

# Distinct life history strategies underpin clear patterns of succession in microparasite communities infecting a wild mammalian host

Caroline Glidden<sup>1</sup>, Canan Karakoç<sup>2</sup>, Chenyang Duan<sup>3</sup>, Yuan Jiang<sup>3</sup>, Brianna Beechler<sup>3</sup>, Abdul Jabbar<sup>4</sup>, and Anna Jolles<sup>3</sup>

<sup>1</sup>Stanford University

<sup>2</sup>Indiana University

<sup>3</sup>Oregon State University

<sup>4</sup>University of Melbourne Faculty of Veterinary and Agricultural Sciences

December 6, 2022

## Abstract

In free-living ecological communities, organismal life histories shape interactions with their environment, which ultimately forms the basis of ecological succession. Individual animals in natural populations tend to host diverse parasite species concurrently over their lifetimes. However, the structure and dynamics of mammalian parasite communities have not been contextualized in terms of primary ecological succession, in part because few datasets track occupancy and abundance of multiple parasites in wild hosts starting at birth. Here, we studied community dynamics of twelve subtypes of protozoan microparasites (*Theileria* spp.) in a herd of African buffalo. We show that *Theileria* communities followed predictable patterns of succession underpinned by four different parasite life-history strategies. In contrast to many free-living communities, network complexity decreased with host age. Examining parasite communities through the lens of succession may better inform the effect of complex within host eco-evolutionary dynamics on infection outcomes, including parasite co-existence through the lifetime of the host.

## Hosted file

Glidden\_etal\_2022\_microparasite\_succession.docx available at <https://authorea.com/users/563140/articles/610310-distinct-life-history-strategies-underpin-clear-patterns-of-succession-in-microparasite-communities-infecting-a-wild-mammalian-host>