

Is phylogeny or ecology a stronger driver of nematode parasite community structure in an herbivorous primate?

India Schneider-Crease, Jacinta C. Beehner, Thore J. Bergman, Megan A. Gomery, Lia Koklic, Amy Lu, Noah Snyder-Mackler

Parasites are ubiquitous in wild animals, and infections can impose significant costs on reproduction and survival, making parasites major drivers of evolution. Disentangling the structure of parasite communities in wild animals can offer insights into host evolution as well as provide critical information for wildlife health initiatives.

Host ecology and evolutionary history both structure parasite communities. Host species in the same habitat are more likely to share parasites than species that don't share habitats, because they are more likely to encounter the same species of parasites. Indeed, the emergence of certain parasites in new species is often tied to novel overlap between hosts, which is often driven by human-induced habitat changes. Species that share a recent common ancestor are also expected to share parasites, even if they do not share the same habitat. While data exist that support the importance of both ecology and evolutionary history in shaping broad patterns of parasitism, little is known about the relative strength of host ecology and evolutionary history on parasite communities within a single system. That is, which element of an animal's life is more critical to the shape of its parasite community?

We characterized the parasite community of geladas, a primate that is closely related to baboons but has numerous adaptations to a grazing



lifestyle. We sampled from three different areas across the Simien Mountains National Park, Ethiopia, to ensure that we obtained a clear picture of the overall gelada gastrointestinal parasite community. We then compared the gelada parasite community to those reported for baboon species (the evolutionary comparison) and to those reported for grazing species (e.g., sheep, goats, cows) that live in the same area of Ethiopia as geladas (the ecological comparison). We found that geladas share more elements of their parasite community with domestic grazers than with baboons. Overall, geladas' adaptations to grazing may strongly influence their parasite communities, suggesting a stronger role of ecology than evolutionary history in this system.