NATIONAL GEOGRAPHIC

## PREMIUM ANIMALS Elephants may call each other by

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African savanna elephants communicate more like humans than previously thought, new research shows—opening up new possibilities for elephant cognition.

name, a rare trait in nature



Since she started studying African savanna elephants in 1975, biologist Joyce Poole noticed that sometimes an elephant would call out to their kin. Sometimes, a bunch

would answer, and other times only one would respond.

June 10, 2024

"I suspected elephants had a way of directing their calls to specific individuals," says Poole, scientific director and co-founder of the nonprofit **ElephantVoices**, but "had no idea how one would tease this out."

Now, scientists have published new research in the journal Nature Ecology and **Evolution** that begins to do just that. The study provides evidence that elephants address each other with calls, or names, that are specific to the individual.

Names are a rare phenomenon in the animal kingdom, and the few species that use them, such as parrots and dolphins, mimic a sound first made by the recipient. Bottlenose dolphins, for example, broadcast their own signature whistle, which others repeat when addressing them.

nothing to do with sounds or physical properties of the listener.

Elephants seem to do something different: They use arbitrary vocal labels that have

"We thought this was unique to people," says study co-author **George Wittemyer**, a biology professor at Colorado State University and and chairperson of **Save the** Elephants' scientific board.

LISTEN TO THE ELEPHANT FRIDA CALL TO THE ELEPHANT ROTHKO

(15)

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In human language, an arbitrary label would be calling a bovine a "cow," since that word does not resemble, either physically or acoustically, the animal itself. A simpler label, which scientists call an iconic label, would refer to a bovine as a "moo," since that's based on and imitates sound the animal makes.

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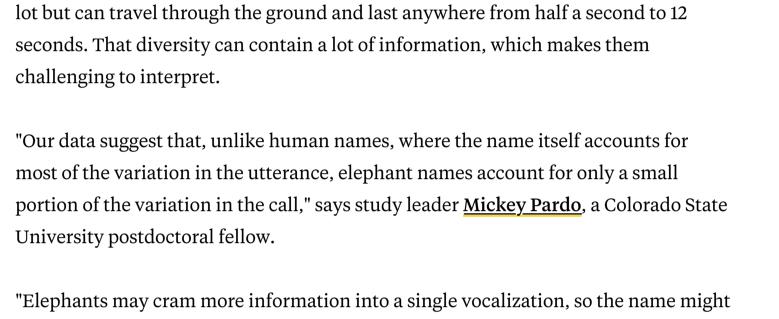
Arbitrary labels expand the scope for communication and provide a way of expressing abstract thought—and it's likely true for elephants, too. "In terms of cognition, that opens all sorts of possibilities," Wittmyer says. What's in a name? The team drew on both recordings made from 2019 to 2022 in Kenya's Samburu

from Amboseli National Park in the 1980s, 1990s, and 2000s. Poole, a study coauthor and National Geographic Explorer, made the Amboseli recordings. In all, the team analyzed data from 101 African savanna elephants making 469 separate calls to 117 recipients.

National Reserve and Buffalo Springs National Reserve, as well as archival recordings

AUDIO BY MICHAEL PARDO

The scientists focused on contact, greeting, and caregiving rumbles, which elephants use when initiating contact with an unseen family member, approaching another in touching distance, and nurturing a calf. These were the types of calls researchers thought were most likely to contain a name. <u>(Learn why both African elephant</u> species are now endangered, one critically.)



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Elephants produce a range of vocalizations, from trumpets and barks to many types

frequency sounds, partially outside the range of human hearing, that not only vary a

of rumbles. Their structures are complicated. For example, rumbles are low-

be only one piece of a complex signal that simultaneously conveys other

information."

it is there.

different receivers.

cousin Rothko.

More data needed

Plugging the data into a computer algorithm, researchers found that calls from the

Hence, the acoustic structure of calls from a Samburu elephant named Frida to a

matriarch, Donatella, were more alike than Frida's calls to other elephants, like her

This "indicates that the calls were indeed specific to the individual targeted receiver,"

same caller to the same receiver were more similar than calls from the same caller to

Though researchers don't know how a name is encoded in a call, this study indicates

LISTEN FRIDA CALL TO DONATELLA AUDIO BY MICHAEL PARDO

(15)

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The researchers' new analysis found contradictory answers as to whether different elephants use the same name to address the same receiver. You May Also Like

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finally know why.

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One of several possible explanations is that different elephants use name derivatives

to address the same receiver—somewhat akin to nicknames. (Read: "What are

elephants really saying? First-ever library reveals communication mysteries.")

"Just as the human nicknames Liz, Elizabeth, and Ellie have certain features in

same individual with somewhat similar yet distinct labels," Pardo says.

are fewer than 500 calls, which is very little for such a study."

what seem like names can have other explanations.

common despite being distinct words, it may be that different elephants address the

Lack of data is an issue, says Tel-Aviv University zoology professor **Yossi Yovel**, who

appreciates the attempt to tease out individually specific calls, he notes that "there

was not involved in the study. While he finds the topic "super interesting" and

learn the 'name' of the receiver unless it is consistent across callers," he says. "But they say it is not." "For a name to be a name, more than one caller should use it," he says, noting that

"For many pairs they have only one caller and one receiver, so it is impossible to

Donatella reacts strongly to a call that scientists believe contains her "name." She approached the speaker and responded seven more times. VIDEO BY MICHAEL PARDO For instance, if someone said "hi hi hi" to one person and "hey hey" to another, the algorithm would probably suggest one name is hi and another is hey, Yovel says. "But this is not the case."

The researchers also conducted field experiments, playing back multiple recordings

to the study elephants, with some originally addressed to them and others from the

The findings revealed dramatic reactions, showing that elephants do recognize their

For instance, when Donatella listened to playback of a call originally addressed to

her, she "called eight times, approached the speaker, and searched behind it."

But when hearing a recording from Frida to her cousin Rothko, Donatella barely

same caller that were not. (See "What elephant calls mean—a user's guide.")

# reacted, calling just once and not approaching the speaker. 'A door into how their mind works'

this other place?" she says.

Name recognition

own "name," and respond to it, Pardo says.

"We're really in early stages to try and decipher what's going on," Wittemyer says.

For instance, Poole wonders if elephants also have names for places. "When they're negotiating a plan of action, you can see them agree or disagree. But what are they saying? Are they saying, 'I'm not going to go with you, I want to go to

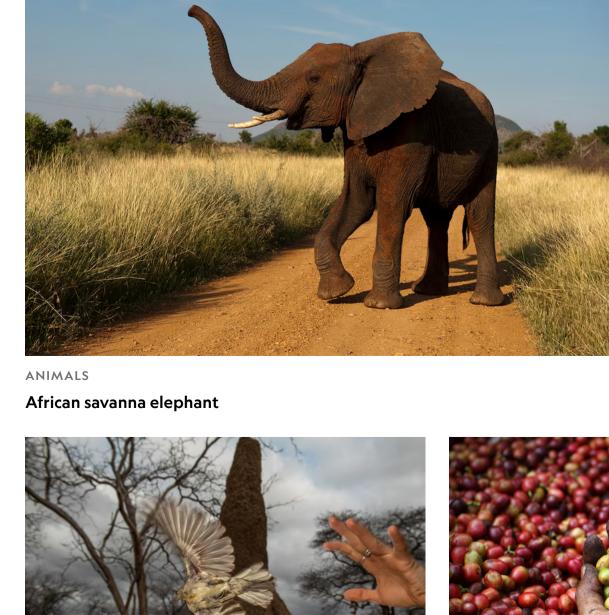
"This study opens a door into how their mind works," Wittemyer adds. "We're making

a step to understanding them better, and maybe that will help us live with them

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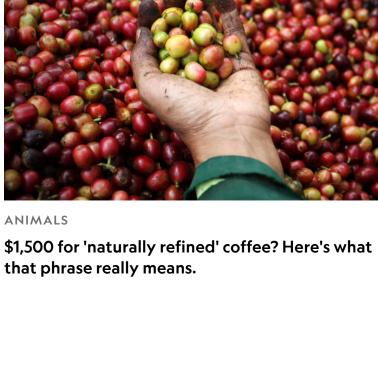


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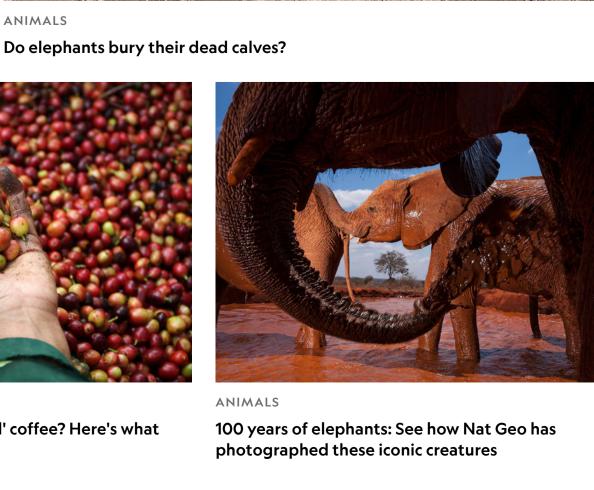


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