

present an Interdisciplinary Seminar with

DR. CARLOS A. BOTERO

Assistant Professor of Biology, Washington University

Ecological & evolutionary modeling
shed light into the evolution &
spread of human agriculture



3:30 PM*, FEBRUARY 4, 2020

Hallam Auditorium, Room 206@NIMBioS · 1122 Volunteer Blvd.

**Reception & refreshments at 3 pm*

Abstract: Modern humans existed for at least 200K years as hunter-gatherers before developing agriculture. However, around 12KYA a few societies around the world figured out how to domesticate plants and animals, forever altering our ecology and way of life. My talk will cover how my team is taking advantage of recent advances in cultural phylogenetics, computational biology, and evolutionary ecology to quantitatively test a variety of mechanistic hypotheses related to the origin and spread of agriculture. Specifically, I will discuss how we (1) hindcasted population dynamics of hunter-gatherers to evaluate whether agriculture most likely originated in times of need versus surplus; (2) used climate niche modeling to evaluate whether the 11 to 19 areas of origin of agriculture were somehow different than other places concurrently inhabited by humans; (3) investigated how environmental and geographic barriers may have significantly delayed the spread of agriculture in Africa and the Americas as compared to Eurasia; and (4) used machine learning to evaluate whether the rapid spread of agriculture was primarily enabled by war, cultural diffusion, or both.

Bio: Dr. Carlos A. Botero is an Assistant Professor of Biology at Washington University in Saint Louis. He is generally interested in understanding how animal behavior is subjected to eco-evolutionary dynamics driven by climate oscillations and climate change. His research program is currently focused on the evolution of avian cognition and human culture.