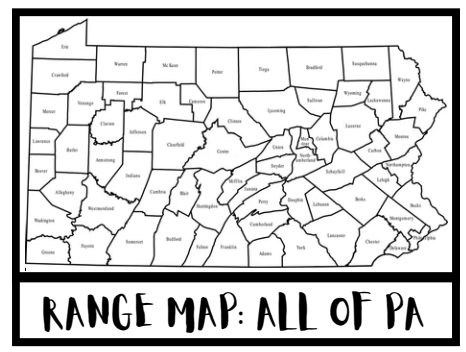
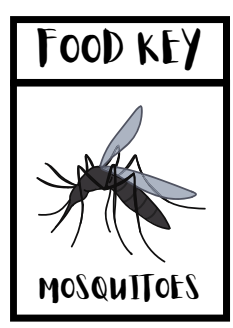


BATS

Learn more at: www.pgc.pa.gov



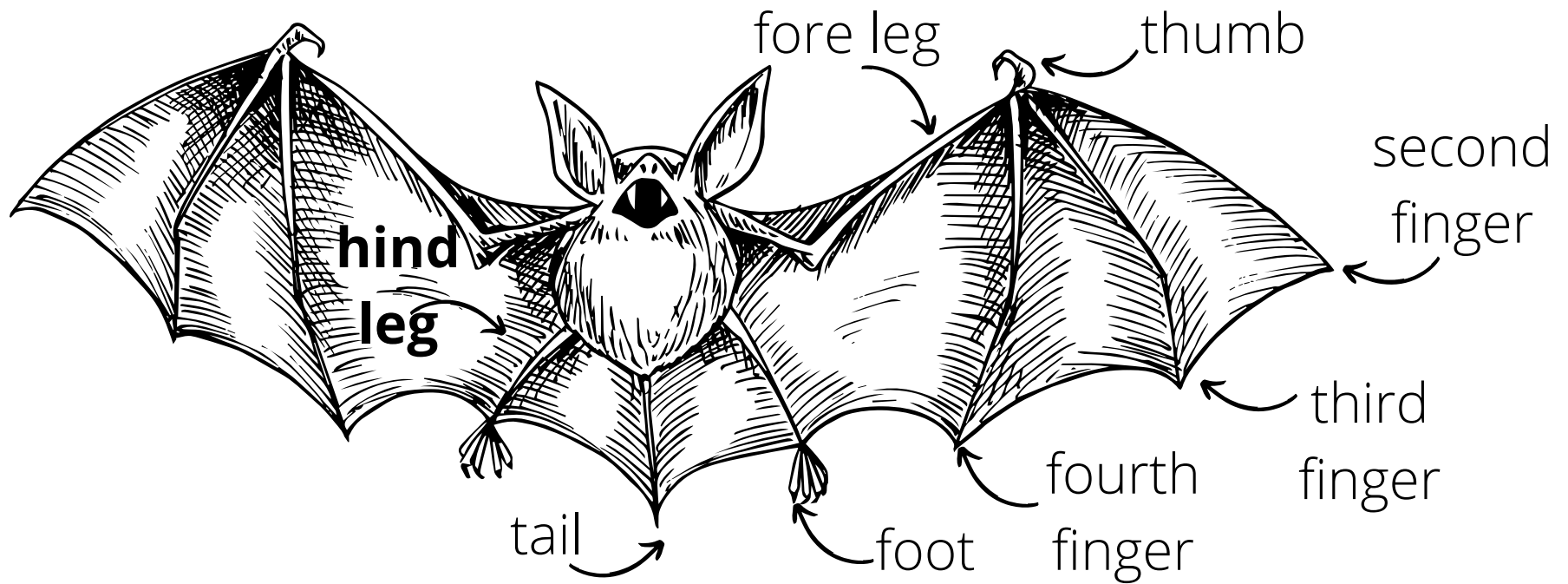
WHAT'S FOR DINNER?

If you were a bat, you could plan to munch about 600 mosquitoes in an hour! How's that for a hearty appetite - and a lot of work too. A bat consumes up to 25 percent of its weight at a single feeding, with the smaller, hibernating species estimated to consume nearly a million insects per bat per year. Imagine how many insects we'd have if there were no bats dining out every night!

How many mosquitoes? Ask an adult if you can use a box of elbow macaroni. Pour the entire box into a large jar. These are your mosquitoes. Make a list of how many "mosquitoes" you, your friends, and your family think there might be in your jar. Once you have everyone's guesses, count the mosquitoes. Who was closest? Are there more or less than 600? As you can see, bats must be very busy to catch and eat as many mosquitoes and insects as they do. Keeping the insect population in check is a big help to the environment.



Have you ever been scared by a bat? If so, you have plenty of company. Bats have a bad reputation with many people. We tend to think of them in haunted houses at Halloween or worry they'll attack us or get in our hair. That's too bad, because bats are one of nature's most interesting and useful creatures.



Do you know what a **mammal** is? Mammals are creatures that are **warm-blooded**, have hair or fur, are vertebrates, are born alive, and have mammary glands that produce milk. Humans are mammals and so are bats. But bats aren't just any old mammal; bats are the **ONLY** mammal that flies! Although bats may look like flying mice because they're small and furry, they really aren't like mice at all. In fact, they're actually more closely related to humans than mice. Some people are afraid of being attacked by a rabid bat. There's not much to worry about, though. Bats, unlike other animals with rabies, seldom attack other

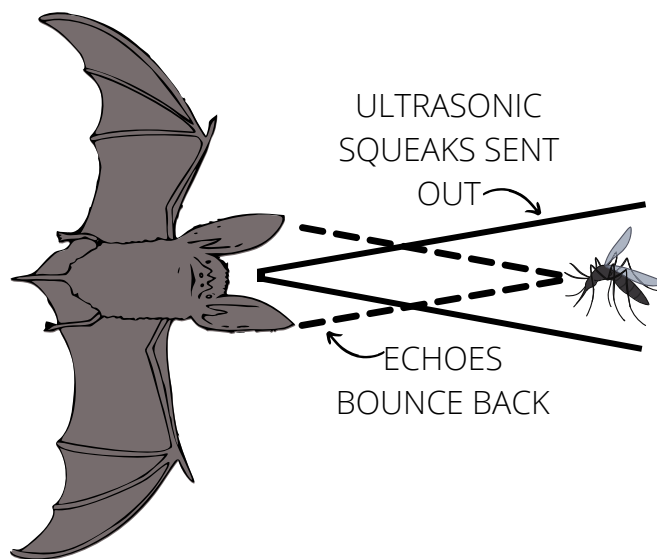
creatures. However, you should **NEVER** try to handle a bat - or any other wild animal - especially one that acts sick. Leave bat handling to the experts!

Bats have been on earth for at least **60 million years**. That means they developed only about 5 million years after the dinosaurs died out. It also means they've been around for about 57 million years longer than humans and our ancestors. Some scientists believe that bats evolved from small, shrew-like mammals that lived in trees and ate insects.



Echolocation or "Bat Radar"

Are you afraid a bat will dive right into you? Well, you'll be pleased to know that the last thing a bat wants to do is attack or run into you. Bats almost never attack people or fly into their hair. In fact, bats avoid running into any object except the insects on which they feed. They do this by using a remarkable system called **echolocation**. Flying bats constantly give off high-pitched squeaks that we can't even hear. They have large ears; these help them hear the **echoes** coming back as the squeaks bounce off even the tiniest objects, so they can tell the **location** of the insects they eat. This is a lot like radar, only bats used it long before there were people on earth!



The better to hear you with, my dear: take a good look at the ears of a bat. What do you notice about the size and shape of the ears? Look at your ears in a mirror. How are they different from a bat's?

While one person sits in a chair and wears a blindfold, have another person ring a bell or clap their hands from different locations. Can the blindfolded person point to the bell and identify its location?

Next, have the blindfolded person cup their hands behind their ears and try again. What did the use of hands do? Look again at a picture of bat ears. How does the shape of bat ears compare with the cupped hands at your ears?



Radar Game

Have you heard the expression "blind as a bat"? Well, don't believe it! North American bats may not have outstanding eyesight, but they certainly aren't blind (many tropical bats have very good eyesight). Even though bats aren't blind, they do rely heavily on their radar and echolocation to find food and avoid objects in their path.

Here's a game you can play with your friends on the playground or in an open field. Begin by blindfolding one person in the group; this person is it. This person must then try to tag the others in the group by listening to the bat squeaks the others make and tagging them. The "squeakers" can't move and must squeak once the game begins. The last person to be tagged becomes it.



Roosting bat

Make a bat magnet to roost in your house to remind you how useful these interesting creatures are.

Here's what you'll need:

Black, brown, or gray construction paper 11 1/2" x 3" strip and a triangular piece

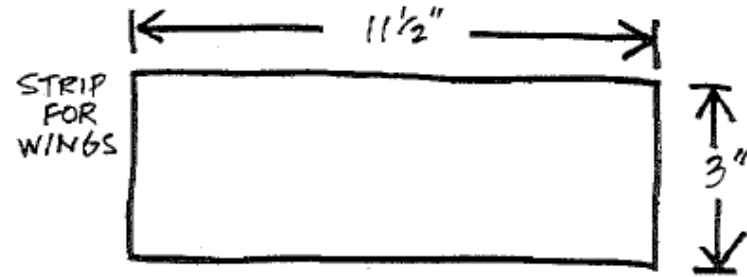
Clothespin - kind with metal spring

Glue, tape, newspaper

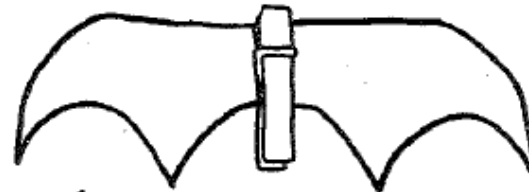
Paint (Black, brown, or gray depending on species)

Small magnet

1. Spread newspaper on workspace. Paint the clothespin and allow to dry. This is the bat's body.
2. Fold the strip of construction paper in half and draw a wing pattern on it. Cut out the wings and glue to clothespin.
3. Pinch the triangular piece together as shown to create the ears. Wrap in place with tape. Open the clothespin and tuck the ears in. Secure inside the clothespin with a drop of glue.
4. Glue a magnet on the clothespin and place on refrigerator. Just squeeze the clothespin open and your bat can help you by holding important messages.



FOLD STRIP IN HALF
DRAW WING PATTERN
THEN CUT OUT WINGS
DO NOT CUT ALONG FOLD

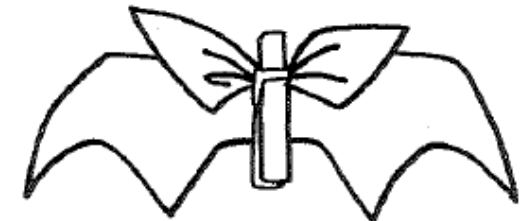


GLUE WINGS TO CLOTHESPIN

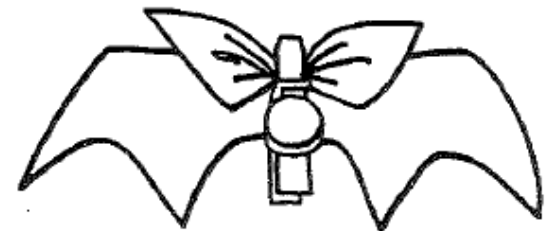
CUT OUT PAPER TRIANGLE



PINCH TOGETHER FOR EARS



OPEN CLOTHESPIN
TUCK EARS AGAINST
SPRING AND GLUE



GLUE A MAGNET
ON THE CLOTHESPIN



Learn more at: www.pgc.pa.gov



Refrigerator Roost

Now that you've made one or two bats, its time to give them a roost! Print this sheet out our draw your own, and hang it on your fridge! Now, yours bats will have a nice safe place to sleep.

BAT #1

BAT #2

Bats go to the bathroom just like we do. Bats' excrement is called **guano**. Glue some black beans on the box to the right to represent your bat's guano!

GUANO



HOME sweet HOME



All bats in Pennsylvania are **nocturnal** which means they are mostly active at night. During the day, bats rest in different places. These places are commonly referred to as **roosts**. Some species live in large colonies in caves, hollow trees, under tree bark, in barns, and attics. All of them hang upside down, although no one is quite sure why. Bats **evolved** this way, with feet **adapted** for clinging upside down, rather than perching like in birds. Bats also use the claw-like thumb at the joint of the wing to cling to walls and balance while roosting. Bats are the **ONLY** creature to roost upside down!

A bat's point of view: Lie on your back on a bed and hang your head and shoulders down as far as you can towards the floor. pretend you're a roosting bat. Do things look strange and different when you're upside down? You may feel funny because blood rushes to your head, but bats are designed so that doesn't bother them. Hanging upside down is normal to a bat!

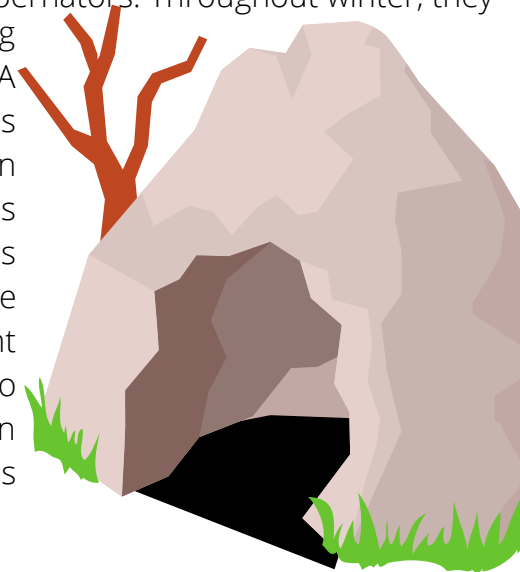
FAMILY LIFE

Most bats, including the smaller species, usually bear a single pup per year; the larger species may have up to four. The pups, born in summer, are naked, blind, and helpless. They are nursed by their mothers as are other mammals, and by six weeks old, most are self-sufficient and nearly adult size.



WHERE SHALL WE SPEND THE WINTER?

In fall, winter and early spring, insects are not readily available to bats in Pennsylvania and other northern states. At this time, three species migrate south; six others hibernate underground, usually in caves. Except the three that migrate, our cave bats are true hibernators. Throughout winter, they eat nothing, surviving by slowly burning body fat accumulated during summer. A hibernating bat's body temperature drops close to the air temperature; respiration and heartbeat slow; and certain changes occur in the blood. Most favor cave zones having the lowest stable temperature above freezing. During winter, bats might awaken and move about within a cave to zones of more optimum temperature. In many caves, bats of several species hibernate together.





Learn more at: www.pgc.pa.gov



Bats you might see

There are 9 species of bats in Pennsylvania. Some of them look so much alike that even experts have difficulty telling them apart. One way to tell them apart are by size. You'll probably be surprised how small they are!

Pennsylvania bats range in size from the **hoary bat** (length, 5.1 to 5.9 inches; wingspread, 14.6 to 16.4 inches; weight, 0.88 to 1.58 ounces) to the **tri-colored bat** (length, 2.9 to 3.5 inches; wingspread, 8.1 to 10.1 inches; weight, 0.14 to 0.25 ounces). Of the 9 species of bats that regularly occur in Pennsylvania, six of them hibernate in Pennsylvania and three migrate south for the winter. Two additional species, **evening bats** and **Seminole bats**, are rare visitors from the South.

The **Indiana bat**, **little brown bat**, **long-eared bat**, and **tri-colored bat** are all listed as **endangered species** in Pennsylvania. This means that the species is at serious risk of extinction within their range in the state. Additionally, the **small-footed bat** is listed as a **threatened** species, which is a species which is at risk of becoming endangered in the near future.



What can you do?

Never disturb a bat roost or a cave, especially in winter, when the bats are hibernating. Simply waking up a hibernating bat can use up to 67 days' worth of stored energy, so that bat might not survive the winter. Don't try to keep a bat as a pet; they almost always die quickly in captivity. Try your best to educate others that bats are good and should be protected. If you find a bat in your home, don't kill it! It's often a young bat that is confused - leave a window open and it will usually find its way out. If it doesn't give your local Game Commission regional office a call.



Night Watch

On a summer evening at dusk, take a walk outside. If you live near a pond or lake, walk there. A still, warm night is best; if the bugs are biting you, chances are the bats will be out feeding, too. Stand still and watch above you for flying bats. They like to dip and swoop, so don't be alarmed. What did you notice about how and where they swooped? Why do you think bats are helpful creatures?

Put up a bat house: Several major conservation organizations, including the Pennsylvania Game Commission, sell houses that are designed just for bats. Now that you understand how useful bats are, you might want to attract some to your neighborhood. If you put up two or three bat houses in appealing locations, the chances are good that you'll attract some bats.