

Vampire bats share their food in hopes that the favor will be returned

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A common vampire bat pictured on a piece of wood. Photo by: Uwe Schmidt/Wikimedia Commons

Sharing with others is important because you never know when you will need someone to help you out.

According to new research, this is the strategy employed by the common vampire bat. A study published Tuesday in the journal *Biology Letters* looked at the way female bats share meals. The females who shared with many bats who were not related to them did better over time than those with smaller networks.

It is increasingly clear that humans are not the only animals that form friendships. Scientists think of friendships as strong relationships with those who are not family. They run deeper than relationships based on trading. Many animals trade with each other in the form of symbiotic relationships. The bat's strategy, which the researchers call "social bet hedging," may play a role in shaping cooperative behavior in other species, including our own.

The lead author, Gerald Carter, is a researcher at the Smithsonian Tropical Research Institute in Panama, between Central and South America. He said it is important to understand simpler social bonds, like food-sharing, among animals. The research will provide a foundation to help them understand more complex relationships among humans.

Sharing A Meal Between Friends

Carter studied blood-drinking bats who are native to Central America and South America. Wild females and their young will often roost, or rest during the day, in groups of eight to 12 in caves or hollow trees. Each night, they leave their homes in search of a blood meal from animals and livestock. Their blood-only diet contains little fat and the bats cannot store energy for very long. Those who go two or three nights without feeding starve to death.

When a female bat fails to secure a meal for herself, she will groom her roost-mates. The hope is that in return they will throw up some of their partially digested meal into her mouth. Help often comes from mothers, daughters or other kin. However, the bats will also often share their food with unrelated individuals, or their friends.

In research conducted in Costa Rica in the 1970s and 1980s, biologist Jerry Wilkinson observed bats refusing to feed roost-mates that had previously snubbed them. The bats became an ideal species to study what biologists call reciprocal altruism. Reciprocal altruism is when one animal makes a sacrifice to help another, believing that the favor will be repaid.

Wilkinson is a professor at the University of Maryland. He also helped write the paper. Wilkinson said people thought bats traded meals equally and directly. Now, however, it seems that the bats are giving back to each other over longer periods of time.

Keeping Tabs On Who Gave What

In 2015, Carter and Wilkinson found that the bats would sometimes appear to forgive roost-mates. They did this if the roost-mates did not share before because they did not have enough food. Also, bats who had previously been unable to help would be especially generous later on, almost as though they were making up for past stinginess.

In other words, each bat appears to navigate a complex social environment. She keeps track of who didn't give her food and why. At the same time, she also works to repair relationships that have been strained.

In addition, some bats feed more unrelated bats than others. Those who kept weaker ties with a larger number of friends would usually be fed as often as those who forged stronger bonds with a few friends.

Benefits Of A Big Social Network

However, when the researchers separated a bat from her primary donor, typically her mother or daughter, the benefits of having a bigger social network became clear. Bats who had invested in quantity instead of quality had an easier time finding donors. Their friends helped them deal with the loss.

“When I very first plotted the data, I was overwhelmed with surprise and joy that it looked exactly how I thought it should,” says Carter. “That is a very rare thing in science.”

“I was surprised to see such clear evidence for the value of having backup partners. We’ve not seen that before,” says Joan Silk. She is an anthropologist at Arizona State University who has studied social relationships among baboons.

“The great contribution of this paper is that it provides evidence about a completely new way in which having relationships matter,” Silk says.

I Get By With A Little Help From My Friends

Like female vampire bats and humans, female baboons are known to form close ties with unrelated baboons. They tend to spend more time grooming more partners following the death of a female relative. Humans tend to report greater happiness from having a small number of close friends. However, in environments where friends are likely to leave, quantity matters more than quality.

Among humans, baboons and bats, these strategies likely operate outside of conscious awareness. People and animals are not seeking out friendship because of the costs and benefits. “We feel emotionally compelled to help others,” Carter says, “because natural selection has done the calculations for us.”

You don't ask your friends to help you with your problems because you've paid for two of their dinners, Carter says. “That’s not how friendships work at all.”