

Night Fliers

A scientist searches the night skies to investigate bats.

BY BRITT NORLANDER

Night is falling in a forest in French Guiana (gee-AH-nah), a country in South America. Nancy Simmons, a **zoologist** at the American Museum of Natural History in New York, hikes along a trail. She opens a black net attached to long wooden poles.

As the sun sets, night-flying bats begin to emerge from their sleeping roosts. As they swoop past Simmons—THWAP!—some get caught in her net. Simmons carefully starts untangling the bats. She works through the night, examining each one before setting it aside in a cotton bag. At the end of the night, she decides which bats to release and which to take to her camp to study.

Through many long nights of work, Simmons has captured 78 different bat species within

only a small circle of the forest. Each species has its own **traits** that help it survive.

But French Guiana isn't the only place swarming with bats. These animals are found on every continent except Antarctica. In fact, nearly one fifth of all the species of **mammals** on Earth are bats.

Now, scientists are trying to learn how all these different types of bats are related. Follow along as Simmons discusses her quest to build a more complete bat **family** tree.

Is it difficult to study bats?

Yes! Bats are **nocturnal**, so we have to work during the night. Studying little animals that fly at night is difficult because you can't see them easily. That's why we use nets to catch them.



Nancy Simmons holds a bat that she caught in her net, shown above, in French Guiana (see map).

Once you have captured a bat, what do you do?

I study the structure of the bat's body. This ranges from what the bat looks like on the outside to what it looks like on the inside. For instance, I study color patterns on the bat's fur as well as the form of the bat's skull and the shape of its teeth.



A lesser long-nosed bat feeds on the fruit of a saguaro cactus.

Words to Know

- zoologist** — scientist who studies animals
- trait** — a characteristic
- mammal** — a warm-blooded animal that can produce milk, has a backbone, and has fur or hair
- family** — a group of animals or plants that are related
- nocturnal** — active at night
- insectivore** — an animal or plant that feeds mainly on insects
- endangered** — at risk of no longer existing

To discover more about bats, tour the Science Explorations Web site. Be sure to take part in the live question-and-answer session with bat specialist Nancy Simmons. www.scholastic.com/bats

MERLIN TUTTLE/PHOTO RESEARCHERS, INC. (LESSER LONG-NOSED BAT); ROBERT VOSS (SCIENTIST); COURTESY OF NANCY SIMMONS (NETS)



The flying fox is the world's largest bat.



The bumblebee bat is the world's smallest bat.

What do these traits tell you?

You can learn a lot about how an animal lives by studying the structure of its body. For instance, bats that eat insects need to pierce the insect's hard outer skeleton. These bats usually have sharp, pointy teeth. On the other hand, a bat that eats fruit needs to crush the fruit to get out the juices. So fruit-eating bats tend to have broader, less pointy teeth—more like a human's.

So there are lots of different kinds of bats?

There are more than 1,100 species. They range from fruit-eating bats to **insectivores**. And they come in different sizes too. A large fruit-eating bat called the flying fox has a wingspan

of up to 2 meters (6 feet). At the other extreme, the bumblebee bat is the world's smallest bat. It's smaller than my little finger, and its wingspan is about 8 centimeters (3 inches). These bats eat tiny insects. And there are all kinds of bats in between.

If each species of bat is different, how are they related to each other?

That's one of the big mysteries. Most scientists now recognize 18 or 19 bat families. Bat species are grouped into these families based on traits that the species share. For example, all the bat species in one family may have similar teeth, skulls, wing forms, and eat the same type of food. But scientists have not yet agreed how

bats in each of these families are related to each other.

How will you sort it out?

We are gathering information on the traits of bat species from all over the world. By compiling all of this information, we hope to find links among the different bat families. Then, we'll be able to build a better bat family tree.

Why is it so important to learn about bats?

Studying bats will help us protect them. There are many species of bats that are **endangered**. By gathering information about bats, we will be able to determine which species are at risk and how to help them survive.

Why must we protect bats?

Bats play a key role in many environments. For instance, one of the important things that some bats do is feast on corn ear worms. These insects feed on many of the plants that are grown for food. If bats were wiped out, corn ear worms could grow out of control and destroy the plants we rely on for food.

Chip Challenge

Can you find ways to group different potato chips?

THINK: What are some characteristics that you and your parents have in common? What are some characteristics that make you different?

PREDICT: There are many differences among bats. To understand these differences, scientists *classify* bats, or sort them into groups. Each group shares a particular set of characteristics. For example, the members of one group may all eat insects. Scientists group all sorts of things. Suppose you were a scientist who had to group different types of potato chips. Would you be able to group the chips? How?

Procedure:

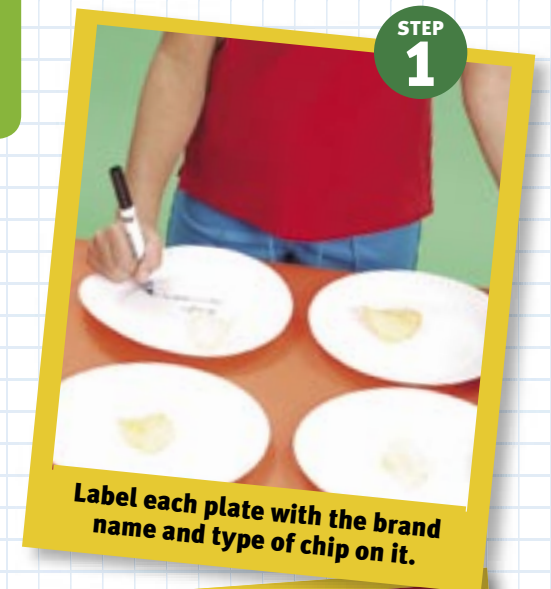
1. Place one chip from each bag on a separate paper plate. Label each plate with the brand name and type of chip you placed on it.
2. On an index card, write a list of categories that will help you study the chips. Some categories to include are: "Type of Snack," "Brand Name," "Texture: Smooth or Ridges," "Is it Salted?" and "Is it Flavored?"
3. Start this classifying activity with one potato chip. Study the characteristics of the potato chip. Then, take the list of categories you created. Fill in the appropriate information beside each category. If your potato chip is flavored, be sure to write the type of flavor. After you are finished, place the index card beside the chip on the plate.
4. Repeat Steps 2 and 3 with the remaining potato chips.
5. When you are finished, compare and contrast the lists you created. Determine the most common characteristic among all the chips. Next, determine the second-most common characteristic. Continue to do this until you reach the least-common characteristic.

Conclusions

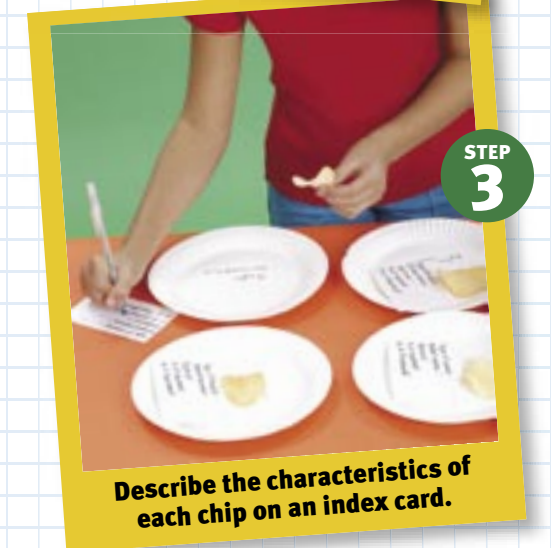
1. What was the most common characteristic among the chips?
2. What was the least common characteristic among the chips?
3. Are there other categories you could have created for the chips? If so, what categories?

You'll Need

- ✿ 8 different types of potato chips. They should be of different textures, flavors, and brands.
- ✿ 8 paper plates
- ✿ Pen or Pencil
- ✿ 8 index cards



Label each plate with the brand name and type of chip on it.



Describe the characteristics of each chip on an index card.

check it out

Golden-capped fruit bats and many of their relatives can be seen in the Museum's Hall of Biodiversity. This permanent exhibition deals with an important environmental issue: the need to protect and preserve the variety of life forms on Earth. The Museum has been researching and celebrating the natural world for more than 135 years and has more than 30 million objects in its entire collection. The Museum's 200 scientists travel around the world on 100 field expeditions each year. They study everything from leeches to woolly mammoths to the universe.

To learn more, ask your teacher, or go to www.amnh.org.