What's to know about elephants' trunks? A lot more than people think.

Scientists in Georgia studied elephant at Zoo Atlanta to discover how trunks work.

By Lela Nargi

If you've ever watched an elephant eat and drink, you may think it's a simple process. The largest land mammals in the world use their long trunks to pick up food — about 400 pounds a day — and move it to their mouths. They seem to use their trunks like a straw to suck up water.

A new study by researchers at the Georgia Institute of Technology shows that elephant trunks are pretty cool — but also complicated. In fact, this research is among the small amount of new scientific information on elephant anatomy published in more than 100 years. And the research shows that elephants use several techniques to move things.

"Elephants can move their trunks in four different ways," says Andrew Schulz, the study's lead researcher. "They can wrap them, twist them, stretch them and shorten them. The fancy way to describe that is to say their trunks are muscular hydrostats." Other examples of muscular hydrostats are tongues and octopus tentacles.

Elephant species are closer to extinction than scientists thought

When elephants pick up food, they use all four of those movements, Schulz says. They can also sweep up objects. They can use the liplike ends of their trunks to gently pluck small objects. And they can use suction (like a vacuum cleaner) to pick up foods of various sizes. "They can grab a tortilla without ever breaking it, which is nuts to me," says Schulz.

When elephants drink, they don't use a strawlike slurp. Instead they expand the inside of their trunk to store up to 2.4 gallons of water before they consume it. And elephants may have many more tricks up their trunks — Schulz just hasn't figured them all out yet.

To study trunk anatomy, Schulz spent a lot of time working with an elephant named Kelly at Zoo Atlanta in Georgia. He chose her over two other elephants there because "she has a personality that's amazing," Schulz says. "She likes exploring with her trunk, and she really likes something called 'enrichment.' That means we could figure out interesting ways for her to find and get her food."

Schulz and Kelly's handlers set up cameras outside Kelly's enclosure. They talked about what foods might be familiar to Kelly for them to experiment with. Tortilla chips mimic leaves she might pick up in the wild. Rutabagas, which Schulz cut into different shapes and sizes, are a lot like the root vegetables Kelly would forage for and eat in a forest.

Learning about the ways Kelly's trunk works is fascinating and important work, especially because no other researchers have figured out such trunk mechanics, Schulz said. And, he says, there are additional reasons learning about trunk mechanics is useful.

It could also help engineers understand how to build more useful robots. That's especially true for "soft robots," which don't have joints and could be used to do things such as help doctors perform surgery.

And with some elephant populations in Asia and Africa sharply declining, Schulz sees another important reason to study elephant trunks: to help save these animals.

"We're using science to get people inspired to learn more about elephants," Schulz says. "And the more animals are studied, the more likely [they are] to be conserved.