

“Rethinking time as a mediator for ecological interactions has implications for conservation to public health”

Summary:

Although the niche is a foundational concept, ecologists have devoted most of their attention to the study of habitat and food as the main dimensions to explore species coexistence and ecological community structure. Although time has been deemed among a highly relevant niche axis, its study was historically relegated due to the difficulty to document and analyze it. However, new technological advances (e.g., camera traps, circular statistics, modeling simulations, AI) have opened the door for a detailed examination of activity patterns for a variety of taxa worldwide. Implications of these studies are not constrained to the theoretical ecology realm. In separate studies we have shown experimental evidence that the overlap of activity patterns of rodent species hosts to zoonotic pathogens is likely linked to the transmission of these agents relevant for public health. Moreover, using a randomization algorithm I developed in a novel way we were able to uncover robust evidence for intraspecific niche conservatism among widely separated populations of several wildlife species with wide neotropical distributions (Families Felidae and Tapiridae). This finding has strong implications for the study of evolution of activity patterns as well as practical applications for the management and conservation of these species, many of which are in some endangerment category. Ongoing studies at my laboratory are addressing questions within this framework from local to global scales.