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Hyenas' ability to count helps them decide to fight or flee

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EAST LANSING, Mich. — Being able to count helps spotted hyenas decide to fight or flee, according to research at Michigan State University.

When animals fight, the larger group tends to win. In the current issue of Animal Behaviour, Sarah Benson-Amram, an MSU graduate student studying zoology, showed that hyenas listen to the sound of intruders' voices to determine who has the advantage.

"They're more cautious when they're outnumbered and take more risks when they have the numerical advantage," said Benson-Amram, who conducted the study through MSU's BEACON Center for the Study of Evolution in Action. "Hyenas appear to be as capable as chimpanzees or lions at assessing their advantage."

The finding supports the concept that living in complex social groups, as hyenas, lions and chimpanzees do, is one of the keys to the evolution of big brains, Benson-Amram added.

Even though spotted hyenas live in clans of up to 90 individuals, they spend much of the day in much smaller, more vulnerable groups. When researchers played recordings of potential intruders, the hyenas' reaction depended on how many voices they heard compared to how many fellow pack members surrounded them. Groups of three or more hyenas were far more likely to approach the source of sound than pairs or individuals.

This study was the first to show that hyenas can tell the difference between individual voices, and most of the animals in the study could distinguish up to three different voices, said Kay Holekamp, MSU zoologist and BEACON researcher, whose field study of spotted hyenas in Kenya has been ongoing for more than 20 years.

"The recordings were taken from hyenas from other parts of Africa," she said. "But even though the voices were unfamiliar, the hyenas in the study were able to tell when they were from the same or different animals."

MSU students Virginia Heinen and Sean Dryer also contributed to the study.

BEACON is an NSF-funded Science and Technology Center headquartered at MSU, with partners at North Carolina A&T State University, the University of Idaho, the University of Texas and the University of Washington.

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Sarah Benson-Amram, MSU graduate student, demonstrated that hyenas' ability to count helps them decide to fight or flee. Photo courtesy of MSU.

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