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## Lemurs Match Scent Of A Friend To Sound Of Her Voice

If scent and sound match, that animal may be nearby

By Robin Ann Smith



*Caption: A lemur rubbing on a sweetgum's trunk leaving a unique trace of scent. Credit: Ipek Kulahc*

Humans aren't alone in their ability to match a voice to a face -- animals such as dogs, horses, crows and monkeys are able to recognize familiar individuals this way too, a growing body of research shows.

Now a study has found that some animals also can match a voice to a scent.

Researchers at Princeton and Duke report that ring-tailed lemurs respond more strongly to the scents and sounds of female lemurs when the scent they smell and the voice they hear belong to the same female -- even when she's nowhere in sight.

The researchers say that lemurs are able to learn a particular female's call along with her unique aroma and link them together into a single picture of that individual.

The study appears online April 16 in Proceedings of the Royal Society B.

Cat-sized primates from the African island of Madagascar, ring-tailed lemurs howl, wail, moan and chirp to each other to stick together as they forage in the forest. They also produce an impressive variety of scents. Their genital secretions alone contain hundreds of odor molecules that help the animals tell one individual from another.

In a series of experiments, researchers presented pairwise combinations of calls and scents from familiar females to 15 ring-tailed lemurs in outdoor enclosures at the Duke Lemur Center in Durham, North Carolina.

When a lemur entered the enclosure, the researchers played a call from a familiar female over a hidden loudspeaker, and then presented the animal with scent secretions from either the same female, or a different female from the same social group.

The hidden speaker was positioned between two wooden rods -- one swabbed with a female's scent and the other 'unscented' -- so that the sounds and the scents came from the same location.

In general, the lemurs paid more attention to the sounds and smells in the matched trials in which the call they heard and the scent they smelled came from the same female, than in the mismatched trials when they heard one female and smelled another.

Both males and females spent more time sniffing and/or marking the scented rods in the matched trials than in the mismatched trials. Males also spent more time looking in the direction of a female's call when her scent was present instead of another female's scent.

The results held up whether the sounds and odors came from a dominant female or a subordinate one.

The ability to tell if the voice they hear corresponds to the scent they smell may help a lemur figure out if the animal producing the scent is still nearby, said Princeton graduate student and coauthor Ipek Kulahci.

Unlike shrieks, yips and wails, odors can linger long after the animal that made them has left the area.

This may explain why lemurs showed more interest in the matched cues than the mismatched cues, Kulahci added.

"If they detect a whiff of a familiar female and she's still within earshot she can't be far."

Kulahci's co-authors on the study were Christine Drea of Duke University and Daniel Rubenstein and Asif Ghazanfar of Princeton University. The study was supported by Princeton University and by the National Science Foundation.

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