SCHOOL OF INFORMATICS, COMPUTING, AND ENGINEERING

CENTER FOR BIOINFORMATICS RESEARCH TALK

Gideon Bradburd

Michigan State University

Thursday May 10th

Indiana Memorial Union

Dogwood Room 4:00 PM

Incorporating Isolation by Distance into Models of Population Genetic Structure

Abstract: One of the first steps in the analysis of genetic data, and a principal mission of biology, is to describe and categorize natural variation. A continuous pattern of differentiation (isolation by distance), where individuals found closer together in space are, on average, more genetically similar than individuals sampled farther apart, can confound attempts to categorize natural variation into groups. This is because current statistical methods for assigning individuals to discrete clusters cannot accommodate spatial patterns, and so are forced to use clusters to describe what is in fact continuous variation. As isolation by distance is common in nature, this is a substantial shortcoming of existing methods. Here, I introduce a new statistical method for categorizing natural genetic variation - one that describes variation as a combination of continuous and discrete patterns. This method produces useful descriptions of structure in genetic relatedness in situations where separated, geographically distributed populations interact, as after a range expansion or secondary contact. Idemonstrate the utility of this approach using simulations and by applying it to an empirical dataset of black bears in North America.

Bio: Gideon is an Assistant Professor in the Dept. of Integrative Biology and Ecology, Evolutionary Biology, and Behavior Group at Michigan State. He got his Bachelors of Science at Yale University, followed by a PhD at UC Davis with advisors Graham Coop and Brad Shaffer, and did a brief postdoc at UC Berkeley with Michael Nachman and Bree Rosenblum. Although the focus of his research now is on statistical methods development, he got his start in biology collecting birds, herps, and fish as specimens for museum collections. He and his partner Marge have an 18 month-old daughter named Lou, and a dog named Banjo.

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