THE UNIVERSITY OF ARIZONA

School of Natural Resources and the Environment

Seminar Series: Spring 2024

HIERARCHICAL STATISTICAL MODELS CAN FUSE MULTIPLE DATA SOURCES AND ACCOUNT FOR DEPENDENCE IN OBSERVATIONAL DATA

SPEAKER: Henry Scharf, UArizona Math

DATE: Wednesday, March 27th

TIME: 3:00 - 4:00 pm

LOCATION: ENR2 S210 & Zoom

ABSTRACT:

This talk will focus on two benefits of hierarchical statistical modeling: (1) the ability to link or "fuse" together multiple types of related observations in a principled way, and (2) the ability to account for dependence in observational data through interpretable, casually-motivated pathways. As an example of (1), I will introduce a species distribution model for vegetation cover in the Jemez mountains of New Mexico that incorporates both remotely sensed satellite imagery and on-the-ground observations of dominant tree species. As an example of (2), I will introduce an animal movement model for the interacting trajectories of killer whales in which dependence across individuals arises due to the effects of an unobserved, dynamic social network. My hope is that audience members who might not already be familiar with hierarchical models will see potential applications in their own work.

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