Quantitative
Eco/evo/etho
Discussions

Automated Acoustic Sensors for Surveying and Protecting Biodiversity at Scale

Feb. 22th (Tuesday): 3-4pm ET

Justin Kitzes

Increasing evidence suggests that the planet is in the midst of its sixth major mass extinction event. In the coming decades, a central challenge for ecology and conservation biology will be to find ways to better understand, predict, and ultimately prevent this biodiversity loss. Meeting this challenge, however, requires a foundation of accurate, large-scale data on species diversity and abundance in the field. In this talk, I will discuss new developments in the field of bioacoustics that are allowing ecologists to gather data on terrestrial wildlife at previously unimaginable spatiotemporal scales. First, I will describe our approach to combining inexpensive field sensors, machine learning models, and sound source localization algorithms for surveying songbirds, frogs, and other taxa in the field. Second, I will describe an ongoing conservation application of these methods, which includes deployments of over one-thousand recorders across Pennsylvania forests to measure the effectiveness of large-scale forest restoration. Finally, I will highlight the potential for these techniques to contribute to new basic ecological understanding of community interactions, population demographics, and species movement.

Justin Kitzes is an Assistant Professor of Biological Sciences at the University of Pittsburgh. His research broadly examines how human alteration of natural habitat impacts species abundance and diversity at large spatial scales. His specific research interests are (a) bioacoustics, including developing and deploying acoustic recording hardware and machine learning classification models, (b) conservation, including conducting acoustic field surveys of populations at risk, and (c) spatial macroecology, including developing theory and models to explain general biodiversity patterns. Dr. Kitzes received his Ph.D. from the University of California, Berkeley (Environmental Science, Policy, and Management) and his B.S. and M.S. degrees from Stanford University (Earth Systems).

Hosted by the Soft Math Lab.

Contact: Irina Tolkova
Email: itolkova@g.harvard.edu

Zoom Registration