

FILED UNDER: ANIMAL BEHAVIOR | ANIMAL COMMUNICATION | PRIMATES | RESEARCH METHODS (BIOLOGY) | SOCIAL BIOLOGY

On the Friends and Family Plan

by Patricia Waldron | January 2016

Like humans, ringtailed **lemurs** communicate through a variety of sounds, including shrieks, grunts, purring and barks; some of these vocalizations can be heard more than a mile away. But — also like humans — lemurs use senses other than hearing to communicate. With their scent glands, lemurs mark branches around their territory, and group members can identify different individuals accordingly. Their facial expressions can signal fear, begging or territoriality, depending on whether they bare their teeth, pout or make a "trumpet-mouth" face. Lemurs also groom friends and family members using their hands and mouths. These grooming sessions remove debris, insects and parasites and encourage bonding between lemurs. By using all of these communication methods, ringtailed lemurs maintain complex social lives.



Shutterstock

Like humans, ringtailed lemurs communicate through a variety of methods that help them maintain complex social lives.

Studies of lemur behavior find that the animals won't groom or call out to just anyone in the group. A new study, conducted by researchers at [Princeton University](#) in New Jersey, finds that ringtailed lemurs will call and respond to other group members when traveling, but that they only make these "contact calls" to close associates whom they are already grooming. The researchers think that these response calls let the lemurs "groom at a distance" when the animals are separated. Initially, the researchers had thought that contact calls would enable lemurs living in large groups to keep in touch with more individuals than they could possibly groom, but the lemurs were even more selective about whom they called out to than about whom they groomed. The results may be useful in future studies of how vocal communication evolved in lemurs and other primates, including humans. The Princeton study was published in the journal *Animal Behaviour*.



Shutterstock

A new study, conducted by researchers at Princeton University, finds that ringtailed lemurs will call and respond to other group members when traveling, but that they only make these "contact calls" to close associates whom they are already grooming.

"The positive links between contact calls and grooming suggests that one of the functions of vocalizations may be to complement grooming," the authors write. "Even though grooming is regarded as one of the best indicators of social bonds between individuals . . . vocal exchanges could provide a more precise indication of who is strongly bonded with whom in social groups."

Grooming for Success

Many social species, including humans, use grooming not just for personal hygiene, but to form bonds between group members. Cleaning, massaging and scratching can signify affection and reinforce family relationships. While social grooming has been studied mostly in primates, other animals, including birds, horses, bats, and even insects, engage in the practice. Besides keeping skin, fur and feathers clean, social

grooming builds trust and helps promote group cooperation. Individuals in some species will even exchange grooming for food or use it to win over mates.



Andrew Hutchinson/Getty Images

In ringtailed lemurs, scientists have regarded grooming as the best indicator that two lemurs have a strong social bond. Lemurs groom each other to form alliances, to make up after fights, to reduce stress and simply to improve hygiene.

In ringtailed lemurs (*Lemur catta*), scientists have regarded grooming as the best indicator that two lemurs have a strong social bond. Lemurs groom each other to form alliances, to make up after fights, to reduce stress and simply to improve hygiene. Grooming can be time-consuming, and so lemurs must be selective about whom they choose to groom. The closeness of a pair of lemurs is proportional to how much time they spend grooming each other.

A group of Princeton researchers led by [Ipek Kulahci](#), a postdoctoral researcher who studies animal behavior in lemurs, wanted to know how lemurs stay in touch when they aren't close enough to groom each other. They also wanted to know if vocalizations could replace grooming when a group grows so large that members don't have time to groom all their fellow lemurs. Based on the observations of previous

scientists, the team suspected that contact calls might be one way that group members could maintain their bonds when grooming wasn't possible.

The Call of the Familiar

To test their idea that contact calls could stand in for grooming, Kulahci and her colleagues examined the social networks of four lemur groups to see if lemurs groomed and made contact calls to the same group members. Lemurs typically live in stable, female-dominated troops with fewer than 25 individuals. When one lemur moves beyond the group's line of sight, the lemur will make a distinct contact call to signal his or her location, which often elicits responses from others.



Shutterstock

To test the idea that contact calls could stand in for grooming, Ipek Kulahci and her colleagues examined the social networks of four lemur groups to see if lemurs groomed and made contact calls to the same group members.

The researchers observed four groups of free-ranging lemurs ranging in size from seven to 21 members. Two of the groups live in a forest enclosure at the Duke Lemur Center in Durham, North Carolina, while the remaining two live on St. Catherine's Island in Georgia. In their experiments, the researchers took note of when grooming occurred and which animals responded to the different contact calls. They also

conducted contact-call playback experiments at the Duke Center enclosure. After removing a lemur from the group, the researchers played a recorded contact call from the missing lemur and then observed who responded to the call. Finally, the researchers performed data analysis to uncover any connection between grooming and contact calls, taking into account family relationships and an individual's gender.

When they mapped out the grooming and contact call interactions, they saw that lemurs responded to animals with whom they had also engaged in grooming sessions. Family relationships and gender were not factors in determining whether one lemur responded to another. Even previous acts of aggression, such as chasing and biting, did not affect whether a lemur responded to another animal's contact call. The findings suggest that calling to each other may help cement strong bonds between lemurs that had already groomed each other, providing a way for the pair to "groom at a distance" while the group is on the move or foraging for food.



Culture RM/Art Wolfe/Getty Images

The data showed that contact calls serve to improve existing bonds rather than increasing the number of individuals with which a particular lemur bonds. In larger troops of lemurs, an individual groomed and was groomed by more group members than in smaller troops. However, in larger troops, lemurs did not vocalize or respond to larger numbers of lemurs.

The data also showed that contact calls serve to improve existing bonds rather than increasing the number of individuals with which a particular lemur bonds. In larger troops of lemurs, an individual groomed and was groomed by more group members than in smaller troops. However, in larger troops, lemurs did not vocalize or respond to larger numbers of lemurs. "Thus, regardless of group size, a lemur's decision of whose contact call to respond to was mainly determined by the frequent grooming interactions," the scientists write. In larger groups, lemurs became more selective about whom they groomed and about who received contact calls and responses.

Close Calls

Just like humans, lemurs show varying levels of interest in interacting with fellow lemurs. "Some lemurs were very social and frequently engaged in grooming interactions while also frequently producing vocal responses to the calls of others," the authors write. "Other lemurs were less socially active and rarely groomed or vocalized." Overall, lemurs spent a great deal of time grooming and making contact calls, and lemurs that engaged in frequent grooming sessions also made many contact calls.



Shutterstock

Overall, lemurs spent a great deal of time grooming and making contact calls, and lemurs that engaged in frequent grooming sessions also made many contact calls.

The researchers suggest that their findings may have implications for understanding the evolution of vocal communication in primates. One popular hypothesis about primate communication is called Dunbar's 'Gossip' Hypothesis. It states that if groups of primates become so large that members cannot maintain group cohesion through grooming alone, then the group will switch to vocal communication, which will eventually replace grooming altogether. The lemur findings reinforce the idea that vocal communication supports bonding, but run counter to the idea that vocalizations can increase bonding in large groups.

"Ringtailed lemur social behavior and cognition are comparable to those of monkeys and apes," the authors write, and they suggest that similar forms of behavior be explored in other social species. Subsequent research may illuminate how primate communication has evolved from grooming, contact calls and scent signals in lemurs to complex verbal behavior in humans.

Discussion Questions

Considering that grooming is more time-consuming than simply calling out, what makes it a good communication method? Why do you think that lemurs are more selective about whom they call out to

than about whom they groom?

When people visit barbershops, hair salons or even the dentist, should that be considered social grooming?

Journal Abstracts and Articles

(Researchers' own descriptions of their work, summary or full-text, on scientific journal websites.)

Kulahci, Ipek G., Daniel I. Rubenstein and Asif A. Ghazanfar. "Lemurs groom-at-a-distance through vocal networks." *Animal Behavior*, December 2015:

<http://www.sciencedirect.com/science/article/pii/S0003347215003474>.

Bibliography

Kulahci, Ipek G., Daniel I. Rubenstein and Asif A. Ghazanfar. "Lemurs groom-at-a-distance through vocal networks." *Animal Behavior*, December 2015:

<http://www.sciencedirect.com/science/article/pii/S0003347215003474>.

Lawson, Kimberly. "Lemur Communication." *Museum of Life and Science* website (February 16, 2012) [accessed December 5, 2015]: <http://lifeandscience.org/keepers/2012/02/16/lemur-communication/>.

Vignieri, Sacha. "Just called to say 'I love you.'" *Science*, November 20, 2015, page 924.

Keywords

Ringtailed lemurs, *Lemur catta*, primates, grooming, social networks, vocal communication, Ipek Kulahci

Citation Information

Waldron, Patricia. "On the Friends and Family Plan." *Today's Science*. Infobase Learning, Jan. 2016. Web. 5 Sept. 2017. <<http://tsof.infobaselearning.com/recordurl.aspx?wid=99270&ID=34275>>.