School of Earth and Environmental Sciences Colloquium Series

Dr. Maya Stokes

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Wednesday, March 08th, 2023
12:15 – 1:30 PM
This is an ONLINE talk!

Geologic mechanisms of freshwater fish speciation in the southeast United States

The high biodiversity of mountain ranges across Earth suggests a link between geologic processes and biological evolution. Topographic uplift has been linked to the diversification of both terrestrial and freshwater species in many tectonically active landscapes. However, tectonically inactive mountain ranges also host exceptional levels of freshwater biodiversity. In this talk, I discuss how the erosional exhumation of ancient geologic structures has influenced landscape dynamics and driven the diversification of freshwater fish in the Appalachian Mountains. As rivers erode through layers of different kinds of rock, the spatial distribution of rocks at the surface of the landscape changes. Thus, for fish with habitat specificity linked to rock type, erosion can progressively expose either favorable or unfavorable rock types, creating either barriers or corridors. I utilize geologic and phylogenetic datasets to test these scenarios in darter species endemic to the southeast United States. The results demonstrate how erosion can drive the diversification of freshwater organisms in ancient mountain ranges long after tectonic activity ceases.

Brief bio: Dr. Stokes got her start in geology at Rice University before moving to MIT to pursue her doctoral degree with Prof. Taylor Perron. Her Ph.D focused on the causes and consequences of river network reorganization in the Appalachian Mountains and the Amazon River basin. After MIT, she worked as a postdoctoral researcher at Yale University in the Ecology and Evolutionary Biology department where she learned to apply molecular methods to research the evolutionary history of freshwater fishes.

****THIS IS AN ONLINE MEETING****
Zoom link for remote attendance:
https://us02web.zoom.us/j/82229858276?pwd=UkNzM2FNY2p6cG42YjBmeHg0dGxNdz09
Meeting ID: 822 2985 8276 Passcode: 515589