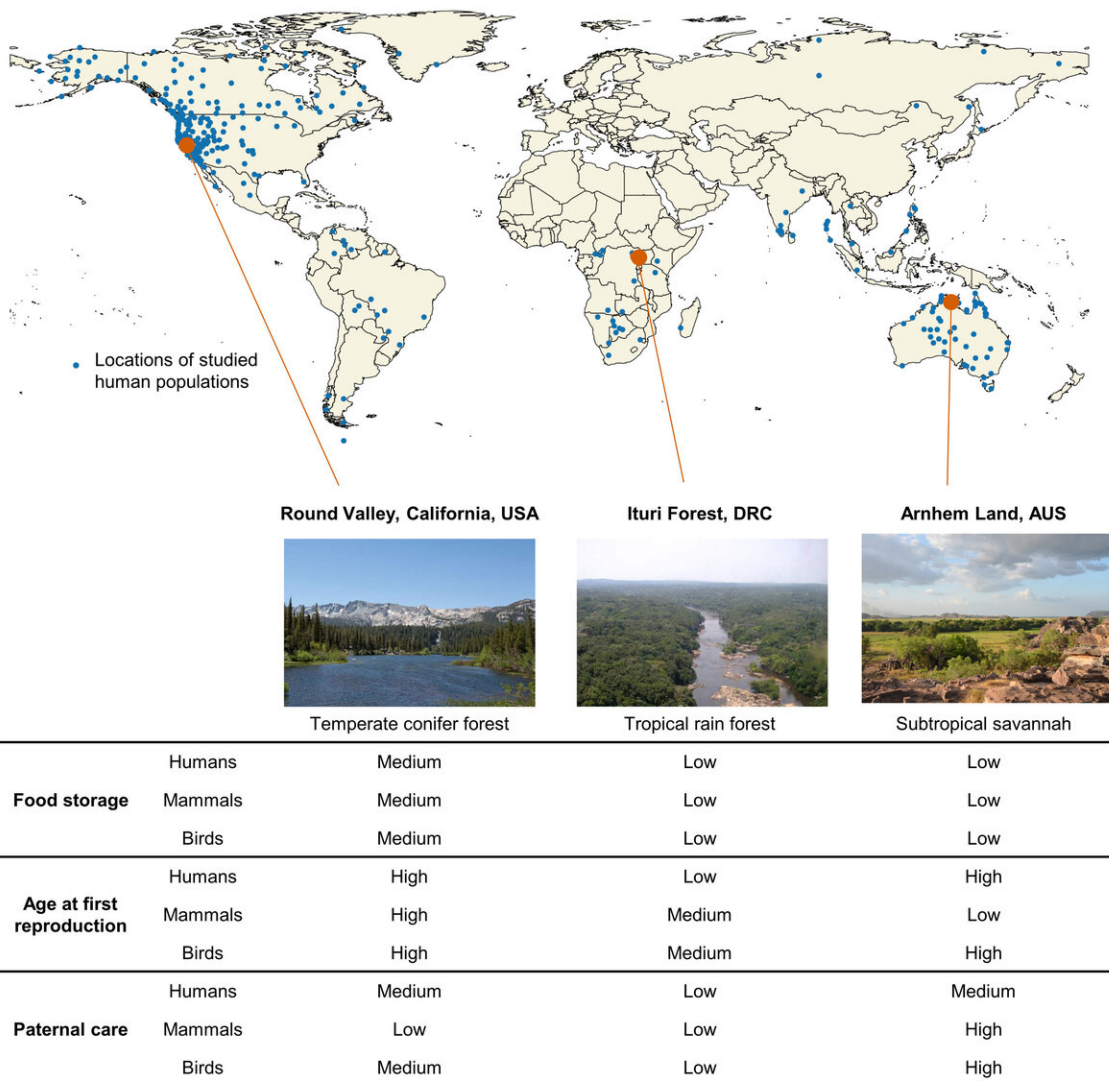


Foraging humans, mammals and birds who live in the same place behave similarly

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Notes: Mammals and birds are located within a 25 km radius of the corresponding human population. Medium corresponds to the average value across all locations shown on the map. High (low) means more (less) than the average value. The table displays information for the following three human populations: Yuki (USA), Mbuti (Democratic Republic of Congo) and Murnging (Australia).

Data visualization determining which mammal and bird species lived in the same location and computed their average behavior. Credit: Toman Barsbai, Dieter Lukas, Andreas Ponderfer, Barsbai et al., *Science* (2021)

Foraging humans find food, reproduce, share parenting, and even organize their social groups in similar ways as surrounding mammal and bird species, depending on where they live in the world, new research has found.

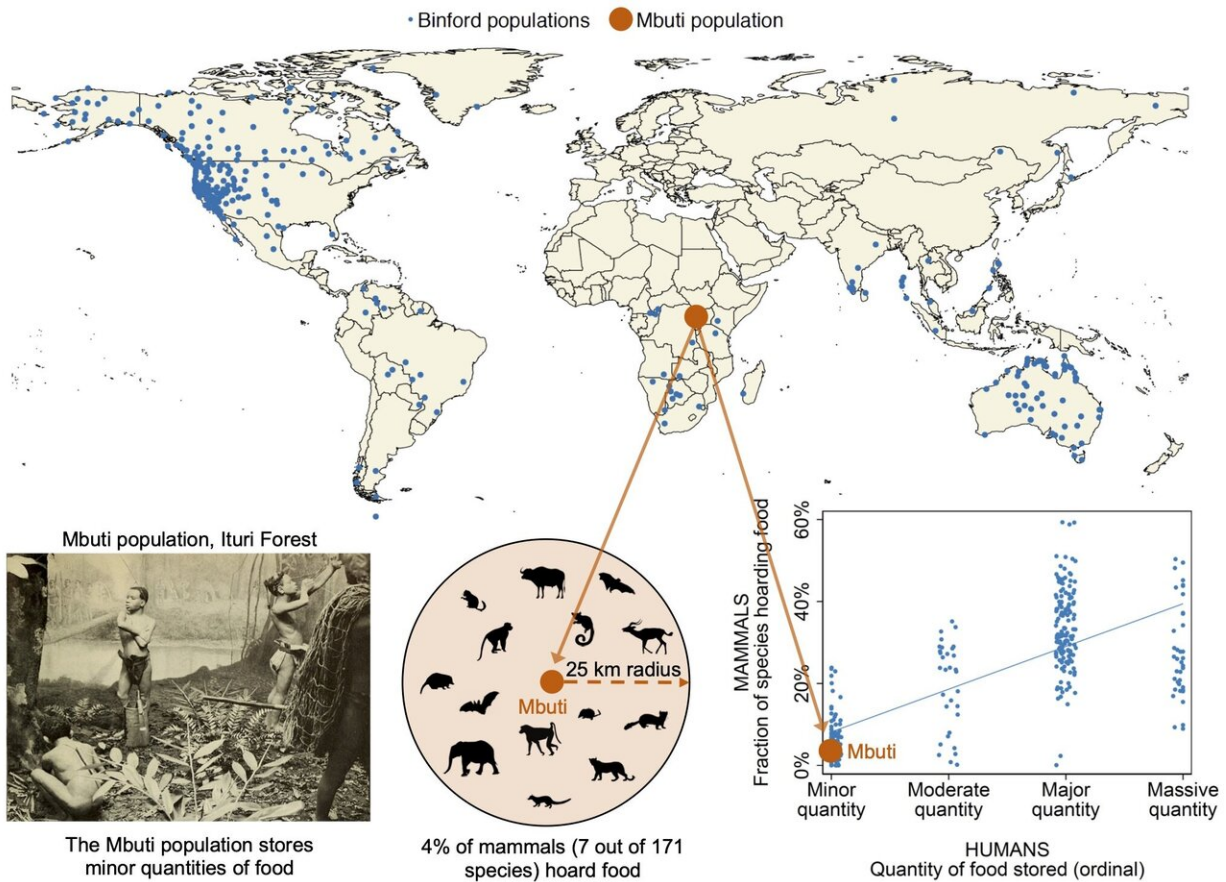
The study, published today in *Science*, shows [environmental factors](#) exert a key influence on how foraging human populations and non-human species behave, despite their very different backgrounds.

The team of international researchers analyzed data from more than 300 locations around the world, observing the behaviors of foraging human populations alongside other [mammal](#) and [bird species](#) living in the same place. Their findings show that for almost all behaviors, 14 of the 15 investigated, humans were more likely to behave similarly to the majority of other non-human species living in the same place than those elsewhere.

"Previous research has explored how [environmental conditions](#) shape the [behavior](#) of closely related species. This is the first time a broad comparative perspective has been used to systematically compare very different species—humans, mammals, and [birds](#)—across a wide range of behaviors. Our evidence shows how remarkably pervasive and consistent the effect of the local environment is on behavior," said author Dr. Toman Barsbai, from the University of Bristol and the Kiel Institute for the World Economy. "The similarities are not only present for behaviors

directly relating to the environment, such as finding food, where we might expect a clear correlation, but also for reproductive and social behaviors, which might seem less dependent on the local environment."

For example, when obtaining food, there are environments where humans get a significant proportion of their calories from hunting. In these locations it was shown there are much larger proportions of carnivorous mammals and birds than elsewhere. Similar associations were also identified for reliance on fishing, how far to travel to gather food, whether or not to store food, and whether or not to migrate between seasons—with each behavior found to be more common in humans, other mammals, and birds in some locations than in others.



Data visualization determining which mammal and bird species lived in the same location and computed their average behavior. Credit: Barsbai et al., Science (2021)

For reproductive behavior, there are large differences across populations when individuals first reproduce. In some human populations, men on average have their first child when they are 30 years of age or older, whereas in other populations men might be younger than 20. At locations where humans have children later, the local mammals and birds are similarly on average older when they first reproduce than the mammals and birds living in places where humans reproduce early. The study also showed other variables were correlated across species, including the proportion of individuals having multiple partners, how far individuals move to live with new partners, and how likely couples are to divorce.

Regarding social interactions, there are some places in the world where offspring care is more equally shared between parents than in other places, places where group sizes are larger, and places where social classes, meaning some individuals are more dominant, are more common in both humans and non-[human](#) species.

The study findings strongly indicated these behavioral similarities were associated with the local environment. Knowing the environmental conditions of a [place](#) allowed the researchers to predict what behaviors to expect there. However, it is not yet clear which environmental factors are of particular importance for specific behaviors or what the mechanisms are linking them.

"We were surprised these associations appeared across humans, mammals, and birds," said author Dr. Dieter Lukas, from the Max Planck Institute for Evolutionary Anthropology in Germany. "Different

[species](#) could be expected to sense and interact with their environments in very different ways. Even if they end up with the same behavior, they might have gotten there through different paths. In particular, the flexibility that allows humans to adapt behavior to environments around the world is probably facilitated by relying on learning from other people and building on this information over generations."

The study focused on [human populations](#) who obtain most of their food by foraging in the environment where they live. "It would be interesting to see how many of these environmental restrictions shape other societies where individuals get food through agricultural specialization and trading", said author Dr. Andreas Ponderfer, from the University of Bonn and the Technical University of Munich. "Agricultural intensification is often thought to buffer humans from the [environment](#). Nevertheless, individuals in these populations might not be as buffered as we think and behaviors might still reflect adaptations that occurred before the adoption of agriculture."

More information: K. Hill et al., "Behavioral convergence in humans and animals," *Science* (2020). [science.sciencemag.org/cgi/doi ... 1126/science.abf7572](https://science.sciencemag.org/cgi/doi/10.1126/science.abf7572)

T. Barsbai at University of Bristol in Bristol, UK et al., "Local convergence of behavior across species," *Science* (2020). [science.sciencemag.org/cgi/doi ... 1126/science.abb7481](https://science.sciencemag.org/cgi/doi/10.1126/science.abb7481)

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