

Ashley L. Kissick

BIO

Ashley Lorraine Kissick completed a Bachelor of Arts degree at Maryville College in 2007, during which she held an undergraduate research internship at the Center of Agricultural Research and Higher Education Center (CATIE) in Turrialba, Costa Rica. After college she lived in Costa Rica and later worked at EARTH University as an academic coordinator for the Office of International Academic Relations. She began her dissertation research under the support of a USDA National Needs Fellowship and was later a teaching assistant for AGRY 320 "Genetics." She developed novel traits that better define species' functional roles and methodology to examine change in functional diversity across environmental gradients and spatial foci. The work resulting from her dissertation is the first to detect stability mechanisms operating within a multitrophic community and to use visual contrasts to investigate predator-prey interactions at the community level.

Functional diversity and ecosystem stability

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Abstract

Much attention has shifted to functional diversity, or the range of species' ecological roles in ecosystems, as an indicator for ecosystem change after habitat disturbance. Here, a functional diversity approach was used to examine change and detect mechanisms of ecosystem stability in a multitrophic community along a gradient of habitat fragmentation. This community consisted of longhorned beetles and their beetle predators, insects with diverse ecological roles in hardwood forests. Avian visual perception of beetles was also used to examine the interplay between avian predator and beetle prey abundances. This study revealed that while the beetle community's functional diversity was reduced in fragmented habitats, the presence ecosystem stability mechanisms within beetle functional groups may have prevented loss of ecosystem function in functionally redundant groups. Vision mediated predator-prey interactions also impacted predator and prey abundances. This relationship had greater resolution when including species' function to link species across trophic levels.

