

Postdoctoral Position in Population Ecology

A LANDSCAPE RESISTANCE MAPPING APPROACH TO UNDERSTANDING SPECIES INVASION PATTERNS

We seek a highly motivated postdoctoral scientist to work on an NSF-funded project that integrates population ecology and gene flow analyses to understand the patterns and underlying processes of range expansion in an infamous invasive species. The postdoctoral researcher will use a combination of large data sets and simulation modeling to test the multi-scale patterns and underlying processes of spread by the European gypsy moth across the natural and human landscape in the eastern United States.

Project Summary:

Understanding the factors that affect species range edges is critical to both predicting the spread of invasive species and informing species conservation efforts. At a range edge, movement patterns interplay with local population dynamics to determine spread dynamics. Regional patterns are formed by interactions between local population dynamics and landscape features. For invasive species these factors determine the rate and extent of spatial spread, and ultimately the consequences for local ecosystems. This project centers on a fundamental question in the field of spatial ecology: What are the drivers of geographical range expansion and how do multi-scale processes interact to shape invasion patterns? Few systems provide the spatiotemporal resolution to characterize variation in population dynamics across an invasion front, primarily due to the challenges of studying low density populations outside of the established range, which consequently limits our broader understanding of invasive species range dynamics. We overcome this limitation by using the North American invasion of the gypsy moth and an exhaustive spatiotemporal dataset that is used to annually quantify the 2000 km long range edge. This project combines cutting-edge landscape genetics with detailed analyses of local population dynamics to inform model simulations used to elucidate how local population processes, landscape connectivity, and anthropogenic movement of propagules integratively drive spread patterns.

The successful applicant will work collaboratively with a team of faculty with expertise in using statistical, modeling and GIS approaches in forest insect ecology, population genetics, and landscape ecology. We are particularly interested in a candidate with strong quantitative skills, experience in population modeling on spatiotemporal scales, and with proficiency in the R programming language. Knowledge of GIS, including within the R platform, is desirable. A PhD in biology, ecology, environmental science, genetics, or a related area is required. Applicants should have demonstrated excellent writing skills and have a proven ability to publish research in peer-review journals. The project entails working with existing data sets, thus, there is not a field component to this position.

The position will be based in the Department of Biology at Virginia Commonwealth University (VCU) in Richmond, VA. The successful applicant will be based in the laboratory of Derek Johnson (www.vcuderekjohnson.com), but will also work closely with Dr. Rodney Dyer (VCU), and will be expected to work with collaborators Patrick Tobin (University of Washington), and Jeffrey Holland (Purdue University), including traveling to annual or semi-annual collaborator meetings and national conferences. The appointment is initially for one year, but may be renewed for a 2nd year conditional on exemplary performance. Preferred start date is September – December 2016, and while later start dates may be negotiable, earlier start dates are preferable. Salary and benefits are competitive. To apply, contact Derek Johnson (dmjohnson@vcu.edu) via email and send 1) a cover letter that explains your fit to the position, the particular skills and expertise you will bring to the project, and preferred start dates, 2) a complete CV with publications, grants, and when you completed (or will complete) your PhD, and 3) the names of three references. Review of applications will begin June 15 and continue until the position is filled.