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Article:

Large Lady Hyenas Throw Their Weight into Cub-Making

by [Stephanie Pappas](#), LiveScience Senior Writer

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Hyenas are one of the few mammals in which females outweigh their male counterparts. A new study finds that this may be because the burliest hyena ladies live longer and have more pups.

The research, published March 15 in the journal Proceedings of the Royal Society B, suggests that evolution acts on female [hyenas](#) to drive the size difference between them and their male brethren.

"There are a lot of hypotheses for why females are larger than males," study co-author Eli Swanson, a doctoral candidate at Michigan State University, told LiveScience. "But nobody really understands why." [[Images of spotted hyenas](#)]

Strange mammals



Hyenas are aggressive, but they know how to cooperate. According to a 2009 study published in the journal *Animal Behavior*, hyenas are quicker learners than non-human primates when it comes to figuring out how to do a task to get food.

CREDIT: Eli M. Swanson

Hyena females are weird in a lot of ways. They're exposed to high levels of androgen in the womb, which, among other things, gives them a partially external vagina that [looks more like a penis](#).

Figuring out why the usual pattern of big males and smaller females is reversed in hyenas is tricky. Lots of theories have been suggested, Swanson said. One is that male hyenas experience evolutionary pressure to become smaller, because they have to leave their original pack and join a new one, where they are low-ranking and may not get enough food to sustain a big body. Another theory is that big hyena moms are better at protecting their babies, or that their size allows them to provide their cubs more nutrients through nursing. Or perhaps big female hyenas are just better hunters or can compete more fiercely for meat when they belly up to a carcass.

To try to rule out some of these theories, Swanson and his colleagues collected size measurements of various female hyena body parts. This fieldwork, conducted in Kenya, requires sedating the animals with a tranquilizer gun.

"We tranquilize them from the car, and then they fall asleep and we just do our thing," Swanson said.

The researchers took 13 measurements, including total body length, skull size and leg length. Total "body size" isn't captured with any one measurement, Swanson said, especially in an animal that can gorge itself on prey and gain pounds at one sitting.

So the researchers statistically combined traits that were closely related in size. In these clusters, the whole was greater than the sum of the parts: Individual body part measurements might not affect the hyena's success, but in combination, size made a difference. The researchers found that while overall size didn't affect a hyena's reproductive success, some clusters of traits did. In addition, the length of the lower leg, the height at the shoulder and their body length were all individually associated with

more reproductive success.

The life history of the animals, however, revealed that they were no better at keeping their [cubs alive](#) than their smaller counterparts. Instead, the larger females may be able to go into heat sooner after losing a litter of pups, allowing them to have more offspring overall. They also breed for more of their adult lives, Swanson said.

When bigger is better

That finding suggests that it's not better milk production or the ability to get toothy with attackers that drives the evolution of hyena female's size, Swanson said. The research can't rule out other theories, such as possibility that big females are [better hunters](#). Nor did it look at male hyenas to see how evolution might affect their size.

The next step is to look more closely at which body parts are most different between males and females, Swanson said. He also plans to compare how size affects survival in males versus females. And he hopes to look at the relationships between body size traits and individual behaviors, like hunting. There may be multiple factors playing into the body size difference, Swanson said.

"What I'd like to be able to do is rule out a couple more hypotheses and find positive support, direct support, for at least one," he said.

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