ALIX A. PFENNIGWERTH

University of Tennessee • Dept. of Ecology & Evolutionary Biology • Knoxville, TN 37996
alix.pfennigwerth@gmail.com • 865-216-7868

SUMMARY

- Field ecologist that is passionate about conducting high-quality research to support innovative and effective resource management solutions.
- Over 6 years' experience in ecological research, monitoring, and resource management.
- Leadership and project management experience in federal, academic, and NGO settings.
- Technical expertise in plant community ecology and statistical and spatial analysis.
- Author of successful funding proposals totaling $125,000 and 6 scientific articles.

EDUCATION

M.S. Ecology & Evolutionary Biology Expected May 2017
University of Tennessee, Mentor: Dr. Jennifer Schweitzer
Field, lab and greenhouse based thesis: Functional variation and plant-soil interactions shape the response of forests to contemporary global changes.
Relevant coursework: Field Ecology, Core Evolution, Mycorrhizal Fungal Ecology, Core Ecology, Biometry, Relentless Evolution, GIS & GPS for Biosystems, Conservation Biology, Science Writing, Plant-Soil Feedbacks, Independent Study and Thesis.
GPA: 4.0/4.0

B.S. Biological Sciences Aug 2007-Dec 2011
University of Tennessee, *Summa cum laude*
Relevant coursework: Botany, Ecology, Genetics, Field Botany, Environmental Writing, Plant Evolutionary Morphology, Writing About Science/Medicine, Dendrochronology, Science Writing as Literature, Statistics, Plant Ecophysiology, Ecosystem Ecology, Undergraduate Research, Independent Study.
GPA: 3.98/4.0

Undergraduate International Exchange Program Jan-June 2010
Universidad Nacional de Costa Rica
Relevant coursework: Flora (Field Botany).

PROFESSIONAL EXPERIENCE

Graduate Research Fellow & Graduate Student Aug 2014-present
National Science Foundation & University of Tennessee Knoxville, TN
Supervisor: Dr. Jen Schweitzer (major professor), 865-974-0856 40 hrs/wk
Faculty Committee: Drs. Joe Bailey, Charles Kwit, and Daniel Simberloff

- Principal investigator of two large-scale ecological studies assessing (1) the effect of climatic gradients on intraspecific plant trait variation and (2) the role of plant-soil interactions in plant community responses to foundation species mortality in Southern Appalachian forests.
- (Co-)authored 5 peer-reviewed publications (3 published, 2 in review); orally presented scientific research findings at local, regional, and national conferences.
- Principal author of successful grant proposals totaling over $125,000.
- Led, trained, coordinated, and oversaw the work of 3 field crew members.
- As Lab Undergraduate Research Coordinator (2014-2016), was responsible for interviewing, hiring, scheduling, and training 5-10 research assistants per semester.

Inventory & Monitoring Volunteer Jan 2015-present
National Park Service—Great Smoky Mountains National Park (GRSM) Gatlinburg, TN
Supervisor: Troy Evans, Vegetation Ecologist, Phone: 865-430-4742 10 hrs/wk

- Led project in collaboration with resource managers to develop park-wide (>2000 km^2) wetland habitat model (ArcGIS) that increased Park's wetland detection rate by 300%.
- Prepared draft/final technical report and peer-reviewed article that presented findings, interpretations, and conclusions of wetland habitat modeling project.
- Orally presented ecological findings to agency scientists and natural resource managers.
- Collected ecological monitoring data (i.e, plant species ID and cover, tree diameter, coarse woody debris and fuels, increment tree cores for dendrochronological analysis) from >15 long-term forest vegetation plots and >50 wetland plots.

Graduate Teaching Assistant Aug 2013-July 2014
University of Tennessee—Ecology & Evolutionary Biology Knoxville, TN
Supervisor: Dr. Jen Schweitzer, 865-974-0856 40 hrs/wk

- *Same responsibilities as **Graduate Research Fellow** above.*
- Taught two 25-student Biodiversity undergraduate lab/discussion courses.

Research Specialist II May 2013-Aug 2013
University of Tennessee—Forestry, Wildlife and Fisheries Knoxville, TN
Supervisor: Dr. Charles Kwit, Phone: 865-974-9793 40 hrs/wk

- Assessed climate change vulnerability of Tennessee's 22 threatened and endangered plant species using NatureServe CCVI Excel-based tool and ArcGIS spatial analyses.
- Designed, implemented, and analyzed data from field and greenhouse studies of plant-soil and plant-insect interactions in eastern forest understories.
- Co-authored a peer-reviewed scientific paper based on field ecological study; prepared draft technical reports that presented findings, interpretations and conclusions of field- and computation-based ecological studies.
- Trained, coordinated and oversaw the work of an undergraduate field technician.

Research Specialist I Nov 2012-May 2013
University of Tennessee—Tree Improvement Program Knoxville, TN
Supervisor: Dr. Scott Schlarbaum, Phone: 865-974-7993 40 hrs/wk

- Trained and oversaw 4-person field crew in field and greenhouse settings.
- Propagated, maintained, and measured performance of various tree ecotypes for ecological research and restoration.

Biological Science Technician May 2012-Oct 2012
National Park Service—Big South Fork NRRA & Obed WSR Oneida, TN
Supervisor: Marie Tackett, Botanist, Phone: 423-569-2404 ext. 251 40 hrs/wk

- Trained, coordinated and oversaw 4-person field crew in riparian and forest vegetation monitoring and invasive plant/insect/disease management.
- Coordinated with senior scientist to successfully, effectively and safely implement daily projects with field crew in remote field settings.
- Inventoried and monitored rare plant communities and maintained Park Herbarium.
- Prepared comprehensive annotated bibliography that summarized the findings and conclusions of hemlock woolly adelgid research published to-date.

Research Intern Dec 2011-May 2012
Tennessee Exotic Pest Plant Council Knoxville, TN
Supervisor: Dr. Sara Kuebbing, Phone: 302-650-4860 20 hrs/wk

- Designed, implemented and analyzed data from statewide survey of invasive plant expenditures from >200 private, federal, state, and municipal land managers.
- Authored scientific article on research survey findings, interpretations, and conclusions.
- Orally presented research findings to general public, academic/agency scientists, industry professionals, and resource managers at state and regional conferences and workshops.
- Developed informational website, survey protocol and factsheet on costs of invasive

plants to disseminate information to decision makers, resource managers, and the public.

Lab and Field Technician June 2010-May 2012
University of Tennessee—Ecosystem Ecology Lab Knoxville, TN
Supervisor: Dr. Aimee Classen, Phone: Denmark +45 27642754 20 hrs/wk

- Trained and supervised 3 undergraduate technicians on field and lab techniques for ecological studies of plant-soil and plant-climate relationships.
- Routinely operated and repaired field equipment (i.e., Li-COR 7500 infrared gas analyzer) to measure net ecosystem exchange (ecosystem/plant/microbial CO_2 flux).
- Inventoried, maintained, purchased, and accounted for field and laboratory supplies.
- Managed, ensured quality of, and analyzed complex ecological datasets.
- Contributed to technical reports and orally presented research findings to lab group.

SKILLS

Project management

- Managed 2 field-, lab-, and greenhouse-based research projects over 3 years
- Coordinated field, lab, and greenhouse work of subordinates and collaborators
- Managed timeline, budget, and project reporting for three multi-year grants

Program leadership

- Organized conferences and community workshops; chaired committees (TN-IPC)
- Organized and led collaborative efforts with land managing agency (NPS)
- Hired, trained, and coordinated 5-10 technicians and volunteers per semester (2014-2016)

Data analysis and management

- Proficient with R statistical language (4 years with R as primary statistical platform)
- Comfortable organizing, analyzing, and plotting complex ecological data
- Graduate coursework in Biometry (Fall 2014)
- Structural Equation Modeling Workshop (USGS, Jan 2014)
- Can proficiently load/define data, create/relate tables/queries/reports/forms in MS Access
- MS Access Basic and Advanced Trainings (LYNDA, Sept 2016; UTK OIT, Feb 2017)

Field botany and ecology

- Proficient field botanist/ecologist with academic, agency, and NGO experience
- Strong working knowledge of plant taxonomy; proficient with dichotomous keys
- Numerous undergraduate and graduate courses in plant taxonomy and plant ecology

Geographic Information Systems (GIS)

- Comfortable loading, extracting, and manipulating ecological data in ArcGIS
- Created wetland habitat model (ArcGIS/MaxEnt) now utilized by National Park (GRSM)
- Graduate coursework in GIS/GPS Applications to Biosystems (Fall 2015)

Science communication and outreach

- Authored 4 successful grant proposals, 4 publications, technical reports, popular articles
- Experience leading resource management-oriented community workshops (TN-IPC)
- Experience disseminating science to NGO, government, academic, and private audiences
- Expert lead for community citizen science projects (e.g., BioBlitz, Weed Wrangles)
- Developed factsheet and protocol for invasive plant expenditures survey (TN-IPC)

Spanish

- Conversationally fluent (written and spoken)
- Studied abroad in Spanish-speaking country and university for five months (2010)

First Aid, CPR, and AED, certified May 2016, exp. May 2018
Search & Rescue Technician III, arduous duty, NPS, May 2015, exp. May 2017
Wildland firefighter type 2, arduous duty, NPS, Oct 2012, exp. Oct 2017

PUBLICATIONS

Peer-reviewed

Connell, RK, **AA Pfennigwerth,** AT Classen, C Kwit. 2016. Incorporating redispersal microsites into myrmecochory in eastern North American forests. *Ecosphere* 7:e01456.

Van Nuland, ME, IM Ware, L Mueller, R Wooliver, **AA Pfennigwerth**, Q Read, JA Schweitzer, J Bailey. 2016. Plant-soil feedbacks: connecting ecosystem ecology and evolution. *Functional Ecology* 30:1032-1042.

Wooliver, R, **AA Pfennigwerth,** JK Bailey, JA Schweitzer. 2016. Plant functional constraints guide macroevolutionary trade-offs in competitive and conservative growth responses to nitrogen. *Functional Ecology* 30:1099-1108.

Pfennigwerth, AA, JK Bailey, JA Schweitzer. Intraspecific plant trait responses to climatic gradients along elevation: Plasticity and population matter. In revision*, AoB PLANTS.*

Pfennigwerth, AA, JK Bailey, M Van Nuland, JA Schweitzer. Seeing the forest for the soil: plant-soil biota interactions mediate forest responses to disturbance, but only in the right light. In review, *Journal of Ecology.*

Pfennigwerth, AA, Albritton, JA, Evans, T. Six years of progress and novel method development for wetland detection and inventory in the Great Smoky Mountains National Park. In preparation, *Park Science* (to be submitted June 2017).

Technical reports and popular science

Pfennigwerth, AA. 2015. Wading into the unknown: modeling wetland habitat suitability in the Great Smoky Mountains National Park. Technical Report submitted to the Great Smoky Mountains National Park. Gatlinburg, TN.

Pfennigwerth, AA, JA Schweitzer. The great survivor: *Rhododendron maximum* varies across gradients in the southeastern US. In press, *Journal of the American Rhododendron Society.*

Pfennigwerth, AA, S Kuebbing. 2013. Direct costs associated with invasive non-native plants in Tennessee*. Wildland Weeds* 15:4-6.

GRANTS

Graduate Research Fellowship, National Science Foundation, 2014-2016 **total $115,000**
John W. Humke Student Scholarship, Natural Areas Association, 2015-2016 **total $1,802**
Research Grant, Ecology and Evolutionary Biology, Univ. of TN, 2013-2015 **total $4,625**
Research Grant, American Rhododendron Society, 2014 **$4,150**

AWARDS

First Place Student Presentation, Annual Natural Areas Conference, 2015
Travel Award, University of Tennessee, 2015-2016
Chancellor's Excellence in Teaching Award, Nominee, University of Tennessee, 2014
Chancellor's Top Collegiate Scholar, Biological Sciences, University of Tennessee, 2011
Ira Sliger Leadership Award, University of Tennessee, 2011
RecSports Endowment Award, University of Tennessee Recreational Sports, 2011
J. Paul Blakely Award of Distinction, Society for Technical Communication, 2011
J. Paul Blakely Award of Excellence, Society for Technical Communication, 2010
Study Abroad Scholarship, Center for International Education, Univ. of TN, 2010

PRESENTATIONS

Published abstracts

Pfennigwerth, AA, JK Bailey, M Van Nuland, JA Schweitzer. Digging into mechanisms: plant-

soil biota interactions mediate shrub expansion in declining forests. 43rd Annual Natural Areas Conference, Davis, CA. Oct. 20, 2016. *Oral presentation.*

Pfennigwerth, AA, J Albritton. Wading into the unknown: modeling wetland habitat suitability in the Great Smoky Mountains National Park. Great Smoky Mountains National Park Brownbag Lunch Series, Gatlinburg, TN. Apr 7, 2016. *Oral presentation.*

Pfennigwerth, AA, JK Bailey, JA Schweitzer. Inferring response to climate change from natural laboratories: is there convergence in plant functional traits across multiple elevational gradients in *Rhododendron maximum?* 42nd Annual Natural Areas Conference, Little Rock, AR. Nov. 4, 2015. *Oral presentation.*

Pfennigwerth, AA. Putting a price tag on plant invasion: economic costs of invasive plant control. 20th Anniversary Conference of the Tennessee Exotic Pest Plant Council. Nashville, Tennessee. Feb. 27, 2015. *Oral presentation.*

Connell, RK, **AA Pfennigwerth,** AT Classen, C Kwit. Redirecting directed dispersal in an ant-myrmecochore system: addressing the uniqueness of microsites near ant nests in an eastern North American forest. Ecological Society of America Annual Meeting, Sacramento, California. Aug. 2014. *Poster.*

Watson, BT, **AA Pfennigwerth**, DA Lincicome, C Kwit. Climate change vulnerability of threatened and endangered plants in Tennessee: species range representation matters. Ecological Society of America Annual Meeting, Sacramento, California. Aug. 2014. *Poster.*

Pfennigwerth, AA, S Kuebbing. The economic expenditures on exotic, invasive plant management in the state of Tennessee. 14th Annual Southeast Exotic Pest Plant Council Conference, Auburn, Alabama. May 8, 2012. *Oral presentation.*

Invited talks and lectures

Guest lecture, University of Tennessee, Urban Ecology (Biology 106), Nov 3 2016

Guest lecture, University of TN, Native Plants in the Landscape (Plant Sci 421), Sept 9 2014

Guest workshop, Big South Fork NRRA, Invasive Plants in the Community, June 27 2013

Guest lecture, University of TN, Wildland Recreation (Forestry 321), Jan 24 2012

SERVICE AND OUTREACH

Tennessee Invasive Plant Council, Board Member, 2012-present; Treasurer, 2014-16

Community Ecological Inventories and Invasive Plant Pulls (Knoxville Weed Wrangle, BioBlitz, and Invasive Plant Inventory, Mar 2016, Aug 2015, Mar 2015; Nolichucky River Purple Loosestrife Inventory, July 2012), Plant ID Team Leader

The Nature Conservancy, LANDFIRE Biophysical Settings Reviewer, 2016

***Functional Ecology*,** Manuscript referee, 2015-2016