Tedward Erker

Madison, WI
(314) 324 6079
tedward.erker@gmail.com
stat.wisc.edu/ erker/
tedwarderker

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.

Education

2013–Present **Ph.D.**, *University of Wisconsin–Madison*, *3.929*.
Forestry, Department of Forest and Wildlife Ecology

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

Relevant graduate coursework

- Tools for Reproducible Research
- Statistical Methods-Spatial Data
- Advanced Data Analysis with R
- Multilevel Models

- Intro Mathematical Statistics I & II
- Statistical Meth. for Bioscience I & II
- Teaching Statistics
- Statistical Consulting

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 $150,00 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*

Awards, Grants, and Fellowships

Jan 2018	Stan Conference Scholarship	
2015-2018	NASA Earth and Space Science Fellowship	*$105,000*

Jan 2018

Stan Conference 2018 Scholarship

2015-2018

NASA Earth and Space Science Fellowship
$105,000

Sep 2016

Mapping Wisconsin's Urban Tree Canopy (co-author), Wisconsin Department of Natural Resources
$50,000

Oct 2016

George Kress Award for Outstanding Contribution of a Forestry 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 (highest award in major), Washington University in St. Louis

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