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Humans and honeyguides speak in local dialects, UCT research shows

Carvalho Nanguar, Yao honey-hunter from northern Mozambique, with a male greater honeyguide released from the hand after being caught for research purposes. Photo: David Lloyd-Jones and Dominic Cram.

Researchers from the University of Cape Town (UCT), working with international collaborators, have shown that people in northern Mozambique use regionally distinct "dialects" when communicating with honeyguide birds, revealing a striking parallel to the way human languages diversify.

Published in *People and Nature*, the study shows for the first time that human-to-wildlife communication can vary within a region in much the same way that human languages develop local dialects. These dialects allow communities to coordinate cooperation with greater honeyguides (*Indicator indicator*), wild birds that lead people to honeybees' nests in exchange for leftover wax and larvae, and so provides food for both people and birds.

A rare example of two-way communication between humans and wild animals
In parts of sub-Saharan Africa, honey-hunters and honeyguides cooperate with each other to gain access to wild bees' nests, and coordinate their behaviour using distinctive calls. Cooperation between species allows humans to find and harvest more honey, and honeyguides to feed on more wax, thanks to honey-hunters' skilled use of fire and tools to subdue the bees and open their nest.

This long-standing partnership is one of the few known cases of cooperation between humans and wild animals. These birds are not domesticated or deliberately trained; instead, they benefit from learning to interpret human signals in the wild, so they can readily locate humans who are seeking honey. These signals vary culturally across Africa, and earlier experiments have shown that honeyguides respond more strongly to local calls given to attract honeyguides, than to unfamiliar calls from another country.

"While honey-hunters in different parts of Africa are known to have culturally distinct calls to honeyguides, we wanted to see whether calls also vary between neighbouring communities and follow predictable patterns," said lead author Jessica van der Wal, a researcher affiliated with UCT's FitzPatrick Institute of African Ornithology. "In other words, whether human-to-wildlife signals show the same kinds of regional patterns that we see in human languages."

Distinct regional dialects shaped by human culture, not environment
The team recorded calls from 131 honey-hunters across 13 villages in northern Mozambique's Niassa Special Reserve, drawing on deep local knowledge in a region where communities – mostly Yao – depend heavily on wild honey and honeyguides for their livelihoods.

The authors analysed both recruitment calls used to attract a honeyguide over long distances, and quieter coordination calls used while following a guiding honeyguide at close range. Honey-hunters used a variety of calls, trills, grunts, whoops and whistles. Across both recruitment and coordination calls, the researchers found that regional variation increases with distance, with communities farther apart using more distinct calls. Importantly, environmental factors such as habitat acoustics did not explain these differences. Finally, honey-hunters who moved villages seemed to match the calls used in their new community.

"These regional honey-hunting calls pattern across space in a way that looks remarkably similar to human dialects," added van der Wal. "It suggests that cultural processes within human communities, rather than environmental pressures, are the primary drivers of this diversity."

Honeyguides appear to learn local dialects too
Despite regional differences in calls, human-honeyguide cooperation remains successful and important for human livelihoods across the Niassa Special Reserve.

"This suggests that both species are adjusting to each other across the Niassa landscape," said senior author Professor Claire Spottiswoode of UCT's FitzPatrick Institute of African Ornithology, who leads the Honeyguide Research Project. "Humans learn and maintain the local signals needed to cooperate with honeyguides, and honeyguides are in turn probably learning and so helping to reinforce these local human dialects – much as they learn larger-scale variation in human signals across Africa, more akin to different human languages."

A window into interspecies communication

The findings highlight how human cultural diversity can shape interactions with wildlife, even with undomesticated animals.

Spottiswoode concluded: "It's been a privilege to study this rare example of cooperation between our own species and a free-living wild animal, in collaboration with Niassa's honey-hunting communities – and in so doing be given a window into the evolution of communication between species."

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