



## What Do Wolves Have to Do with Elk Antlers? / And why does it matter?

By K.C. and Aaron Morris

### There's something new in the Wild Kids section!

Aaron Morris, a wildlife ecologist and International Wolf Center board member, and his wife, K.C., who is a third-grade teacher specializing in elementary literacy, have summarized a recent scientific paper into language that's easier for children to understand. We hope our young readers will enjoy this learning experience, and that parents will help them appreciate it. Please share your feedback about this new approach with International Wolf Center publication director Chad Richardson by writing to [chad@wolf.org](mailto:chad@wolf.org).

### Vocabulary

**Shed** The process of dropping off, or getting rid of, antlers

**Evolve** The changing of physical form and behavior of a species over long periods

**Hypothesis** An idea to test through a study or experiment

**Trait** A feature determined by genes

**Pedicated** Having already shed antlers for the season

The bugling sound of a bull elk breaks the silence across a meadow. The elk stands tall near his herd, his impressive rack of antlers on full display. It is fall, and the elk rut, or mating season, is at its peak. Another bull elk moves in to challenge him, and the two animals walk side-by-side, sizing one another up. The challenger gives up and leaves. His antlers are smaller; he is no match for the larger bull.

Elk are members of the deer (*Cervidae* in Latin) family. In North America, they are mostly found in the Rocky Mountains of the United States and Canada. Scattered herds also inhabit the Midwest and eastern U. S. The males, or bulls, **shed** and regrow their antlers each year.

A group of researchers from the University of Montana, Yellowstone National Park, and Utah State University wanted to learn more about the timing of when elk shed their antlers, so they conducted a scientific study to do that.

### What did they study?

The article they wrote about their research begins with information they already knew about elk antlers. They explain that antlers **evolved** as a physical **trait** that shows off the health and strength of a male elk. The researchers also describe the primary, or most important, purpose of elk antlers—they are tools male elk use to compete for mates during the rut. Elk with the largest antlers usually win these competitions, and they attract more females to their herds. That can be because their antlers are an effective weapon for fighting other males, or because their antlers are impressive enough to persuade other males not to challenge them.

Though the scientists knew the primary purpose of elk antlers, researchers wondered if antlers might have another purpose. They thought it was possible that antlers might discourage wolves from hunting male elk that have not yet dropped them off. They wondered if this could explain why some male elk wait longer to shed their antlers than others.

To test this **hypothesis**, the researchers studied data, or information, about wolves hunting male elk

**Q** How much can antlers weigh?

**A** Each antler can weigh 20 pounds. With two antlers, that makes an incredible 40 pounds some elk are carrying around on their heads—about the weight of a five-gallon pail of water.





Elk in North America are also called wapiti. This name originates from the Shawnee and Cree languages, and refers to the white rump of an elk.

In Europe, the term “elk” refers to the animal we call a moose in North America.

## Did you know?

People sometimes call antlers “horns,” but antlers and horns are different. Antlers are made of bone and are shed and regrown every year. Horns grow throughout an animal’s life and are not shed. The inside structure of the horn is bone, but the outside is covered in keratin, the same substance found in hair and fingernails. White-tailed deer and elk have antlers. Bison and bighorn sheep have horns.



in Yellowstone National Park to find out whether wolves prefer to hunt antlered elk or **pedicled** elk (the ones that *have* dropped their antlers).

### What did they discover?

The researchers describe two important discoveries from their study.

- First, their data showed that wolves were more likely to *attack* pedicled elk than antlered elk when they had a choice.
- Also, the researchers found that wolves “strongly preferred” to *kill* pedicled elk over antlered elk. In other words, if you are a male elk that has dropped your antlers, you’d better watch your back!

According to the researchers, these results are surprising because pedicled elk are usually in better physical condition than antlered elk—and predators like wolves, that chase their prey, would rather go after animals that are in bad physical shape. This is because injured, sick, or weak animals are easier to hunt. The researchers suggest that, even though carrying around heavy, awkward antlers takes a physical toll on an elk, the possibility of being hunted and eaten by wolves may have caused elk to evolve to sometimes wait to shed their antlers.

Another observation the researchers make is that whether elk shed their antlers earlier or later often reflects how old they are. Older, bigger elk are more likely to shed their antlers early, so they can get a head start on growing bigger, more impressive ones that make attracting mates more likely. Younger elk that are probably not big and strong enough to attract females anyway are more likely to keep their antlers longer and persuade wolves to stay away.

### Why does it matter?

The title of their article, “Predation shapes the evolutionary traits of cervid weapons,” sums up the researchers’ noteworthy finding: Wolves hunting elk—with their preference to attack and kill pedicled elk—influenced a second purpose for elk antlers. Elk not only use their antlers as a tool to attract mates; they have evolved to keep their antlers longer during a year as a way to convince wolves to leave them alone.

These two purposes of elk antlers are in competition, the researchers say. Elk shed their antlers early or late in the spring, depending how they tend to use them—as a tool for attracting mates or as a deterrent to wolves. ■

### Q Do elk shed their antlers on purpose?

**A** Growing new antlers each year allows bull elk to display how healthy and strong they are. So in a sense, yes—elk shed their antlers every year on purpose so they can grow newer, bigger ones.

### Q How do they do it?

**A** Antlers grow out of an elk’s skull from pedicles, which are bony protrusions on top of the skull. When antlers start growing, they are made of cartilage—the same material that gives your nose and ears their shape. As they continue growing, the cartilage is replaced by bone. The cells that turn cartilage into bone are the same ones that cause the antlers to be shed. The shedding process is triggered by the elk’s hormone levels and how much light there is in a 24-hour period. Over the winter, when hormones change and days grow shorter, cells begin to reabsorb the bone between the antler and the pedicle. Eventually, the bond between the pedicle and the antler weakens enough that the antlers separate and fall off the elk’s head, usually in very early spring.