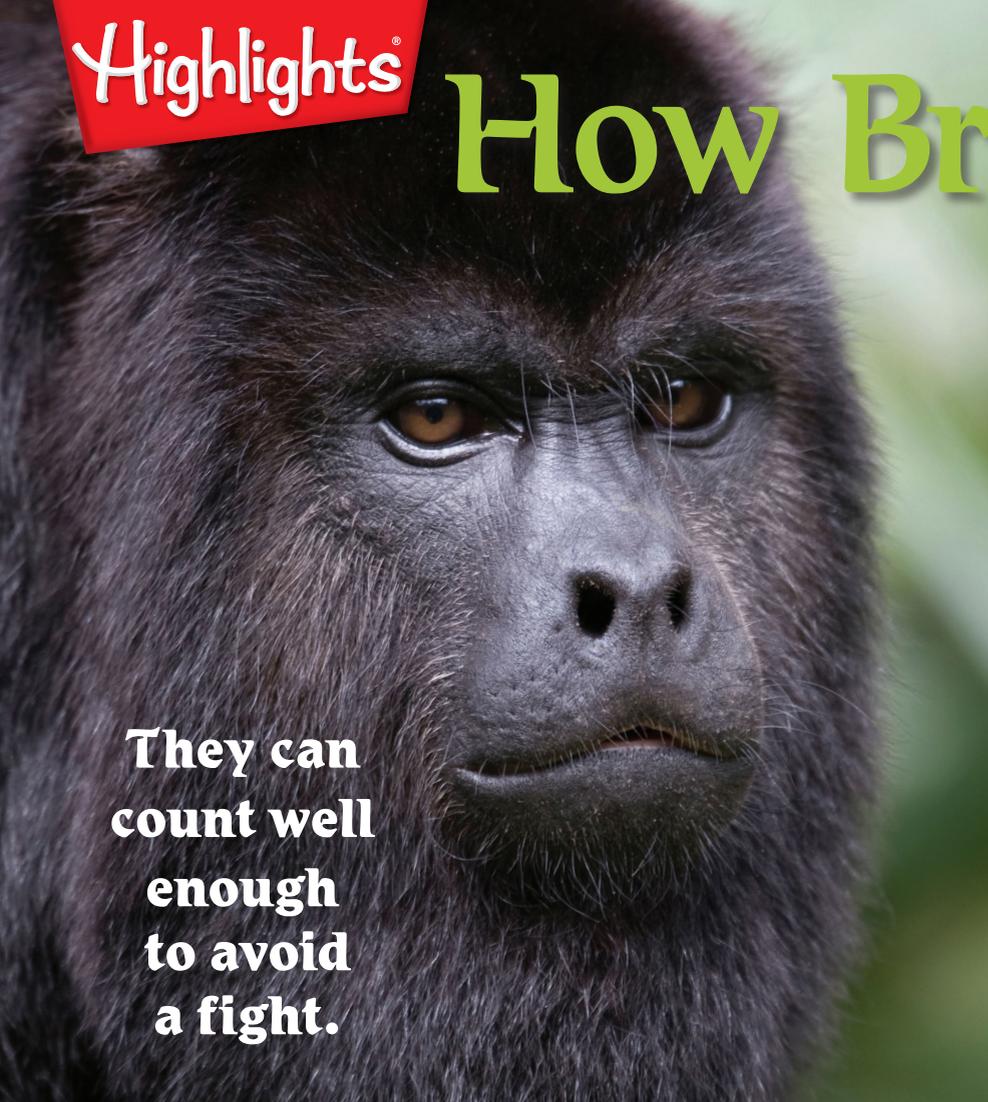


# How Brainy Are Monkeys?



**They can count well enough to avoid a fight.**

By Alison Pearce Stevens, Ph.D.

**F**rom high in the trees, loud roars ring through the forest. Nearby, a troop of black howler monkeys stops to listen. After a pause, one of the monkeys howls back. He wraps his tail around the branch, holds on with all four feet, and begins to swing. A large sac in his neck fills with air, turning his howls into a roar. Soon, two other monkeys join in the howling.

The monkeys think they're howling at another troop. In fact, they are howling at a set of speakers hidden in the trees a short distance away.

Dr. Dawn Kitchen and her assistants are conducting a

playback experiment, taking note of how the troop reacts to the calls from the speakers.

## Challenging Work

Studying monkeys in the forests of Belize, in Central America, may sound like fun, but the work is hard. The days can be hot, so researchers go out early in the cool of the morning. This time is also best for finding the monkeys, who give a “dawn chorus” of calls after they wake up. In the heat of midday, the monkeys sleep, and they can be hard to find.

Sometimes rain prevents the researchers from doing their experiments. They have to protect their electronic equipment from water, so they stay in camp.

The researchers also have to watch for dangers such as snakes, peccaries (wild pigs), and jaguars. They wear long sleeves, long pants, and boots whenever they go into the forest to avoid bites from mosquitoes, which may carry a serious disease called malaria. The clothes make for hot, sweaty work in the humid afternoons.

Despite the challenges, Dr. Kitchen loves her work. She has always wanted to work with animals, and studying these intelligent primates in their habitat is about as good as it gets.

But that habitat is shrinking. Much of the forest where black howler monkeys live has been cut down for farming and ranching. As a result, the monkeys are endangered.

Dr. Kitchen started studying howler monkeys with Dr. Robert Horwich, a scientist who has helped protect the monkeys. She is not directly involved in protecting the howlers. Instead, her work



**A mother and baby howler monkey rest in a tree.**



**Howler monkeys are some of the loudest animals in the world.**

helps people understand why the monkeys behave the way they do and what they need to survive.

## Small Monkey, Big Noise

Howler monkeys are some of the loudest animals in the world. Their calls can be heard up to a mile away. The volume is remarkable because the monkeys are quite small. The average male weighs only 15 pounds, yet his roar can be as loud as a tractor-trailer barreling down a highway.

Black howler monkeys live in troops with one to three males and several females. Each troop defends a territory where the members search for food and raise their young. When two troops come upon each other, the monkeys may fight, and injuries are common. They howl to tell other monkeys, “Keep away!” Howling can prevent a fight.

A larger troop is likely to win a fight. If the monkeys in one troop

Black howler monkeys live in Central America. The map shows their range in green.



how the monkeys would respond to the different-sized “troops.”

Just before sunrise, the researchers headed into the forest, lugging a snow sled filled with heavy equipment: speakers, poles, cables, a boat battery, an amplifier, and a tape player.

## A Loud Experiment

When the research team located a troop, they used the poles to prop the speakers high in the tree branches—at the same height as the monkeys. Leaves covered the speakers, so the monkeys couldn't see them. Then the researchers played the recordings and wrote down everything the monkeys did.

After running her playback experiment more than 100 times, Dr. Kitchen found that monkeys stayed quiet or ran away when they heard playbacks of larger troops. If the troop was about the same size or smaller, they called back and approached the speakers. The monkeys could tell the difference between troop sizes. They could count!

Dr. Kitchen was delighted to have more evidence that the black howler monkey is a remarkable species. Each new discovery may help people appreciate that these wild neighbors should be saved. 🌿



**Dr. Dawn Kitchen**

can tell whether another troop is bigger before they are close enough to fight, they can avoid injuries. Dr. Kitchen wondered: can the monkeys tell which troop is bigger just from the calls?

To find out, she made sound recordings of males that were howling at other troops. She put some howls together to make a big “troop” of three calling monkeys, and left others as single calls in a small “troop.” Armed with her recordings, Dr. Kitchen and her assistants set out to see