

PH.D. CANDIDATE

# CHAD RIGSBY

DISSERTATION DEFENSE

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## Mechanisms of Antixenosis and Antibiosis of Ash to Emerald Ash Borer

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The outbreak of invasive forest insects is thought to result from the existence of defense-free space stemming from a lack of a shared co-evolutionary history between the insect and its novel hosts. In my research, we've identified and characterized the resistance mechanisms of a resistant, co-evolved host to emerald ash borer (EAB), an invasive devastating forest pest in North America, and have therefore gained insight into how native North American ashes are unable to defend themselves against the borer. We have found that the co-evolved host has characteristics that result in EAB preferring not to use it as a host, traits which our North American ashes lack. Additionally, we also found that defense-associated enzymes are significantly more active in the co-evolved host than North American ashes, specifically oxidative enzymes that cause damage to biomolecules (e.g. DNA, proteins, etc...) in the gut of the insect. These findings will be applied to the development of resistant varieties of ash so that these trees can be replanted in the landscape.



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Wednesday, April 27 2016

12-3 PM

White Hall 120



Environmental Sciences Ph. D. Program

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