

Apes shed pounds while doubling calories, researcher finds

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In the U.S., even zoo gorillas need to switch to a heart-healthy diet.

"A lot are dying of [heart disease](#), we believe like humans," said Elena Hoellein Less, a PhD candidate in biology at Case Western Reserve University.

In fact, heart disease is the number one killer of male Western lowland [gorillas](#) – the only species of gorillas in North American zoos.

After Brooks, a 21-year-old gorilla, died of heart failure at Cleveland Metroparks Zoo in 2005, Less and other researchers here took a hard look at how the animals' lifestyle affects their health. Less now leads an effort to counter the killer disease by returning the primates to a diet more akin to what they'd eat in the wild.

Gone is the bucketful of vitamin-rich, high-sugar and high-starch foods that zoos used for decades to ensure gorillas received enough nutrients.

Instead, Cleveland's Mokolo and Bebac receive a wheelbarrow of romaine lettuce, dandelion greens and endive they gently tear and bite, alfalfa hay they nimbly pick through, young tree branches they strip of succulent bark and leaves, green beans, a handful of flax seeds, and three Centrum Silver multivitamins tucked inside half a smashed banana.

Instead of spending about a quarter of their day eating the old diet, the pair now spends 50 to 60 percent of each day feeding and foraging,

about the same amount of time wild gorillas forage.

Although they take in twice as many calories on the new diet, after a year, the big boys of the primate house have dropped nearly 65 pounds each and weigh in the range of their wild relatives.

"We're beginning to understand we may have a lot of overweight gorillas," said Kristen Lukas, an adjunct assistant professor of biology at Case Western Reserve and chair of the Gorilla Species Survival Plan® (SSP®) for the Association of Zoos and Aquariums. The organization serves 52 zoos in the U.S. and Canada in a coordinated effort to improve the health and survival of the nearly 350 gorillas in the population.

"And, we're just recognizing that surviving on a diet and being healthy on a diet are different," said Lukas, who is also curator of Conservation and Science at Cleveland Metroparks Zoo. "We've raised our standards and are asking, are they in the best condition to not only survive but to thrive?"

Less is one of five Case Western Reserve graduate students in the biology program who are involved in research linking behavior to the health of zoo animals, a unique program among U.S. zoos, Lukas said.

At the same time Less has been monitoring the diet and resulting habits of the gorillas, she's been measuring the amount of fat on the backs of the apes and attempting to discern what benefits against heart disease they may be gaining with the new diet, using biomarkers of insulin resistance and inflammation as guides.

She's also creating a body mass index for the animals, similar to that used to gauge healthy weight and makeup in humans.

Though these zoo gorillas now weigh about the same or sometimes more

than their wild counterparts, "we believe those in the wild have more muscle," Less said.

If the continuing study finds that to be true, she said, "The next step is exercising gorillas in zoos."

In addition to dropping weight and becoming active feeders, the gorillas also dropped a habit seen only in zoo gorillas, a habit that literally turned patrons away. Whether to taste sugar again and again, or to take up time not spent foraging or because large amounts of sugar and starch didn't sit well; on the old diet, the gorillas would repeatedly spit up and then eat what they'd just spit up.

"That behavior has been completely eliminated with the new diet," Less said.

Colleagues at other Gorilla SSP® institutions have allowed versions of the new diet to be tested at zoos in Columbus, North Carolina, Toronto and Seattle. Results are expected later this year.

Should the larger sample prove the diet provides health benefits, the Gorilla SSP® may endorse high-fiber foraging at zoos nationally and internationally, Lukas said.

Provided by Case Western Reserve University

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