UNIVERSITY OF DELAWARE

CENTER FOR BIOINFORMATICS & COMPUTATIONAL BIOLOGY

BIOINFORMATICS SEMINAR

JEFF BULER

Associate Professor, Entomology and Wildlife Ecology

UNIVERSITY OF DELAWARE

DATA SCIENCE APPLICATIONS IN AEROECOLOGY: USING WEATHER RADAR TO TRACK MIGRATING BIRDS

The national network of more than 150 weather surveillance radars that sample the lower atmosphere 24 hours a day across the country has been archiving data since the mid-1990's. In addition to detecting precipitation, the radars also detect flying animals and provide important data for aeroecology, the study of how airborne animals use and interact with the lower atmosphere. At 3 petabytes in size, this data archive is arguably one of the largest biological datasets in the world. My lab has developed algorithms to process weather surveillance radar observations of migrating birds as they leave terrestrial habitats in synchronized flights and map their terrestrial distributions. Our methods have provided novel insights into the ecology of birds at multiple scales and across large regions. I will discuss a summary of recent and ongoing studies in my lab that apply machine learning models to 1) elucidate drivers of bird distribution patterns at broad and fine scales, 2) develop near real-time spatial and temporal decision-support tools that quantify Avian Influenza infection risk with respect to where wild waterfowl interface with commercial poultry, 2) and assess the ecological impacts of light pollution on nocturnally-migrating birds during migration. I will also discuss some of the remaining data analysis challenges and future directions to unleashing the potential of the radar to advance the field of aeroecology.

BIOGRAPHY

Dr. Jeff Buler is an Associate Professor in the Department of Entomology and Wildlife Ecology. He earned his Ph.D. in Biological Sciences from the University of Southern Mississippi in 2006 before joining UD in 2007 as a Research Scientist. He founded the University of Delaware Aeroecology Program in 2011 where he has specialized in the use of weather surveillance radars to study birds. His broad research interests include avian ecology, landscape ecology, remote-sensing, and conservation biology. He has over 45 peer-reviewed publications and his research has been featured in 42 popular news media stories.

CBCB SEMINAR

10/11/2021

3:30-4:30PM

AP BioPharma Room 140
(590 Avenue 1743)

or via ZOOM:
https://udel.zoom.us/j/93442313974
(Passcode: BINF865)

bioinformatics.udel.edu

College of Engineering
CENTER FOR BIOINFORMATICS & COMPUTATIONAL BIOLOGY