Biology Seminar

12:30 - 1:30 pm
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BGS 0153

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Old dog, new tricks:
Using data science techniques to solve ecological problems

Like much of the rest of the world, ecology has entered an era of big data. Big data typically refers to data sources that are characterized as complex with large volumes, varieties, and velocities. Ecology is similarly complex and our research attempts to explain the near-infinite interactions that occur among species, the physical environment, organismal biology, and evolution. Using big data to solve big ecological questions appears as an ideal pairing, but there are certain inherent problems. While our methods have evolved significantly from the days of Clements and Gleason over a century ago to use a more data-driven approach to science, effective applications of big data remain infrequent. The goal of my research is to develop new tools and techniques using big data that improve our ability to predict ecological responses to global change.

In this seminar, I will discuss some of the research projects I am leading that leverage big data to solve questions about ecology and our relationship with nature. I will discuss three core themes in my research: 1) The creation of tools to capture ecological responses across broad temporal and spatial scales, 2) The use of modelling techniques to approximate interactions among species, and 3) The role of anonymized smart device data towards better quantifying human-nature relationships. I will explore case studies in each of these themes and current research advancing the methodologies of ecological research. The research I present will not solve all ecological questions but will certainly provide additional tools for our ability to understand our natural world.