling and jumping. Their long hair-like antennae are about the same length of their bodies. Male Mormon crickets are peanut-shaped with a rounded end. Females tend to be longer with a sword-like spear on their end that is used for injecting eggs into the dirt.

Each female will lay about 86 eggs in the summer. The eggs are completely developed by fall, but don't hatch. They are dormant over the winter. Hatching begins in the spring when the soil warms up. Immature Mormon crickets move around in search of food and shelter. Two to three months later, the young Mormon crickets reach the adult stage.

It is in this stage that the Mormon crickets begin a sort of group migration. They crowd together, crawling along the ground, devouring the plants they come across. These critters can move, too – traveling up to a mile in one day. You can imagine how much damage these hordes cause to crops! They create another disaster on highways! Crickets that are smashed by cars on the highway create a mush that is as slick as black ice! Mormon crickets are cannibalistic, too. When one gets smashed, another one may stop to have a bite to eat. More cars come, and pretty soon the road is covered with insect goo!

Besides having an appetite for one another, Mormon crickets will eat nearly any type of plant they come across. You name it - sagebrush, wheat, barley, alfalfa, clover or flowers in your backyard. On the other hand, Mormon crickets fill their part in the food chain. Hawks, crows, rodents and gulls find the insects tasty. Predators help keep Mormon crickets under control.

The next time you're out hiking, take a closer look at this interesting species of katydid. Be careful when you're handling them though, they've been known to bite!



photo courtesy of Agricultural Research Service

# What is an insect?

Mormon crickets are one of many kinds of insects found on Earth. You can find insects on the ground, in trees, in soil and in your house. They make up about 80 percent of all known animal species on Earth. Insects are all around us. They are common in every habitat except the ocean.

Sometimes any small creepy crawly is called a bug or insect, but not every small creeping thing is an insect. To be an insect, an animal must have three main body parts – the head, thorax and abdomen, six legs and two antennae.

The head of an insect has the eyes, antennae and mouthparts on it. Insects have two large compound eyes. Compound eyes are faceted. They have more than one lens or surface. Compound eyes look a bit like a honeycomb. Insects may also have up to three simple eyes. You have simple eyes. A simple eye has one surface or facet. Without moving their heads, many insects can see in every direction around them.

The thorax, or middle part of an insect, is where the wings and legs are found. All adult insects have legs, but not all insects have wings.

The abdomen is where an insect breathes. Most insects breathe through tiny holes called spiracles.

Insects do not have an internal skeleton of bone like you. Insects have an exoskeleton. An exoskeleton is a hard fingernail-like covering on the outside of the insect's body. The exoskeleton can flex but not expand. As insects grow, their exoskeletons become too small. They shed their exoskeletons when they outgrow them. Just like a snake sheds its skin.

Insects come in all shapes and sizes. Hairy winged beetles are some of the smallest of insects. They can crawl through the eye of a needle. Fairyflies are also small. They can fly through the eye of a needle. The longest insect is a 13-inch long walkingstick found in Malaysia. Atlas moths in India have the largest wings at 12 inches across. Goliath beetles found in Africa are the bulkiest and heaviest. They can be as big as a baseball.

Wow, what diversity. Insects are amazing animals!

# A little history...

You might be wondering how the Mormon cricket got its name. The story takes place a long time ago.

In 1847, the first pioneers of the Church of Jesus Christ of Latter-day Saints started settling in Utah. People who follow this religion are also called Mormons. By 1848, over 4,000 settlers were living in and around Salt Lake City. Their survival depended upon raising enough food to feed everyone.

Their crops were doing fairly well until late May when hordes of insects began destroying the crops. The insects began devouring the new corn, beans, wheat, pumpkins, squash, cucumbers and melons. Everything seemed lost. Farmers battled the insects as best they could, but little seemed to help.

In June, relief came in the form of gulls. Hungry gulls came off the lake and gobbled up the crickets. For three weeks straight, the gulls came daily and ate the insects. The gulls saved the pioneers crops. Since then, these insects have had the common name of Mormon crickets, even though they are actually katydids.

This was not the first interactions between Mormon crickets and humans. About 2000 years ago, humans lived in a cave near what is now Ten Sleep, Wyoming. Cooked remains of several hundred katydids, or Mormon crickets, were found in their roasting pit! Yummy!

Another story related to this insect comes from a member of the Pony Express in Nevada. He recorded a story about a Piute Indian hunt. You'll never guess what the target was - Mormon crickets! The Indians dug a series of large trenches, covered them with straw, and drove hundreds of crickets into their traps. They then set the straw on fire, burning the crickets. The charred crickets were gathered and brought back to camp. They used the insects to make flour, and the flour was used to make bread. Crickets added protein to the bread! How resourceful! Many people used insects as a source of protein. Even today, you can find people that include insects in their diets.

Now you know how the Mormon cricket got its name and the long history some humans have shared with this insect.



# Beneficial Insects

Our lives would be very different without insects. It is unlikely that we would be able to survive on Earth without them.

We need insects to help us make food. Insects pollinate more than 200 species of crop plants in the United States. Without insect pollination, there would be no carrots for salads, no watermelon, no apple pie, and no vanilla or strawberry ice cream, and that's just the beginning.

There would be no honey, silk, inks and dyes, or other useful products. Insects and insect parts are used to make jewelry, beads and pictures. Insect products are even used to make medicines for arthritis and infections.

Insects are important parts of the food web that connects all animals and plants. Bats, skunks, raccoons and fish depend upon insects for the majority of their food.

Dead trees, dead animals and animal droppings would cover the ground if we did not have insects to decompose them.

Insects are valuable scientific tools. They have been used for studying ecology, evolution and genetics. Because grasshopper and cockroach nerves are similar to humans, they have been used to test the effects chemicals might have on people.

Insects also provide enjoyment for people. Many people like to watch and photograph butterflies and other insects. In China, people have a 2000-year history of enjoying the songs of crickets and keep them in cages.



# Population Explosions

Pop! Boom! Bang! You've heard of explosions. Population explosions get a person's attention, too. A population explosion is when the population of a certain species of animal gets really big, really fast.

Mormon crickets may have population explosions in the summer time. Usually this is when the adults are on the move. They seem to be everywhere!

Another insect, the periodic cicada, has an interesting story. These insects have a very long life cycle, but you would never know it. For seventeen years they live underground in a juvenile stage, sucking root fluids for food. In the spring of their seventeenth year, they begin constructing exit tunnels. They leave the ground and enter adulthood. The emergence is similar to a population explosion, because so many come out at the same time.

Another animal with populations that cycle are lemmings. They are small rodents that live in the north. There is a legend about the changes in their population. Every three to five years the population seems to swell. People used to believe that when the lemming population got too big, the lemmings themselves took care of it by jumping off a cliff into the ocean. The real truth is that if the population gets too big, lemmings feel the need to migrate, or move, to another area to find food. Sometimes they die in the process, but it is not because they thought they needed to kill themselves.

Jackrabbits are other animals that seem to "explode" every ten years. The population then drops rapidly.

As you can imagine, these explosions affect many other animals in the food chain. Chain reactions even happen in food chains! When an explosion occurs, a balance is lost. Biologists must pay close attention when this happens.



# Harmful Insects

Insects may cause humans harm by the things that they do. Biting and stinging insects probably come to your mind first. Insect bites and stings may not only be irritating, but could also be dangerous. Some people have deadly reactions to bee stings. Insects may also spread and transmit diseases to people and animals with their bites.

Some insects like to eat the same things we do and may destroy crops. Cotton, corn, wheat, potatoes, apples and oranges are just a few plants that can be damaged by insects.

Insects can eat any plant or animal product. Flour beetles, grain weevils and other pests will feed on stored grain, cereals, pet food and powdered chocolate. Just about everything in the kitchen that is not protected may be eaten by insects. Insects may even eat our clothes, homes and the glue in books.

Trees used to make lumber and paper can be attacked by insects. Moth, beetle and other insect larvae borrow into trees. Burrowing insects may cut the vessels that move water and food up and down the tree. This can kill the tree. Insects also bring diseases into trees on their feet and bodies, harming and killing the trees.

Insects can cause problems, which is why food chains are so important. We need a diversity of predators to help control the insects that may cause us problems.



# Nature's Transformers

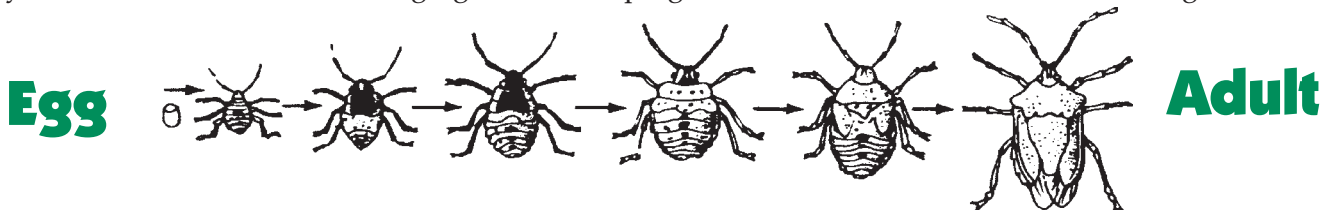
Can you think of an animal that changes the shape of its body as it grows? Butterflies may come to your mind. They change from fuzzy, crawling insects that chew their food to beautiful, flying insects that drink their food. What a change! They go through a metamorphosis.

There are many kinds of metamorphosis in the insect world. There are insects that make big changes, like the butterfly. This is called complete metamorphosis. There are other insects that don't seem to change at all. This is called simple metamorphosis.

Insects with simple metamorphosis have three life stages – egg, nymph and adult. Simple metamorphosis is broken into three kinds. The first group is insects that have no metamorphosis. They look the same when they are nymphs and adults. None of these insects have wings. The second group is incomplete metamorphosis. Dragonflies are in this group. Insects in this group lay their eggs in water. The nymphs are called naiads (NI-ads). They live in the water and breathe with gills. The adults do not live in water and do not breathe with gills. The last group with simple metamorphosis are insects with gradual metamorphosis. This is the group Mormon crickets are in. The nymphs and adults look pretty much the same, and they live in the same habitats.

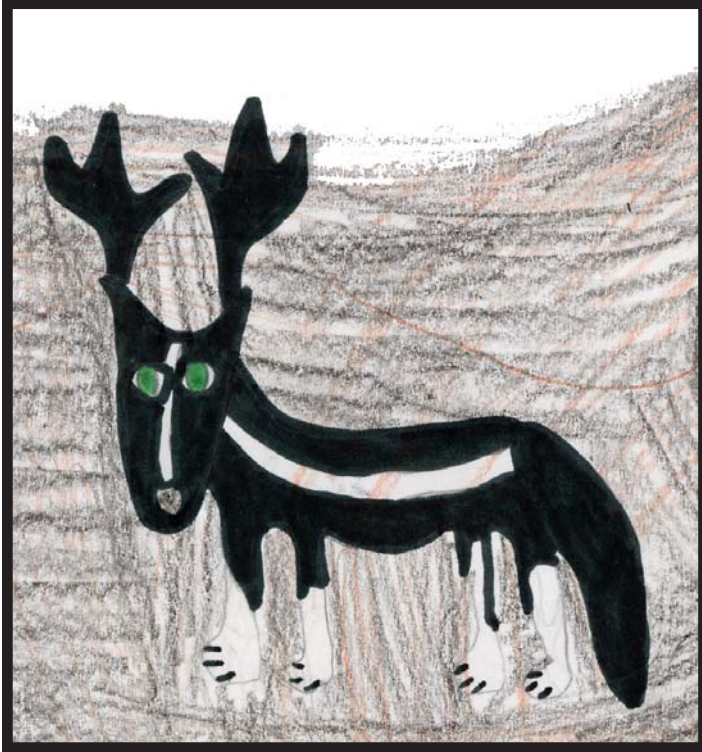
Insects that have complete metamorphosis have four stages in their life cycle – egg, larva, pupa and adult. The young and adults live in different habitats and often feed on different food. Butterflies are in this group. Many people think that metamorphosis happens so that each life stage lives in a different habitat. That way the young insects and adult insects do not have to compete with each other for food.

Metamorphosis is amazing to see. If you find a cocoon, leave it outside, but look at it everyday. You may be able to see the insect changing and developing inside. It is fun to see what will emerge!





# And The Winners Are...



Here are the results of our hybrid animal contest. You sure made this hard on us! We had so many great entries that it was hard to pick just a few. We graded the entries on the following criteria – creativity, artwork, name of hybrid, and the written description of the critters habitat. Everyone will receive a certificate. Our honorable mentions will receive an Idaho Wildlife Viewing Guide. Our top three winners will receive a shirt, wildlife viewing guide, poster and lunch bag!

## Our top three winners are:

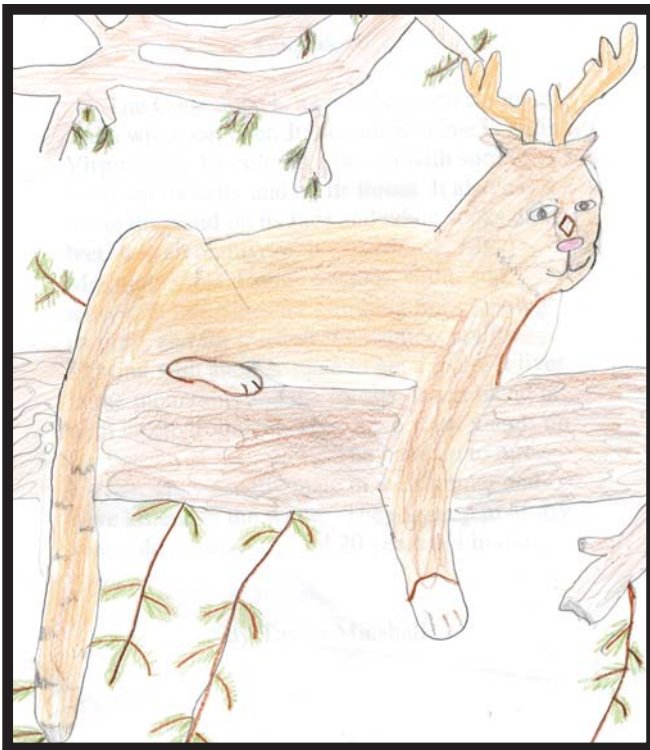
Skelk

By Jackie Riendeau

Russell Elementary, Moscow, ID

Mrs. Strong's 4<sup>th</sup> grade class

*"The way the skelk gets its food is it jumps out and stabs it with its antlers and then eats the rattlesnake or lizard."*



Cougalope

By Taylor Minshall

Troy Elementary, Troy, ID

Mrs. Flakus' 4<sup>th</sup> grade class

*"The cougalope is a cross between a cougar and a white tail deer. Its scientific name is Felis Virginianus."*



The Pine Hawk  
 By Wade Malone  
 Russell Elementary, Moscow, ID  
 Ms. Cochran's 4<sup>th</sup> grade class  
*"The pine hawk can fly up to eighty miles per hour! Basically, this is the real beast, top of the food chain, king of the jungle, you know, the big guy."*

## Honorable Mention Winners:

The Mule Duck .....	By Ceilidh McElroy .....	Troy Elementary
The Mear .....	By Brandon Gieselmann .....	Russell Elementary
Bobcat Owl .....	By Monica Miller .....	Troy Elementary
Grizgle .....	By Anna Alford .....	Russell Elementary
Sheeppine .....	By September Wickham .....	Troy Elementary
The Spotted Bear Bat .....	By Audrey Naranjo .....	Russell Elementary
Deergle .....	By Tori Fonoti .....	Troy Elementary
Wolvcoon .....	By Monica Baker .....	Russell Elementary
The Deerkey .....	By Marc Acuna .....	Russell Elementary
The Black Gopher .....	By Jenica Bourque .....	Russell Elementary



# A Buggy Scramble

Unscramble the letters to complete the sentences.

1. Mormon crickets are actually a kind of \_\_\_\_\_ (dkyatd).

2. Mormon crickets lay their eggs in the \_\_\_\_\_ (drungo).

3. Most insects \_\_\_\_\_ (eerthba) through tiny holes called spiracles.

4. \_\_\_\_\_ (mpsihostamore) is when an animal changes its shape as it grows.

5. \_\_\_\_\_ (siecnst) are important pollinators of plants.

6. Insects can be real \_\_\_\_\_ (stpse) and eat crops.

7. In China, people have kept \_\_\_\_\_ (tscircek) in cages to listen to their songs.

8. If conditions are right, Mormon crickets could have a population \_\_\_\_\_ (xpenoosli) this summer.

9. Many ancient peoples ate crickets to get \_\_\_\_\_ (neproti) in their diets.

10. Insects are common in every \_\_\_\_\_ (tbaaith) except the ocean.



## WILDLIFE EXPRESS

Volume 18 • Issue 8 • *Mormon Cricket* •  
April • 2005

*Wildlife Express* is published nine times a year (September-May) by the Idaho Department of Fish and Game. Classroom subscriptions and an Educator's Guide are available for \$30.00 per year and includes a classroom set of 30 copies mailed to your school each month. Subscriptions of five copies or less are available for \$10.00.

*Wildlife Express* is also available on the Idaho Department of Fish and Game website at no charge at <http://fishandgame.idaho.gov> For more information, call or write: *Wildlife Express*, Idaho Department of Fish and Game, 600 South Walnut, PO Box 25, Boise, Idaho, 83707 (208) 287-2874.

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### WE WOULD LIKE TO HEAR FROM YOU !

If you have a letter, poem or question for *Wildlife Express*, it may be included in a future issue! Send it to the address printed above!

