

Equality, more than dominance, defines Asian elephant society

October 11 2016



An adult female Asian elephant asserts dominance over another by putting her trunk over her. Credit: Uda Walawe Elephant Research Project

Elephants are commonly thought to live in female-led, or matriarchal, societies that rely on the strong leadership and wisdom of elders. But a new study on Asian elephants led by researchers at Colorado State University found that Asian elephants, unlike African savannah elephants, do not exhibit clear dominance hierarchies or matriarchal leadership.

Shermin de Silva, director of the Uda Walawe Elephant Research Project; CSU Associate Professor George Wittemyer; and Volker Schmid, biologist at the University of Regensburg, compared dominance interactions exhibited by adult female Asian elephants in Sri Lanka and a similarly aged group of female African savannah elephants in Kenya.

The researchers found that Asian elephants showed less than one-third the amount of dominance behavior as their African counterparts. As a result, it was impossible to construct linear hierarchies among individuals, in contrast to the African females, for which dominance patterns were clear.

"Female Asian elephants are a bit more like lionesses than like African savannah elephants," said de Silva, who conducted this research while a postdoctoral fellow at Colorado State University.

The team also explored whether there might be more orderly hierarchies among elephants of different age groups or social groups in Sri Lanka. While the older elephants did tend to "win" confrontations more often in both populations, the Asian elephants showed a greater tendency for younger individuals to dominate older elephants. The animals also showed no real order by social group, which contrasts with African elephants.

What might explain these differences?

The classic view of elephants is based on decades of research on African savannah elephants, which found that females and calves form highly cohesive families with clear age-based dominance hierarchies. Such societies are favored under the ecological conditions savannah elephants typically find themselves in, namely where rainfall is unpredictable and resources are widely dispersed.

These environments also contain large predators, and there is a great deal of competition among elephants for access to the best and safest areas.

Asian elephants live in more productive and predictable environments where food and water are historically not difficult to come by. In this particular study, the elephants lived on an island that is free of large predators, such as tigers, and they had little to fear.

Team members said that this frees up the elephants to make their own movement decisions, without the need to rely on the knowledge of others, or tolerate being dominated by them. The researchers refer to this phenomenon as an "ecological release."

Asian elephants and African savannah elephants belong to two different species, separated by 6 million years of evolution. This is comparable to the split between humans and chimpanzees.

Based on the findings, the researchers said that elephants may be prone to experiencing increased conflict when confined to smaller areas, where movements are more constrained and direct competition cannot be avoided.

A James Smithson fellow at the Smithsonian Conservation Biology Institute, de Silva is founder of the conservation nonprofit Trunks & Leaves Inc. Wittemyer also serves as scientific director of Save the Elephants.

More information: Shermin de Silva et al, Fission–fusion processes weaken dominance networks of female Asian elephants in a productive habitat, *Behavioral Ecology* (2016). [DOI: 10.1093/beheco/arw153](https://doi.org/10.1093/beheco/arw153)

Provided by Colorado State University

Citation: Equality, more than dominance, defines Asian elephant society (2016, October 11)
retrieved 3 May 2024 from
<https://phys.org/news/2016-10-equality-dominance-asian-elephant-society.html>

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