Tedward Erker

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Education

2013–Present **Ph.D.**, *Universifty 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

Skills

Statistical Analysis	*GLMs, GAMs, multilevel models, shrinkage and dimension reduction, tree-based methods, dependent data in R and some Stan*
Data Display	*Daily use of grammar of graphics in R's ggplot2*
Writing	*1 scientific paper in review; over $150,000 in proposals*
Presenting	*2 scientific posters, 1 academic presentation, 4 years of teaching*
Computing	*R, python, webscraping, emacs org mode, unix command line, version control (git)*
Mentoring	*2 undergraduate research assistants, 4 years of teaching*

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.

2013–2015 **Teaching Assistant**, *UW-Madison*.

- Statistical Methods for Bioscience II, Spring 2015
  - Led 2 weekly discussion groups, graded homework and exams for this graduate-level course largely covering multiple linear and logistic regression
  - Prof. Murray Clayton.
- Forest Ecology, Fall 2013 and Fall 2014
  - Redesigned, created and independently implemented lab lessons in field and computer lab for ~70 students.
  - Prof. Tom Gower (2013) and Prof. Phil Townsend (2014).
- Living With Wildlife, Spring 2014
  - Graded journals and exams, assisted students during office hours.
  - Prof. Stan Temple.

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.

Feb–Jul 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
- Commited two years to teach in under-resourced public schools

2007–2010 **Greenhouse Assistant**, *Wash. U. 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*, 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.

May–Aug 2008 **Research Assistant**, *Tyson Research Center*, Eureka, MO.

- Sampled vegetation, identified over 100 plant species as part of study to explore phylogenic relationships in invasiveness.

Jan–May 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

2017	Cheyenne Brandt	*Effect of Leaf Area and Tree Canopy on the Urban Heat Island of Madison, WI.*
2015	Bobby Shepherd	*Investigating the influence of the urban heat island on autumn phenology of* Acer platanoides *with smartphone hemispherical photos.*

Professional Affiliations

2016–Present	Society of American Foresters
2018–Present	American Geophysical Union

Languages

Spoken:	English, Spanish
Programming:	R, Python, Stan

Service to the Department and University

2015–2018	Graduate Student Representative	*Department of Forest and Wildlife Ecology*
2017	Software Carpentry Volunteer	*UW-Madison*

Service to Community

2014, 2015	Guest Lab Instructor, Sustainability by the Numbers	*Shabazz High School*
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

Workshops

2017 Hierarchical Modeling and Analysis of Spatial-Temporal Data *Andrew Finley*

2016 Software Carpentry