

# Aspects of Asian elephants' social lives are not related to amount of intestinal parasites

June 28 2022

---



Two elephants interacting. Credit: John Jackson

An international team of scientists found that sociality is not linked to intestinal nematode infection in Asian elephants. The researchers looked at loneliness and characteristics of the elephants' social groups and found no differences in infection levels.

Social behaviors are common in group-living mammals, and it is often thought that sociality and group density are main drivers of infections and parasite transmissions. Recent research however suggests that the health benefits of sociality and group living can outweigh the costs of sociality and help social individuals to fight infections.

"Asian elephants are one of the world's largest and longest-living terrestrial mammals, and have a very complex social life. However, studying sociality and parasite infection in Asian elephants in the wild is very difficult, if not impossible, due to the dense forests they live in and large roaming distances," says Postdoctoral Researcher and one of the two lead authors of the study Martin Seltmann from the University of Turku.

The researchers investigated three different aspects related to Asian elephants' social world: socialness vs loneliness, size of the group, and living in single vs mixed sex groups.

"We studied these characteristics in 71 Asian timber elephants living in their natural habitat in Myanmar. These elephants work in the [timber industry](#), where they pull and push logs out of the forest. This is a unique research environment and population that allows us to study many elephants living in their natural environment, but at the same time have detailed information about their social lives and infection dynamics," says postdoctoral researcher Carly Lynsdale from the University of Helsinki, the other lead author of the study.

These elephants are semi-captive and their access to social partners is somewhat limited by the working conditions. Their social behaviors do not correspond exactly to the social behaviors of truly wild elephants. However, spending much of their time free in their [natural habitat](#) allows the timber elephants to express many of their natural behaviors, which is often not the case in fully captive systems such as zoos.



Elephants and their handlers on their way to work. Credit: Carly Lynsdale

## **Parasite infection is strongly affected by anti-parasitic treatment**

Every elephant works together with an elephant handler (mahout), and this relationship can last a lifetime. Therefore, a handler knows very well about his elephant's behaviors and is able to give detailed information on its social interactions with other elephants.

From 2014 to 2018, the scientists asked the handlers if their elephants have friends or if they prefer to stay alone. Furthermore, the team assessed the size of the elephants work groups as a measure of social group size and the number of males and females within the work group. In addition, the researchers counted the eggs of intestinal parasites (nematodes, or round worms) in fresh fecal samples. These egg counts are a reliable estimate of the extent of parasite infection.

"We found that veterinarian treatment against parasite infection affects levels of parasite infection, meaning the more recent the treatment took place, the lower the parasite infection. This is of course not surprising and is confirmed by past research, and it is good for the health of these elephants to see that this treatment works. When controlling for this effect, we did not find any relationship between our social measures and parasite infection," says Seltmann.

Though this study did not find evidence to support an association between nematode infection and sociality, there is increasing support for the view that costs of infection may in fact be minimized through socially-promoted resistance and/or tolerance pathways.

The reasons underlying the absence of associations between infection and social behavior in elephants remain largely obscure. However, according to the scientists, the research adds to a bigger picture of how social relationships can help prevent or increase the risk of infection in group-living animals.

"Timber elephants live in mobile working units without strong competition or dominance hierarchies, and this may instead mean that intestinal [parasites](#) either do not present large sociality costs for these elephants or that these costs are mitigated by the social health benefits of group living more than in other host taxa. Additionally, there might have been weak infection—sociality associations present in this system that could not be captured by the study's design," says Lynsdale.

The findings of this new study highlight the need for finer-scale studies, establishing how [sociality](#) is limited by, mitigates, or protects against [infection](#) in different ecological contexts, to fully understand the mechanisms underlying these pathways.

The article was published in the topical collection "Sociality and

Disease" in the journal *Behavioral Ecology and Sociobiology*.

**More information:** Carly L. Lynsdale et al, Investigating associations between nematode infection and three measures of sociality in Asian elephants, *Behavioral Ecology and Sociobiology* (2022). [DOI: 10.1007/s00265-022-03192-8](https://doi.org/10.1007/s00265-022-03192-8)

Provided by University of Turku

Citation: Aspects of Asian elephants' social lives are not related to amount of intestinal parasites (2022, June 28) retrieved 25 June 2024 from <https://phys.org/news/2022-06-aspects-asian-elephants-social-amount.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.