

The [Moeller Lab](http://moellergroup.org) (moellergroup.org) at the University of Minnesota, Twin Cities is seeking a postdoctoral associate for a funded project on evolutionary responses to climate change and consequences for geographic range dynamics. Our project specifically focuses on improving forecasts of range expansion for invasive plant species by incorporating knowledge of local adaptation to historical climate variation and its implications for responses to contemporary climate change. The project includes large-scale precipitation and temperature manipulation in combination with reciprocal transplants of genotypes of common tansy (*Tanacetum vulgare*) across four regions of Minnesota. This experiment has already been established and will continue for at least two additional years. The postdoc will lead data collection, statistical analysis, and publication of major results from the experiment. They will also lead the development of predictive distribution models that incorporate data from the experiment. The project is funded by the Minnesota Invasive Terrestrial Plants and Pest Center ([MITPPC](http://MITPPC.org)). We strongly encourage anyone with interests in the following areas to apply: geographic range dynamics, local adaptation, ecological genetics, eco-evolutionary dynamics, and biogeography.

In addition to the focal project, the postdoc will have opportunities to interface with other ongoing research. The lab has an additional USDA-funded project that uses remote sensing to detect and monitor the population dynamics of invasive plant species using satellite imagery. The postdoc would work closely with other lab members working on this project. Third, the lab has conducted research on geographic range dynamics of a California native plant (*Clarkia xantiana*) for ca. 20 years with funding from NSF LTREB. The postdoc would have the opportunity to contribute to the analysis and publication of data from that long-term project. We would be happy to discuss more details.



Beyond research on range dynamics of invasive plants, the Moeller lab works on various topics in plant evolution and ecology and uses a combination of research approaches including field experiments, quantitative and population genetics, and distribution modeling. At UMN, the postdoc will be part of a diverse community of faculty, postdocs, and students in ecology, evolution, and genetics.

Qualifications:

Required education and experience:

- A completed Ph.D. in ecology, evolutionary biology, statistics or a related field.
- Experience in field work and statistical modeling
- Promising record of research productivity

Required knowledge, skills, and abilities:

- Excellent English writing and oral communication
- Strong organizational skills and ability to multi-task
- Ability to work in a collaborative environment
- Ability to travel/drive to research sites in Minnesota with intermittent overnight stays at field stations or similar accommodations
- Basic statistical knowledge

Desired knowledge, skills, and abilities:

- Experience with statistical modeling and the handling of large datasets
- Proficiency in programming (e.g. R, Python)
- Experience with spatial data software or an interest in developing skills in this area (ArcGIS, QGIS, etc.)
- Independent, self-motivated problem solver who communicates well and enjoys working in a collaborative setting

Breakdown of Duties

Field work 30%

Data analysis 30%

Writing/Publications 30%

Managing and mentoring undergraduates 5%

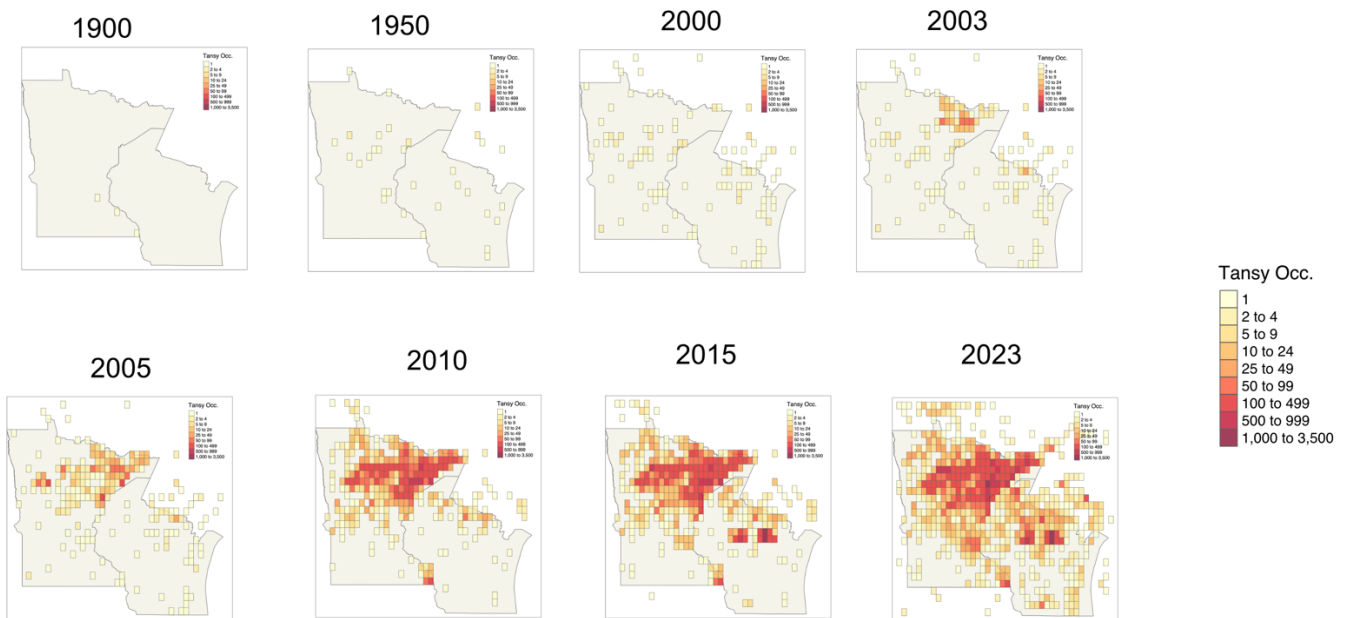
Interaction with stakeholders and collaborators 5%

Salary: Starting salary is \$60,000 per year with employee benefits. This is a two-year (24-month) position that will be appointed on an annual basis, dependent upon the candidate's performance.

Application Timeline: Review of applications will begin May 1 and continue until the position is filled. An ideal start date is September 1, 2024 but is flexible.

Application Materials: Prospective candidates should submit the following documents via the UMN job portal (<https://hr.umn.edu/Jobs/Find-Job> ; Job ID: **358632**): (1) a cover letter describing relevant research experience and research interests, (2) a current CV, and (3)

contact information for three references. Email inquiries to David Moeller (moeller@umn.edu) and/or Ryan Briscoe Runquist (rbriscoe@umn.edu) are encouraged.



Invasion history of common tansy in the Upper Midwest

Some Recent Related Publications

Briscoe Runquist, R.D. & D.A. Moeller. Isolation-by-environment and its consequences for range shifts with global change: landscape genomics of the invasive plant common tansy. *In review*.

Lake, T.A., R.D. Briscoe Runquist, L.E. Flagel, & D.A. Moeller. 2023. Chronosequence of invasion reveals minimal losses of population genomic diversity, niche expansion, and trait divergence in the polyploid, leafy spurge. *Evolutionary Applications* 16:1680-1696.

Gorton, A.J., J.W. Benning, P. Tiffin, & D.A. Moeller. 2022. The spatial scale of adaptation in a native annual plant and its implications for responses to climate change. *Evolution* 76:2916- 2929.

Lake, T.A. Lake, R.D. Briscoe Runquist, & D.A. Moeller. 2022. Deep learning detects invasive plant species across complex landscapes using Worldview-2 and PlanetScope satellite imagery. *Remote Sensing in Ecology and Conservation* 8:875–889.

Briscoe Runquist, R.D., T.A. Lake, & D.A. Moeller. 2021. Improving predictions of range expansion for invasive species using joint species distribution models and surrogate co-occurring species. *Journal of Biogeography* 48:1693-1705.

Lake, T.A., R.D. Briscoe Runquist, & D.A. Moeller. 2020. Predicting range expansion of invasive species: pitfalls and best practices for obtaining biologically realistic projections. *Diversity and Distributions* 26:1767–1779.

Briscoe Runquist, R.D., T. Lake*, P. Tiffin, & D.A. Moeller. 2019. Species distribution models throughout the invasion history of Palmer amaranth predict regions at risk of future invasion and reveal challenges with modeling rapidly shifting geographic ranges. *Scientific Reports* 9:2426.