

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 (advisor), 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.
- 2013–2015 **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
 - Forest Ecology, Fall 2013 and Fall 2014
 - Living With Wildlife, Spring 2014
- 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.
- 2010–2012 **Corps Member**, *Teach For America*, Chicago & St. Louis.

Relevant graduate coursework

- Tools for Reproducible Research
- Statistical Methods-Spatial Data
- Intro Mathematical Statistics I & II
- Teaching Statistics
- Advanced Data Analysis with R
- Multilevel Models
- Statistical Meth. for Bioscience I & II
- Statistical Consulting

Skills

Statistical Analysis	<i>GLMs, GAMs, multilevel models, shrinkage and dimension reduction, tree-based methods, dependent data in R and some Stan</i>
Data Display	<i>Daily use of grammar of graphics in R's ggplot2</i>
Writing	<i>1 scientific paper in review; over \$150,00 in proposals</i>
Presenting	<i>2 scientific posters, 1 academic presentation, 4 years of teaching</i>
Computing	<i>R, python, webscraping, emacs org mode, unix command line, version control (git)</i>
Mentoring	<i>2 undergraduate research assistants, 4 years of teaching</i>

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

November 2016

Mapping Urban Tree Canopy of Wisconsin

Society of American Foresters National Convention. Madison, WI.

Posters

April 2018

Functional and Species Diversity of Trees in Urban Streets

NASA Biodiversity and Ecological Forecasting Team Meeting in Washington, D.C.

May 2016

How Does Structural and Functional Diversity of the Urban Forest Affect the Urban Heat Island and Building Energy Use in Madison, WI?

NASA Biodiversity and Ecological Forecasting Team Meeting in Silver Springs, MD.

Teaching Experience

Spring 2015

Statistical Methods for Bioscience II Teaching Assistant

Led 2 weekly discussion groups, graded homework and exams for this graduate-level course. Prof. Murray Clayton. ;

Fall 2013 and Fall 2014

Forest Ecology Teaching Assistant

Redesigned, created and independently implemented lab lessons in field and computer lab for ~70 students. Prof. Tom Gower (2013) and Prof. Phil Townsend (2014).

Spring 2014

Living With Wildlife Teaching Assistant

Graded journals and exams, assisted students during office hours. Prof. Stan Temple.

August 2010 - May 2012

High School Chemistry and Biology Teacher

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. Confluence Preparatory Academy. St. Louis, MO.

June 2010 - May 2012

Teach For America Corps Member

Selected from over 46,000 applicants nationwide to join the national teacher corps of recent college graduates who commit two years to teach in under-resourced public schools. Chicago, IL & St. Louis, MO.

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.

Relevant Work Experience

August 2013 - December 2014

Arborist

Worked part time as ground crew, hauling brush and aiding climber. Developed online Wisconsin tree species identification application. Urban Tree Alliance, Non-profit. Madison, WI.

February 2013 - August 2013

Arborist

Performed ground crew work, climbed, and as certified pesticide applicator treated for a number of pests including the emerald ash borer. American Tree Experts. New Berlin, WI

March 2007 - May 2010

Greenhouse Assistant

Water, transplant, propagate plants; maintain greenhouse. Work-Study at Washington University Plant Research Facility. St. Louis, MO.

April - August 2009

Farm Education Intern and Farmer

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. Farm And Wilderness Summer Camps. Plymouth, VT.

May - August 2008

Research Assistant

Sampled vegetation, identified over 100 plant species as part of study to explore phylogenetic relationships in invasiveness. Tyson Research Center. Eureka, MO.

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	Code	Course	Credits	Grade
F 2013	F&W ECOL 309	Diseases of Trees and Shrubs	3	A
	F&W ECOL 415	Tree Physiology	3	A
	HORT 571	Statistical Methods for Bioscience I	4	A
S 2014	PL PATH 800	Inquiry-Based Biology Teaching	1	A
	STAT 692	Intermediate Data Analysis with R	1	A
	F&W ECOL 410	Principles of Silviculture	audit	S
	STAT 572	Statistical Methods for Bioscience II	4	A
	PL PATH 801	Teaching Biology: Special Topics	1	A
	STAT 692	Advanced Data Analysis with R	1	A
Su 2014	MATH 234	Calculus–Functions of Variables	4	S
F 2014	F&W ECOL 875	Field Methods in Remote Sensing	1	A
	SOIL SCI 532	Environmental Biophysics	3	A
	STAT 311	Intro Mathematical Statistics I	3	A
S 2015	BMI 826	Tools for Reproducible Research	1	A
	ENVIR ST 556	Remote Sensing Digital Image Processing	3	A
	STAT 312	Intro Mathematical Statistics II	3	AB
	STAT 692	Teaching Statistics	1	A
Su 2015	STAT 699	Statistical Consulting	3	A
F 2015	STAT 575	Statistical Methods-Spatial Data	3	AB
S 2016	STAT 679	Multilevel Models	3	A
S 2017	ZOOLOGY 725	Ecosystem Concepts	3	