

KANSAS STATE
UNIVERSITY
Division of Biology Presents:

**From The Field to the Forest: Soil Carbon Dictates Nitrogen
Availability at Local and Continental Scales**

Monday, March 2nd, 2026 • 3:30 PM • 232 Ackert Hall



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Soil microorganisms require carbon and nitrogen in fixed ratios, and the amount of soil carbon can influence whether nitrogen is immobilized by heterotrophic microbes or available for autotrophic nitrification. Our work demonstrates that these microbial transformations occurring at the micro-scale influence ecosystem level carbon and nitrogen dynamics. Locally, past land use impacts soil carbon pools and thus the fraction of mineralized nitrogen that is nitrified. We further show that soil carbon constrains nitrogen transformations across disparate North American terrestrial ecosystems, and thus the amount of soil nitrate produced through nitrification. While soil nitrate is an important plant-available pool, it is also easily leached to aquatic ecosystems or denitrified to the greenhouse gas nitrous oxide. In examining the nuanced relationship between soil carbon and nitrogen transformations across scales, our work provides a framework for managing potential nitrogen availability and losses across managed and natural systems.

If you would like to visit with Dr. Ashley Keiser, please contact Dr. Lydia Zeglin at lzeglin@ksu.edu.

Coffee & snacks served preceding the seminar in Ackert Hall, Room 225