

Tedward Erker

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Education

- 2013–Present **Ph.D.**, *University of Wisconsin–Madison*, 3.929.
Forestry, Department of Forest and Wildlife Ecology
Committee: Phil Townsend, Jun Zhu, Chris Kucharik, Eric Kruger, Annemarie Schneider.
- 2013–Present **M.S.**, *University of Wisconsin–Madison*.
Biometry, Department of Statistics
- 2006–2010 **B.A.**, *Washington University in St. Louis*, 3.83.
Environmental Studies–Ecology/Biology, Summa Cum Laude

Experience

- 2015–Present **Research Assistant**, *UW-Madison*.
- Map Urban Forests of Wisconsin
 - Tested 3 machine learning algorithms to classify terabytes of imagery
 - Processed imagery in parallel at UW's Center for High Throughput Computing
 - Geospatial analysis in R and image segmentation in python.
 - Carbon Budget of Urban Forest
 - Assessed impact of tree canopy on residential building energy use and carbon emissions of ~30,000 Madison homes.
 - Canopy Foliar Trait Mapping with Imaging Spectroscopy.
 - Applied partial least squares regression models to predict foliar canopy traits (e.g. nitrogen content) from imaging spectroscopy data
 - Explored anthropogenic and environmental drivers of trait variation across Madison, WI.
- 2013–2014 **Arborist**, *Urban Tree Alliance*, Madison, WI .
- Worked part time as ground crew, hauling brush and aiding climber.
 - Developed online Wisconsin tree species identification application.
- 2013 **Arborist**, *American Tree Experts*, New Berlin, WI .
- Performed ground crew work and climbed for pruning and removals
 - as certified pesticide applicator treated for a number of pests including the emerald ash borer.
- 2010–2012 **Chemistry and Biology Teacher**, *Confluence Prep Academy*, St. Louis.
- Educated over 120 students in six classes daily.
 - As first year teacher, developed chemistry curriculum for new charter school integrating College Readiness Standards with Missouri Science Standards.
 - Cross-country coach
- 2010–2012 **Corps Member**, *Teach For America*, Chicago & St. Louis.
- Selected from over 46,000 applicants nationwide
 - Committed two years to teach in under-resourced public schools

- 2007–2010 **Greenhouse Assistant** , *Washington University Plant Research Facility* , St. Louis, MO .
- Water, transplant, and propagate plants; maintain greenhouse.
 - Work-Study
- Apr - Aug 2009 **Farm Education Intern and Farmer** , *Farm And Wilderness Summer Camps* , Plymouth, VT .
- Organized and guided trips of 16-40 students at farm and wilderness education center.
 - Managed 3/4 acre garden and cared for sheep, goats, chickens, pigs, and cows as part of farm team.
- Spring 2008 **Undergraduate Teaching Assistant**, *Washington University in St. Louis*.
- Brave New Crops, Environmental Studies 3322
 - Prof. Glenn Davis Stone

Awards, Grants, and Fellowships

- Jan 2018 Stan Conference Scholarship
- 2015-2018 NASA Earth and Space Science Fellowship \$105,000
- Sep 2016 Mapping Wisconsin's Urban Tree Canopy (co-author), Wisconsin DNR \$50,000
- Oct 2016 George Kress Award for Outstanding Contribution of a Graduate Student \$1,000
- May 2016 Travel Award, UW-Madison Department of Forest and Wildlife Ecology
- Mar 2016 Cool Science Image contest winner, "Madison Lakes"
- May 2010 Outstanding Overall Achievement in Environmental Studies
- Jun 2008 Tyson Research Center Summer Undergraduate Research Fellowship \$3,750

Presentations

- Nov 2016 **Mapping Urban Tree Canopy of Wisconsin**
Society of American Foresters National Convention *Madison, WI*

Posters

- Apr 2018 **Functional and Species Diversity of Trees in Urban Streets**
NASA Biodiversity and Ecological Forecasting Team Meeting *Washington, D.C.*
- May 2016 **How Does the Urban Forest Affect the Urban Heat Island and Building Energy Use?**
NASA Biodiversity and Ecological Forecasting Team Meeting *Silver Springs, MD.*

Mentoring

My undergraduate mentees research a topic, collect new data, perform statistical analyses, and write final papers to complete small research projects. They create posters or presentations to share their work.

Fall 2017

Cheyenne Brandt

Undergraduate Research Project: Effect of Leaf Area and Tree Canopy on the Urban Heat Island of Madison, WI.

Fall 2015

Bobby Shepherd

Undergraduate Research Project: Investigating the influence of the urban heat island on autumn phenology of Norway Maple (*Acer platanoides*) with smartphone hemispherical photos.

Professional Affiliations

Society of American Foresters, 2016–Present

Languages

Spoken: English, Spanish

Computing: R

Service to the Department and University

Oct 2015 - Present

Graduate Student Representative, Department of Forest and Wildlife Ecology

Jul 2017

Software Carpentry Volunteer

Service to Community

Fall 2014 and Fall 2015

Guest Lab Instructor, Sustainability by the Numbers, Shabazz High School

Fall 2017

Guest Lab Instructor, AP Environmental Studies, East High School

Graduate Coursework

| Semester | Course | Grade |
|----------|---|-------|
| F 2013 | Diseases of Trees and Shrubs | A |
| | Tree Physiology | A |
| | Statistical Methods for Bioscience I | A |
| S 2014 | Inquiry-Based Biology Teaching | A |
| | Intermediate Data Analysis with R | A |
| | Principles of Silviculture | S |
| | Statistical Methods for Bioscience II | A |
| | Teaching Biology: Special Topics | A |
| | Advanced Data Analysis with R | A |
| Su 2014 | Calculus–Functions of Variables | S |
| F 2014 | Field Methods in Remote Sensing | A |
| | Environmental Biophysics | A |
| | Intro Mathematical Statistics I | A |
| S 2015 | Tools for Reproducible Research | A |
| | Remote Sensing Digital Image Processing | A |
| | Intro Mathematical Statistics II | AB |
| | Teaching Statistics | A |
| Su 2015 | Statistical Consulting | A |
| F 2015 | Statistical Methods-Spatial Data | AB |
| S 2016 | Multilevel Models | A |
| S 2017 | Ecosystem Concepts | B |