

Wildlife Express

VOLUME 39 | ISSUE 2

OCTOBER 2025

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Bats

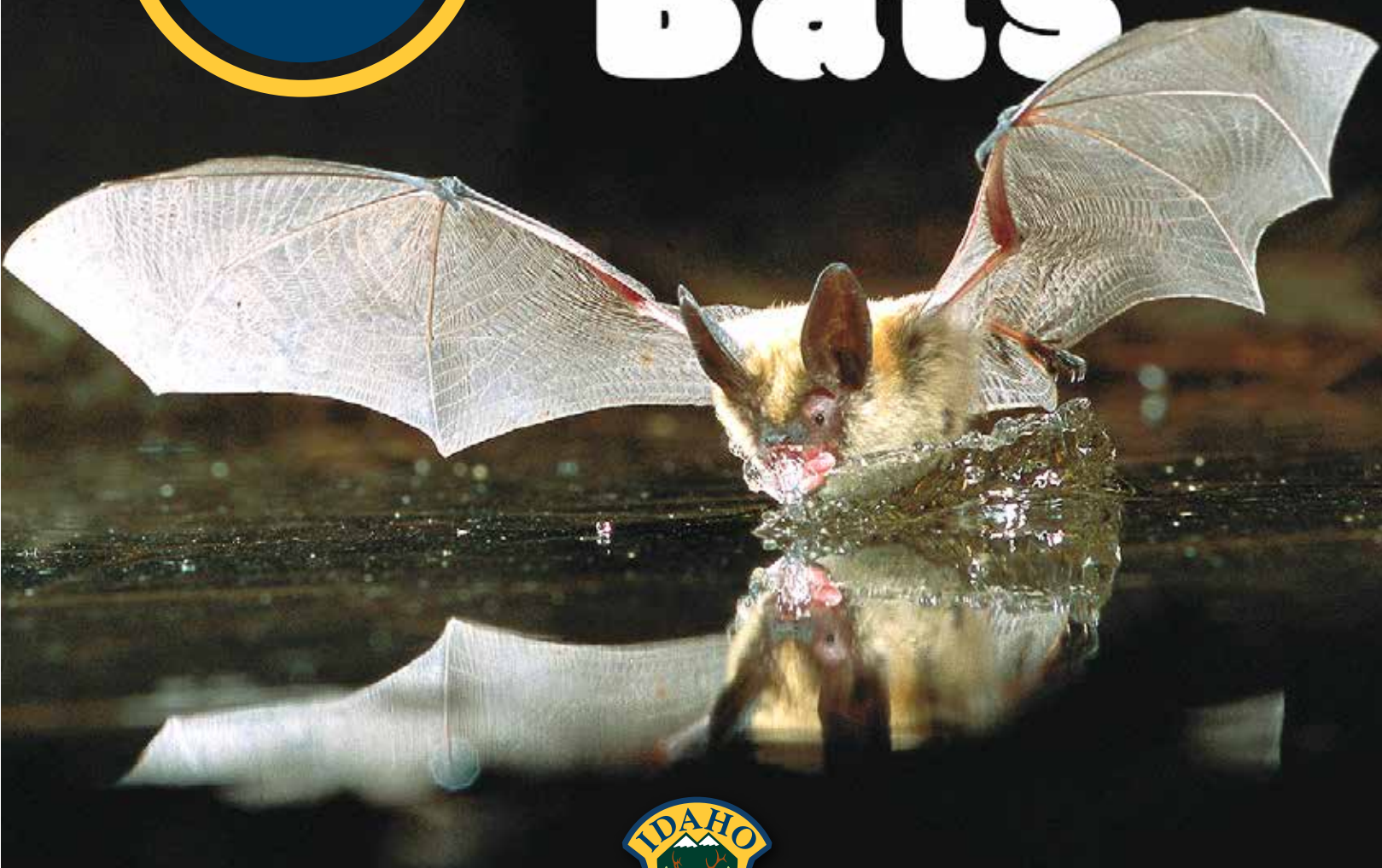


Photo: CC-BY BLM, Michael Durham for Bat Conservation International at Flickr.com



idfg.idaho.gov

A Batty WORLD

Bats have a funny way of resting.

They like to hang upside down with their toes!



Learning about bats is fun because they are so amazing.

Bats are found in every habitat except extreme deserts and the polar regions.

Bats make up one-fifth of all the mammals living on Earth. There are more than 1,400 species of bats. They are divided into two different groups - megabats and microbats.

Mega means big, and megabats are the largest. The giant flying fox has a wingspan of six feet! These bats have large eyes, small ears, and foxlike faces.

Megabats are fruit bats and are found in the tropics; they do not live in our state.

Megabats seek fruit, nectar or pollen using their senses of smell and sight. They prefer to eat fruit that is ripe. They chew on the fruit

and swallow the juice, spitting out most of the seeds and fruit pulp.

When megabats drink nectar, they get covered with pollen and carry pollen between flowers. These bats are essential for the survival of tropical forests. They fertilize flowers that make seeds, and they spread seeds by eating fruit.

Most bats in the world are microbats, the smaller sized bats.

Microbats are small bats with small eyes and interesting ears. Most have a wingspan of around 12 inches or less and would fit in the palm of your hand!

These bats eat insects, frogs, fish, blood, and even other bats. Most microbats are also nocturnal and look for their food at night.

The smallest bat in the world is the bumblebee bat, also called the Hog-nosed Bat, found in Thailand and Myanmar. It weighs less than a penny!

Microbats do not depend on sight and smell to find food, like the megabats. Microbats use a different sense, hearing!

Read the next article to learn how this works!



Echolocation LOCATION LOCATION

You probably know that seeing isn't as easy at night. Microbats rely on their ears and echoes to help them. This is called echolocation. The bats use sound to find their food in the dark.

If you have ever yelled in a large, empty room or into a canyon, you may know about echolocation. After you yelled, did you hear your voice bounce off the walls and back to you? That's an echo. It's fun for us, but it's survival for bats.

Bats make a clicking noise with their mouth or nose. The sounds they make go out and bounce off objects like moths, mosquitoes or flies. That "echo" comes back to the bat's sensitive ears. The bat uses the echo to figure out the location of objects and the food they're seeking.

Their hearing lets them locate objects as fine as human hair. A bat can find food as far away as the length of a football field. It makes clicking sounds about every half second to find food this far away.



... LOCATION LOCATION LOCATION

When a bat gets closer to its prey, it echolocates quickly. This is called a feeding buzz, because the clicks are so close together, they sound more like buzzing than clicking.

Most echolocation calls are at such a high frequency humans can't hear them. People that study bats use special equipment to hear bat echolocation calls.

Researchers can play the calls back in a frequency that humans can hear or look at the sound waves the call makes. Every species of bat has its own special echolocation call, so scientists can identify what kind of bat is flying just by listening to echolocation calls!

A few bats do echolocate at a low enough frequency that humans can hear, like Idaho's spotted bat.

Echolocation is used only to find objects, not as a way to communicate with other bats.

Communication between bats is made in different ways. Bats are social animals, and communication is very important to them for many reasons.

A mother bat and her pup know and find each other by the sound of their calls. These squeaks, squeals and clicks can be heard by humans.

Aren't we lucky we don't have to use our ears to find our food or squeaks to find our moms!





All of Idaho’s 14 species of bats are microbats.

Remember our bats don’t eat fruit, blood, or nectar, but instead they are insectivores—they eat insects.

Farmers appreciate bats because they know that bats eat insects that often destroy their crops.

Some people think that bats are just flying mice or rats. This is far from the truth! Bats are not in the rodent family at all! You are more closely related to a bat than a mouse is!

Bats are the only mammals that can fly. Bats are in their own group of mammals called Chiroptera (ki-ROP-ta-ra). Chiroptera is a Greek word that means “hand wing.” Bird wings are the bird’s arms, but bat wings are their hands. They have four fingers and a thumb just like you do, except a bat’s fingers have a membrane to make a wing!

A bat’s wing can tell you something about the way it flies and how it eats.

A short, broad wing allows a bat to move well and quickly in tight places. Bats with this wing shape usually hunt where there are many obstacles, like shrubs and tall trees. They often swoop down and pluck insects from branches or the ground.

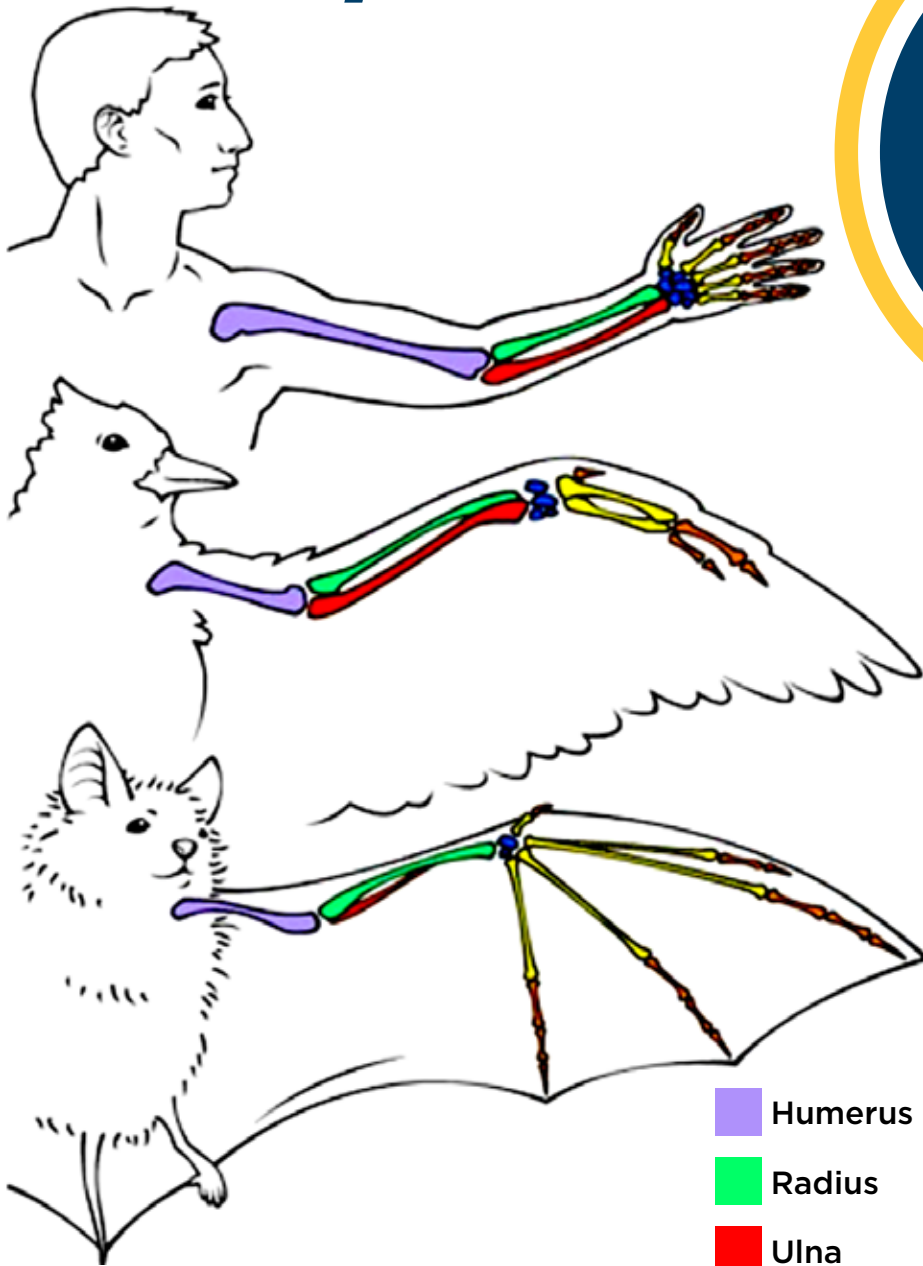
Bats with long, narrow wings are usually fast flyers. They feed while they fly. This can be tricky.

Bats can’t grab an insect out of the air with their mouths like you might catch a piece of popcorn. They make a cup with their wings or the skin between their legs to knock insects and flip them into their mouths.

Next time you see a bat that looks like it’s in crazy flight, remember it could just be the bat eating the food it needs!

Did you know?

**Human, Bird,
and Bat
forearms have
the same types
of bones!**



 Humerus

 Radius

 Ulna

 Carpals

 Metacarpals

 Phalanges

From the outside human arms, bird wings, and bats wings look very different. Humans are covered in skin, birds are covered in feathers, and bats are covered in hair. But on the inside there are many similarities among human, bird, and bat forearms. Did you know that humans, birds, and bats have the exact same types

of bones in their forearm? These organisms share the same forearm bones because they all evolved from a common ancestor.

Human, bird, and bat forearm bones include the humerus, ulna, radius, carpals, metacarpals, and phalanges. Can you identify these bones on the diagram?

Roost SWEET ROOST



A bat's home is called a roost. Roosts provide bats a safe place to rest, have young or to hibernate.

Bats use day roosts, night roosts and may change roosts at different times of the year.

Roosts may be places like caves, abandoned mines, crevices in rocks, holes or cracks in trees, under loose tree bark, or even just a hole in the ground. Some bats live in human structures. Warm attics, old barns and bridges make great bat roosts.

A night roost is a place where a bat can eat, digest its meal in peace, groom, and perhaps take a short nap.

A day roost is more like a bedroom. Day roosts may be a more sheltered area but not always.

A roost where females give birth is called a maternity roost or colony. Hundreds or thousands of bats will often gather to give birth to their young, called pups. Most bats have only one or two pups a year.

A great maternity roost has special qualities. It is warm for hairless pups, and there also must be a good supply of food close by. Bat moms will need plenty of food while making milk for their young.

Hibernation roosts are called hibernacula (hi-ber-NACK-u-la). These roosts are usually in places where the temperature is stable and above freezing. A quiet place away from humans is important, so the bat isn't disturbed. Often a cave, mine or lava tube make a great hibernation roost.



Where HAVE ALL THE BATS GONE?



Bats are so important to our environment. Their appetite for nectar, fruit and insects keep nature in balance. Without bats, our world would not be the same. We need to pay attention because bats are disappearing.

In the United States, bats face many challenges. What is happening and how can you help?

To help, we need to first understand bats. Researchers study bats to see what bats need to survive. They catch bats in nets, measure

them, and weigh them. Sometimes they may put tags on the bats to see where they go during different parts of the year. Handling a bat may be risky for the bat and the person.

In Wildlife Express, all the pictures of people holding bats are researchers that have had special training. They know how to handle bats without harming them. These researchers have also had rabies vaccinations to protect them if a bat they handle has the disease. You should never handle a bat!

Bats often live in large groups in one place like a cave or mine. When people enter a cave, they may disturb or wake the bats. Bats only have a small amount of fat to survive their winter's sleep. If a bat wakes up too many times, it may not have enough fat to survive the winter. This is why gates have been put over some entrances to mines and caves. The gates let bats in and out but keep people out to protect the bats.

A new danger to bats is white-nose syndrome. It is a disease that is caused by a fungus that was introduced into North America. The fungus grows on bare skin while bats are hibernating. Sometimes it looks like white fuzz on the bats' faces, which is how the disease got its name.

As the fungus grows, bats become more active and may even come out of their hibernaculum

during the winter. All this activity uses up precious fat needed to survive the winter.

So far, millions of bats have died. Whole colonies of bats have been killed in the eastern United States and Canada.

White-nose syndrome has not yet been found in Idaho. Recently, however, the fungus that causes the disease has been found in our state. It may be just a matter of time before white-nose syndrome is found in Idaho.

The best way to protect bats is to learn about bats and help protect their habitats. Don't disturb bats, especially when they are hibernating.

Be sure to tell others how important bats are to our environment.

By doing these things, you can help ensure that bats are always a part of Idaho.



SEVEN Idaho Bats

IDAHO HAS 14 BEAUTIFUL AND AMAZING BAT SPECIES
HERE IS INFORMATION ON SEVEN OF THEM.

1

1. Little Brown Myotis

These little bats weigh about the same as two crayons! Even though they're small, they are not Idaho's smallest bat, you'll learn about that one later.

Little brown myotis are found throughout Idaho near water. Caves, hollow trees and human structures make good roosts.

They fly through woodlands and over water at night to catch insects like mosquitoes. A little brown myotis may eat 1,200 mosquito-sized insects per hour in a single night.

2. Pallid Bat

This bat lives up to its name. Pallid means pale, and this bat has a light tan or yellowish belly with a lighter brown or tan back. Pallid bats are found in west-central and southern Idaho.

They live in rocky canyons and cliffs near water. This bat has a large wingspan, about 15 inches!

Pallid bats like the company of other pallid bats. They may even feed together if food is plentiful. While roosting at night they make calls. Scientists think that the calls may help other pallid bats find where the group is roosting.

These bats catch prey on the ground. They eat beetles, crickets, moths and scorpions. The sting of a scorpion doesn't hurt this bat at all!

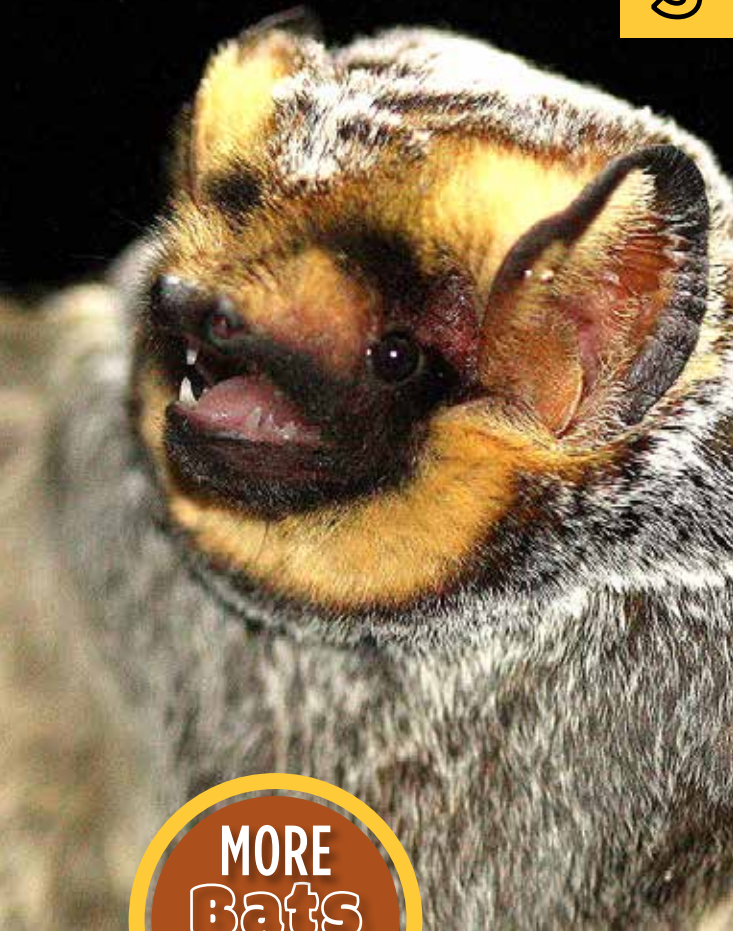
Little Brown Myotis: CC-BY Jason Corbett

Pallid Bat: CC-BY Jason Beck



Bats
of IDAHO

2

3

**MORE
Bats
of IDAHO**

3. Hoary Bat

If you wanted to call a bat “cute,” the hoary bat would qualify. It has dark, white-tipped, frosty fur, round ears, and a round face circled by caramel-colored fur. It almost looks like a tiny koala bear!

This is Idaho’s largest bat. It weighs about as much as three crayons and has a wingspan of 13 to 16 inches.

Hoary bats are probably found throughout most of Idaho’s forests. They don’t like caves at all. They roost in trees! They like to roost in leaves and small branches they can get their toes around.

During the day, their colors make them look like leaf shadows. They hunt along waterways, ponds and over meadows. Often a day roost is more than a mile away from their hunting grounds.

They are swift and direct when they fly to get to feeding areas quickly. Hoary bats love to eat moths, but they may also eat grasshoppers, dragonflies, wasps, beetles, and flies.

This is a bat that likes to be alone. Rarely are hoary bats found together.

4. Townsend’s Big-eared Bat

**4**

Townsend’s big-eared bats do have huge ears. They are up to 1 ½ inches long! Sometimes when they are hibernating or sleeping their ears curl around like the horns on a bighorn ram.

This bat is found throughout Idaho in many habitats. They have been found in dry deserts with shrubs to high mountain forests. This bat roosts in mines, caves and old buildings. In southern Idaho, they have been found overwintering in lava-tube caves.

Well after dark, this bat looks for moths near trees and shrubs. It is a specialist at catching moths, but it may also eat beetles and flies.

In some areas, their numbers seem to be declining, so this bat is a species of greatest conservation need.

Hoary Bat: CC-BY Idaho Fish and Game

Townsend’s Big-eared Bat: CC-BY JN Stuart at Flickr.com



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5. Canyon Bat

Idaho's smallest bat is the canyon bat. It weighs about as much as six small paperclips!

Canyon bats are brown to a pale smoky gray. Their wings, ears, and tails are dark black. Did you know canyon bats are named for where they are found. This bat used to have a different name, the western pipistrelle.

While most bats are nocturnal, these bitty bats could be considered crepuscular (cra-PUS-cular). This means they are active earlier in the evening than other bats. They remain active until after dawn. Their flight is fluttery.

Canyon bats must be aware of owls and other, larger bats. If they don't pay attention, they may become dinner.



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6. Silver-haired Bat

It is easy to see how this bat got its name. The silver-haired bat is covered in dark fur that has silver tips.

Silver-haired bats are not choosy about where they roost, which often gets them into trouble with people. You can find them in firewood piles, small cracks in the side of a building low to the ground, chicken coops, or right out in the open on the side of a tree or building. This also makes them more vulnerable to predation by cats, magpies and crows.

Silver-haired bats are relatively late flyers, emerging two to four hours after sunset. They look for food along waterways and ponds. They eat moths, beetles and other small insects.

This is a snag-loving bat. A snag is a dead standing tree. Silver-haired bats will roost in natural and bird-excavated tree cavities and under loose tree bark.

Silver-haired bats most often migrate from Idaho during the winter. The bat in the video "*What Do I Do when I Find a Bat?*," on the Idaho Fish and Game website is a silver-haired bat. See QR code on next page.

Canyon Bat: CC-BY Scott Altenbach. This work by Cabeza Prieta Natural History Association (<http://cabezaprieta.org>) is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

Silver-haired Bat: CC-BY Katie Miller





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7. Long-eared Myotis

This bat's long ears can extend past its nose and may be $\frac{3}{4}$ of an inch long! The fur is brownish near the tips and dark at the base near the skin.

Long-eared myotis can be found in many habitats, but they are often found in forests. They roost under tree bark, in holes in trees,



and in abandoned mines. They may be found in crevices in cliffs, rocks on the ground, lava-tube caves, or abandoned mines.

Long-eared myotis look for food over water or among trees and shrubs. They pick insects from the surface of leaves, tree trunks, rocks or the ground.

They eat mostly moths and beetles but will also eat true bugs, lacewings, wasps and bees.

WHAT TO DO IF You Find A Bat

In this issue of Wildlife Express, you have learned many cool things about bats. Aren't they amazing animals? One of the most important things you can learn is how to help bats. This includes how to behave if you find a bat.

Sometimes bats find their way into houses and cabins. Bats get very confused by all the walls and lights. They just want to find a way back outside!

This video will give your family exact directions on what to do if you find a bat in your home.

In the fall, it is not uncommon to find a bat roosting on the side of a building during the day. It may leave at night and come back to the exact same spot the next day. This bat is probably taking a break during its fall migration. It might be hanging out because it is finding a lot of insect food. This is a healthy bat that needs to be left alone!

Do not disturb the bat in any way. Stay away from the roosting bat and make sure others do the same. It will resume its migration when it is ready.

What should you do if you find a bat on the ground? Leave the bat alone and find an adult! This bat might be sick, injured or just worn out from its migration.

Even though you want to help, bats can sometimes get rabies. Rabies is a deadly disease, not only for bats, but also for humans and other mammals who become infected. For this reason, you should never pick up a sick or injured wild animal.

Check out the video "*I Found a Bat in my Home! What Do I Do?*" on the Fish and Game website.



Find an adult and contact the nearest Fish and Game office. These people know what to do to help wildlife that's in trouble.

It's important to leave the bat alone and let an adult know. You could also hurt the bat by trying to pick it up. If the bat is in your house, watch the video for help to remove it.

The best way to help is to stay away from the bat. Keep an eye on the bat but do so from a distance. Make sure your friends or other people do the same thing. You will also want to keep any neighborhood pets away from the bat.

When you do the right thing, you will make it more likely that the bat will live to fly another day. It just might return the favor by coming back and eating lots of pesky insects in your neighborhood.



BAT SCAT GUANO BAT POOP



Learning about animal scat can be fun and is helpful for identifying animals that left it. People who study scat are called scatologists.

Bat scat looks a lot like mouse scat but has blunt ends instead of pointed like a mouse's scat. It's about the same size, but mouse scat is more scattered about.

You will usually find bat scat under a roost. The major difference about bat scat is that it's powdery when rubbed between fingers. If you want to be sure, using protective gloves, squish the scat up a bit. Hold it up to light. Do you see glittery or sparkly things, it's probably bat scat.

If you stop and think about what a bat eats, INSECTS, you will better understand why the scat is soft, fragile and sparkly. Bats cannot digest the shiny, hard outer shells of insects. These parts and pieces make their poop appear shiny and shimmery. Sometimes you will even find insect wings or legs on the ground by the poop. A bat may pull these off and eat the soft middle of the insect.

Bat scat even has a special name. GUANO! You may have

heard of guano before. Guano comes from an old word from Andean native language. The word "Quechua" refers to any animal poop that is used as fertilizer. Bat guano is a great fertilizer!

Guano makes great fertilizer because the insect shells found in it are rich in nitrogen, phosphorus and potassium. These elements are very important for plant growth. Nitrogen helps the growth of green stems and leaves. Phosphorus supports the roots, and potassium helps with producing flowers and fruit. Be sure to read directions when working with bat guano fertilizer.

In some caves, guano can be 100 feet deep. Look up Bracken Cave in Texas! Our bat caves in Idaho are not this big or deep. A person must be careful around bat guano because fungal diseases can be spread through spores found in droppings older than 3 years. It is advised to be especially careful when cleaning bat guano because the spores become airborne during cleanup.

We knew bats were important, but here's to their poop too!



Measuring up to a Little Brown Myotis!



Materials Needed:

- Wildlife Worksheet on next page
- Pencils
- Clock with seconds
- Bathroom scale
- Gram scale
- Tape measures

Details:

Mammals:

Both bats and people are mammals.

Wingspan:

Outstretch your arms and measure the distance between fingertip to fingertip.

Number of Fingers:

Count your fingers and thumb.

Weight:

Get on scale and take your own weight.

Resting Heart Rate:

Take your pulse by putting your fingers against the carotid artery in the neck. Sitting down, take a resting pulse by counting the number of heart beats in a 15 second period and multiplying that number by four to determine the total beats for one minute.

Active Heart Rate:

Before taking this rate, do one minute of jumping jacks to simulate flight. Take heart rate as described previously.

Wing Beats:

Flap your arms like wings and count the number you can do in ten seconds. To get the per second amount, divide your number by 10 when you finish.

Food Consumption:

Weigh yourself and divide that number by 32.

Lifespan:

The average lifespan for a human is 74 years.

Were you surprised by any of the answers?

Little Brown Myotis WORKSHEET

	You	Bats
Kind of Animal		Mammal
Wingspan (armspan)		Average 10.5 inches
Number of Fingers		Four fingers and one thumb
Weight		7 - 14 grams, about as much as 2 crayons.
Heart Beats / Minute Resting		Less than 100
Heart Beats / Minute Active		As many as 900
Wing Beats / Second		12
Food Consumption		Eat 1.2 times their body weight in one night.
Lifespan		Longest-lived mammal for its size. Live for an average of 10 years, but can live as long as 30 years or more.

Illustrations: CC-BY Vecteezy.com

Wildlife Express

Volume 39 • Issue 2

Bats

October 2025

Wildlife Express is published by the Idaho Department of Fish and Game

Editor: Sara Focht, Lori Wilson, Rita Dixon

Layout: Nancy Jasper



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: lori.wilson@idfg.idaho.gov

or

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