

CURRICULUM VITAE
DOUGLASS FREDERICK JACOBS

Purdue University Hardwood Tree Improvement and Regeneration Center Department of Forestry and Natural Resources West Lafayette, Indiana 47907-2061, USA	Phone: +1 (765) 494-3608 Email: djacobs@purdue.edu http://www.agriculture.purdue.edu/fnr/faculty/jacobs Birthdate: July 24, 1971
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EXPERTISE: Regeneration of Planted and Natural Forests; Restoration Ecology; Tree Physiology

APPOINTMENTS

- Associate Head (since 2014). Department of Forestry and Natural Resources (FNR), Purdue University.
- Director (since 2017). Tropical Hardwood Tree Improvement and Regeneration Center. Purdue University and USDA Forest Service.
- Co-Director (2015-17). Hardwood Tree Improvement and Regeneration Center at Purdue University.
- Fred M. van Eck Endowed Chair of Forest Biology (since 2012), FNR, Purdue University.
- Professor (since 2011), Associate Professor (2006-11), and Assistant Professor (2001-06). FNR, Purdue University.
- Editor-in-Chief (since 2010), *New Forests* (Springer Publishers, 2016 ISI Impact Factor = 1.54).
- Visiting Professor. 2016. Department of Natural Resources and Environmental Management, College of Tropical Agriculture and Human Resources, University of Hawaii. Manoa, Hawaii.
- Visiting Scientist. 2016. Institute of Pacific Islands Forestry, Pacific Southwest Research Station, USDA Forest Service. Hilo, Hawaii.
- Visiting Professor. 2008-09. School of Forest Engineering, Technological University of Madrid, Spain.
- Instructor. 2000. Department of Forest Resources, Oregon State University. Corvallis, Oregon.
- Graduate Research Assistant. 1998-2001. Nursery Technology Cooperative, Department of Forest Science, Oregon State University. Corvallis, Oregon.
- Graduate Teaching Assistant. 1996-98. Warnell School of Forest Resources, University of Georgia. Athens, Georgia.
- Forestry Technician. 1996-98. USDA Forest Service, San Juan National Forest, Colorado.
- Research Technician. 1996. USDA Forest Service, Institute of Tree Root Biology, Athens, Georgia.
- Biological Technician. 1995. USDA Forest Service, San Juan National Forest, Colorado.
- Research Technician. 1994. National Park Service, Yosemite National Park, California.

EDUCATION

- Ph.D., Forest Science. 2001. Department of Forest Science, Oregon State University, Corvallis, Oregon.
Dissertation: Influence of root architectural development on Douglas-fir (*Pseudotsuga menziesii*) seedling morphology and physiology.
- M.S., Forest Resources. 1998. Warnell School of Forest Resources, University of Georgia, Athens, Georgia.
Thesis: The reforestation of Engelmann spruce (*Picea engelmannii*) using tree shelters.
- B.A., Ecology. 1993. Emory University, Atlanta, Georgia. *Senior Thesis:* Sustainability of Pacific Northwest logging.

HONORS AND AWARDS

- Departmental Nominee to College of Agriculture, Purdue University. Spirit of the Land Grant Award. 2018.
- Departmental Nominee to College of Agriculture, Purdue University. Outstanding Graduate Mentor and Teacher Award. 2018.
- Affiliate Graduate Faculty. Department of Natural Resources and Environmental Management, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa. 2017.
- Academic Leadership Fellow, Big Ten Academic Alliance. 2014.
- USDA Forest Service Rocky Mountain Research Station Outstanding Technology Transfer Publication (*Tropical Nursery Manual*). 2014.

- Dingying Visiting Professor Fellowship, South China Agricultural University. 2013.
- Fred M. van Eck Endowed Chair of Forest Biology, Purdue University. 2012.
- Purdue University Faculty Scholar. 2011-16.
- USDA Forest Service Rocky Mountain Research Station Outstanding Technology Transfer Publication (*Tribal Nursery Manual*). 2009.
- Visiting Professor Fellowship, Technological University of Madrid, Spain. 2008.
- Who's Who in America. 2008.
- Epsilon Sigma Phi, Honor Society of Extension Programming. 2008.
- USDA Forest Service Northern Research Station Partnership Award (Hardwood Tree Improvement and Regeneration Center). 2007.
- USDI Cooperative Conservation Award (Appalachian Regional Reforestation Initiative). 2007.
- Adjunct Research Professor, Changbai Mountain Academy of Sciences, Jilin Province, China. 2006.
- Gamma Sigma Delta, Honor Society of Agriculture, Purdue University. 2005.
- Dilworth Memorial Scholarship, Department of Forest Resources, Oregon State University. 2000.
- Graduate student representative, Department of Forest Science, Oregon State University. 2000-01.
- Outstanding graduate teaching assistant, University of Georgia. 1998.
- Best forestry research presentation, Warnell School of Forest Resources Graduate Research Symposium. University of Georgia. 1998.
- President, Xi Sigma Pi, Forestry Academic Honor Society, University of Georgia. 1997-98.

AFFILIATIONS: American Chestnut Foundation, American Society of Mining and Reclamation, Ecological Society of America, Indiana Hardwood Lumbermen's Association, International Society for Horticultural Sciences, International Union of Forest Research Organizations, Society of American Foresters, Society for Ecological Restoration, Walnut Council

LANGUAGES: English (native), Spanish (intermediate), Swedish (conversational)

TEACHING AND MENTORING

Department of Forestry and Natural Resources, Purdue University

- Instructor, Dendrology (FNR225) 3 credits. Fall 2002-2017 (except 2008, 2016).
- Instructor, Forest Regeneration (FNR535) 3 credits. Fall 2004, 2006, 2009, 2011, 2013, 2015
- Instructor, Silviculture week of summer practicum (FNR372) 1 of 6 credits. Summer 2003-2008, 2015, 2017.
- Co-Instructor, International Natural Resources Practicum (FNR460) 3 credits. Summer 2005, 2007, 2008, 2012, 2013, 2015, 2016, 2017.
- Co-Instructor, Silviculture (FNR333) 3 credits. Fall 2005, 2006.

Department of Horticulture and Landscape Architecture, Purdue University

- Co-Instructor, Nursery Crops (HORT411) 1 credits. Fall 2004.

Department of Forest Resources, Oregon State University

- Instructor, Silviculture: Reforestation (FOR442) 4 credits. Spring 2000.

Warnell School of Forest Resources, University of Georgia

- Graduate Teaching Assistant, Dendrology. 4 quarters (Fall and Spring 1997-1998).
- Graduate Teaching Assistant, Forest Ecology. 2 quarters (Winter 1997-1998).

Publications

1. Jacobs DF, Goodman RC, Weeks SS. **2009**. Stewart's Woods Dendrology Tree Trail Podcast. Purdue University Cooperative Extension Service, FNR-407 (Available Online).

2. Dunning JB, Meilan R, Jacobs DF, Blank GB, Easley TR, Olsson M. **2008**. Collaborative study abroad – Combining efforts to improve undergraduate experience. *North American Colleges and Teachers of Agriculture Journal* 52:20-24.

Funding

- 2007-08 Purdue University College of Agriculture Instructional Innovation (PI) \$20,560**
Integrating iPod® technology into natural resources instruction (with J.B. Dunning, Jr., K. Nichols, G.R. Parker, R. Thomas, H. Weeks, Jr., S. Weeks, and R. Williams)

Presentations

- 2007** -- Integrating iPod® technology into natural resources instruction. Advances in Forest and Natural Resource Management Symposium, **National Taiwan University, Taiwan.**

Invited Instructor for International Courses

- 2013** -- *Bases ecofisiológicas para la producción de plantas de calidad en vivero para mejorar el establecimiento de plantaciones forestales.* 30 students from Chile. Universidad Austral de Chile, **Valdivia, Chile.**
- 2012** -- *Forest Restoration in Theory and Practice.* 17 students from Denmark, Estonia, Finland, Norway, and Sweden, Swedish Agricultural University, **Frostavallen, Sweden.**
- 2011** -- *Scientific and technical basis of afforestation as a tool for sustainable forest management.* 30 students from South America, Mexico, and Spain, Centro de Investigación Forestal-Instituto Nacional de Investigaciones Agrarias (INIA), **Madrid, Spain.**

Graduate Students Supervised

Student	Degree	Role	Status	Research Focus
Andrea Brennan ^{Ross Fellow}	PhD	Chair/Advisor	2016-current	Tree Physiology
Rebekah Ohara ⁺	PhD	Co-Chair/Advisor	2017-current	Community Forestry
Lilian Jacobo ^{Fulbright Scholar+}	MS	Co-Chair/Advisor	2017-current	Tree Improvement
Caleb Redick ^{van Eck Scholar}	MS	Chair/Advisor	2017-current	Restoration Ecology
Weston Schempf	PhD	Chair/Advisor	2015-current	Forest Restoration
Emily Thyroff	MS	Chair/Advisor	2016-current	Forest Restoration
Mariam Valladares ^{Fulbright Scholar}	MS	Chair/Advisor	2016-current	Forest Restoration
Kyle Earnshaw ^{van Eck Scholar}	PhD	Chair/Advisor	Completed – 2017	Forest Restoration
Jennifer Lesko ^{Ross Fellow}	MS	Chair/Advisor	Completed – 2017	Forest Restoration
Charlotte Owings ⁺	MS	Co-Chair/Advisor	Completed – 2015	Restoration Ecology
Safiullah Khurram	MS	Chair/Advisor	Completed – 2015	Forest Restoration
Amy Miller ^{van Eck Scholar}	MS	Chair/Advisor	Completed – 2014	Forest Restoration
Philip Crystal	MS	Chair/Advisor	Completed – 2013	Tree Physiology
Caleb Brown ^{van Eck Scholar}	MS	Chair/Advisor	Completed – 2012	Forest Restoration
Owen Burney	PhD	Chair/Advisor	Completed – 2011	Plantation Establishment
Joshua Sloan ^{van Eck Scholar}	PhD	Chair/Advisor	Completed – 2011	Tree Physiology
Phillip Woolery ^{van Eck Scholar}	MS	Chair/Advisor	Completed – 2010	Plantation Establishment
Rosa Goodman ^{van Eck Scholar}	MS	Chair/Advisor	Completed – 2009	Plantation Establishment
Justin Schmal	MS	Chair/Advisor	Completed – 2009	Nursery Seedling Propagation
Martin Gauthier ^{van Eck Scholar}	PhD	Chair/Advisor	Completed – 2008	Tree Physiology
Ryan Woods	MS	Chair/Advisor	Completed – 2008	Forest Stand Management
Mindy Bumgarner ^{van Eck Scholar}	MS	Chair/Advisor	Completed – 2007	Nursery Seedling Propagation
Michael Nicodemus	PhD	Chair/Advisor	Completed – 2007	Tree Physiology
Anthony Davis ^{van Eck Scholar}	PhD	Chair/Advisor	Completed – 2006	Tree Physiology

Robert Morrissey	MS	Chair/Advisor	Completed – 2006	Forest Stand Management
Zonda Birge	MS	Chair/Advisor	Completed – 2005	Nursery Seedling Propagation
Barrett Wilson	MS	Chair/Advisor	Completed – 2005	Tree Physiology
Anthony Davis	MS	Chair/Advisor	Completed – 2003	Plantation Establishment
Michael Szuter	PhD	Co-Chair/Advisor	2014-16 [†]	Tree Physiology
Kate Zellers	PhD	Chair/Advisor	2010-12 [†]	Tree Physiology
Patricio Alzugaray	PhD	Chair/Advisor	2002-03 [†]	Plantation Establishment
Wenhui Shi*	PhD	Member	2017-current	Tree Physiology
Andrei Toca*	PhD	Member	2015-current	Tree Physiology
Daniel Soto*	PhD	Member	Completed – 2017	Forest Restoration
Cecilia Malmqvist*	PhD	Member	Completed – 2017	Tree Physiology
Prem Pokharel*	MS	Member	Completed – 2017	Forest Restoration
Bradley Kaufmann*	MS	Member	Completed – 2016	Nursery Propagation
Patrick Duffy	MS	Member	Completed – 2014	Forest Ecology
Kejia Pang	PhD	Member	Completed – 2014	Forest Genetics
Oriana Krauss	MS	Member	Completed – 2014	Forest Genetics
Chris Currey	PhD	Member	Completed – 2013	Plant Physiology
Bridget McNassar*	MS	Member	Completed – 2013	Nursery Propagation
Mercedes Uscola*	PhD	Member	Completed – 2013	Tree Physiology
Jessica Johnston	MS	Member	Completed – 2012	Forest Soils
Brian Bailey	MS	Member	Completed – 2011	Forest Stand Management
Scott Rogers	MS	Member	2006-08	Forest Genetics
Jeff Moore	PhD	Member	Completed – 2005	Wildlife Ecology
Michael Taylor*	MS	Member	Completed – 2005	Plantation Establishment

[†]Co-advised with Z. Ma (R. Ohara), K. Woeste (L. Jacobo), M. Jenkins (C. Owings); [†]Resigned for personal reasons;

*University of Alberta, Canada (J. Bockstette, P. Pokharel), University of Idaho (B. McNassar), Oregon State University (D. Soto, M. Taylor), University of Alcalá, Spain (M. Uscola, A. Toca), Linné University, Sweden (C. Malmqvist), University of Hawaii at Manoa (B. Kaufmann), Beijing Forestry University (W. Shi)

Post-Doctoral Research Scientists, Staff, and Technicians Supervised

Staff Member	Degree	Position	Year(s)	Research Focus
Mercedes Uscola	Ph.D.	Post-doc	2014-current	Tree Physiology
Nathaniel Lichti	Ph.D.	Post-doc	2012-2016	Forest Ecology
Jeanne DeNoyer Osnas*	Ph.D.	Post-doc	2014-2016	Functional Ecology
Arjan de Bruijn	Ph.D.	Post-doc	2011-2015	Forest Ecology
Joshua Sloan	Ph.D.	Post-doc	2011-2015	Tree Physiology
Harmony Dalglish	Ph.D.	Post-doc	2011-2012	Forest Ecology
Anisul Islam	Ph.D.	Post-doc	2006-2009	Tree Physiology
Francis Salifu ^{van Eck Scholar}	Ph.D.	Post-doc	2004-2008	Tree Physiology
Amy Ross-Davis	Ph.D.	Post-doc	2006-2007	Plant Propagation
Kent Apostol	Ph.D.	Post-doc	2005-2006	Tree Physiology
Kevyn Wightman	Ph.D.	Post-doc	2002-2003	Plantation Establishment
Bradley Kaufmann	M.S.	Staff	2017-current	Plant Propagation
Robert Masuda	M.S.	Staff	2015-2017	Senior Advisor
Derrick Heacock	B.S.	Technician	2012-2015	Tree Physiology
Justin Schmal	M.S.	Technician	2010-2011	Plantation Establishment
Robert Morrissey	M.S.	Technician	2007-2008	Forest Stand Management

Owen Burney	M.S.	Technician	2007	Plantation Establishment
Nathan King	M.S.	Technician	2005-2007	Plantation Establishment
Josh Vaughan	B.S.	Technician	2005-2007	Plantation Establishment
Marcus Selig	M.S.	Technician	2003-2005	Forest Stand Management
Amy Ross-Davis	M.S.	Technician	2002	Plantation Establishment

*Co-Advisor with J. Dukes

Visiting International Scientists

Staff Member	Title and University	Year(s)	Research Focus
Aziz Ebrahimi	PhD Graduate, Tehran University, Iran	2017-current	Forest Genetics
Jose Sigala	PhD Student, Technological University of Madrid	2017	Forest Restoration
Silvia Medina-Villar	PhD Graduate, University of Alcalá, Spain	2016-2017	Forest Restoration
Guolei Li	Associate Professor, Beijing Forestry University, China	2015-2016	Reforestation
Daniel Soto	PhD Student, Austral University, Chile	2015	Forest Restoration
Andrei Toca	PhD Student, University of Alcalá, Spain	2015-2017	Tree Physiology
Yeqing Ying	Associate Professor, Zhejiang University, China	2013-2014	Tree Physiology
Pedro Villar-Salvador	Professor, University of Alcalá, Spain	2011, 2014	Tree Physiology
Barbara Mariotti	Research Scientist, University of Florence, Italy	2012	Tree Physiology
Magnus Löf	Professor, Swedish University of Agriculture Science	2011	Forest Restoration
Bira Malavasi	Professor, Western Parana University, Brazil	2011	Tree Physiology
Marlene Malavasi	Professor, Western Parana University, Brazil	2011	Seed Science
Mercedes Uscola	PhD Student, University of Alcalá, Spain	2011	Tree Physiology
Shucai Zeng	Professor, South China Agricultural University	2011	Forest Ecology
John Kershaw	Professor, University of New Brunswick, Canada	2005-2006	Silviculture
Juan Oliet	Professor, University of Córdoba, Spain	2003-2004	Tree Physiology

Undergraduate Honors Researchers

Student*	Year	Research Topic
Melody Mount	2016	Quantifying wind-dispersed chestnut blight spores
Carmen Dobbs	2013	Capsicum uptake in forest trees
Matthew Aghai	2008	Response of black walnut to simulated browse: morphology
Olga Kildisheva	2008	Response of black walnut to simulated browse: physiology
Rosa Goodman	2005	Water oak seedling dormancy
Joshua Sloan	2005	Carbon labeling of northern red oak seedlings
Rosa Goodman	2004	Northern red oak seed viability

Theses and Dissertations Supervised

Birge ZKD. 2005. Nutrient loading and retranslocation response of oak seedlings. M.S. Thesis, Purdue University. 72 p. Current Position: Analytical Chemist, Purdue University.

Brown CE. 2012. The influence of shade, water stress, and root competition on American chestnut regeneration. M.S. Thesis, Purdue University. 115 p. Current Position: Forester, Pike Lumber Company, IN.

Bumgarner ML. 2007. Propagation of northern red oak (*Quercus rubra*) container seedlings using subirrigation. M.S. Thesis, Purdue University. 80 p. Current Position: Accounts Manager, Sunlight Supply, Inc., CA.

Burney OT. 2011. Terpene biosynthesis and growth allocation of Pacific Northwest conifers. Ph.D. Dissertation Purdue University. 158 p. Current Position: Assistant Professor and Director, Mora Research Center, New Mexico State University.

- Crystal PA.** 2013. Ecophysiology of butternut (*Juglans cinerea* L.) and naturally occurring hybrids (*J. bixbyi*) with Japanese walnut (*J. ailantifolia* Carr.). M.S. Thesis, Purdue University. 133 p. Current Position: Research Assistant, Amherst College, MA.
- Davis AS.** 2006. Photoperiod manipulation during nursery culture: effects on *Quercus rubra* seedling development and responses to environmental stresses following transplanting. Ph.D. Dissertation, Purdue University. 180 p. Current Position: Professor and Acting Dean, College of Forestry, Oregon State University, Corvallis, OR.
- Davis AS.** 2003. Performance of northern red oak (*Quercus rubra* L.) seedlings under adverse growing conditions. M.S. Thesis, Purdue University. 111 p.
- Earnshaw KM.** 2017. The adaptive role of heteroblasty in *Acacia koa* with implications for restoration and management. Ph.D. Dissertation, Purdue University. 165 p. Current Position: Assistant Professor, New Mexico Highlands University.
- Freeman CC.** 2015. Vegetation and underplanting response to Amur honeysuckle invasion and deer herbivory in mixed hardwood forests. M.S. Thesis, Purdue University. 105 p. Current Position: Project Coordinator, Hardwood Ecosystem Experiment, Purdue University.
- Gauthier MM.** 2008. Morphological and physiological responses of fine hardwood tree species to plantation thinning. Ph.D. Dissertation, Purdue University. 152 p. Current Position: Forestry Scientist, Quebec Ministry of Natural Resources, Canada.
- Goodman RC.** 2009. Nitrogen fertilization of intensively managed black walnut plantations in west-central Spain. M.S. Thesis, Purdue University. 109 p. Current Position: Associate Senior Lecturer, Swedish Agricultural University.
- Khurram S.** 2015. Use of plastic bottles as an alternative container type for propagation of forest tree seedlings in restoration programs. M.S. Thesis, Purdue University. 96 p. Current Position: Professor, Department of Forestry and Natural Resources, Kabul University, Afghanistan.
- Lesko J.** 2017. Restoration of hardwoods through conversion of non-native conifer plantations. M.S. Thesis, Purdue University. 114 p. Current Position: District Forester, IL Division of Forest Resources.
- Miller AC.** 2013. Naturalized offspring from an 86-year-old Chinese chestnut (*Castanea mollissima*) planting: stand dynamics and genetic relationships. M.S. Thesis, Purdue University. 109 p. Current Position: Carrollton Schools Grants and Partnerships Director, Carrollton, OH.
- Morrissey RC.** 2006. Natural regeneration of clearcuts in the stem exclusion stage on the Hoosier National Forest. M.S. Thesis, Purdue University. 89 p. Current Position: Post-doctoral scientist, Czech University of Life Sciences, Prague, Czech Republic.
- Nicodemus MA.** 2007. Nitrogen source effects on black walnut seedling physiology. Ph.D. Dissertation, Purdue University. 182 p. Current Position: Associate Professor, Harding University, AR.
- Schmal JL.** 2009. Exponential nitrogen fertilization of *Quercus robur* seedlings in County Carlow, Ireland. M.S. Thesis, Purdue University. 117 p. Current Position: Forester, WA Department of Natural Resources.
- Sloan JL.** 2011. Examination of endogenous and exogenous physiological patterns of post-transplant *Quercus rubra* seedlings. Ph.D. Dissertation, Purdue University. 140 p. Current Position: Assistant Professor, New Mexico Highlands University.
- Wilson BC.** 2005. Physiological indicators of black walnut seedling dormancy. M.S. Thesis, Purdue University. 76 p. Current Position: Research Horticulturist, Longwood Gardens, Inc., PA.
- Woods R.** 2008. Influence of density reduction on growth responses, stem quality, and understory dynamics in pole-size hardwood stands in the Hoosier National Forest. M.S. Thesis, Purdue University. 78 p. Current Position: Forester, Camp Atterbury, IN.
- Woolery PO.** 2010. Influence of planting stocktype and simulated browse on northern red oak seedling development. M.S. Thesis, Purdue University. 100 p. Current Position: Nursery Manager, Confederated Tribes of the Colville Reservation, WA.

RESEARCH

I study the ecophysiology of forest regeneration in response to culture and environmental stress. This knowledge is used to facilitate reforestation and ecological restoration. My research publications have been cited > **4,100 times, h-index 37** [Google Scholar] and >**2,400 times, h-index 27** [ISI Web of Science]. The following summarizes my research productivity in publications, seminars, and funding: (* indicates co-author was a graduate student at the time the research was conducted; ** indicates co-author was an undergraduate student; + indicates co-author was a post-doctoral scientist, ++ indicates co-author was a visiting scientist)

Refereed Journal Articles (142), Symposia (22), and Book Chapters (3): 167

1. *Burney OT, Jacobs DF. **2018**. Species selection – a fundamental silvicultural tool to promote forest regeneration under high animal browsing pressure. *Forest Ecology and Management* 408:67-74.
2. Chu S, Jacobs DF, *Sloan JL, Xue L, Wu D, ++Zeng S. **2018**. Changes of soil properties under *Eucalyptus* plantations in reference to native *Pinus massoniana* plantations and natural broadleaved forests in South China. *Journal of Forestry Research* DOI: 10.1007/s11676-017-0546-9
3. Mechergui T, Pardos M, Jacobs DF, Hasnaoui B. **2018**. Influence of mulching and tree shelters on four-year survival and growth of zeen oak (*Quercus canariensis* Willd.) seedlings. *Journal of Forestry Research* DOI: 10.1007/s11676-018-0606-9
4. *Shi W, ++Villar-Salvador P, Jacobs DF, ++Li G., Jiang X. **2018**. Simulated predation of *Quercus variabilis* acorns impairs seedling performance and nutrient remobilization irrespective of soil. *Plant and Soil* DOI: 10.1007/s11104-017-3518-0
5. *Toca A, ++Oliet JA, ++Villar-Salvador P, Maroto J, Jacobs DF. **2018**. Species ecology determines the role of nitrogen nutrition in the frost tolerance of pine seedlings. *Tree Physiology* 38:96-108.
6. Espelta JM, Chirino E, Gil-Pelegri E, Jacobs DF, Martín-Gómez P, Navarro-Cerrillo R, ++Oliet J, Vilagrosa A, ++Villar-Salvador P, Pemán J. **2017**. Physiological keys for natural and artificial regeneration of oaks. pp. 453-511 *In: Oak Physiological Ecology. Exploring the Functional Diversity of Genus Quercus L.* Springer Publishers. DOI: 10.1007/978-3-319-69099-5
7. Gustafson EJ, +de Bruijn A, +Lichti NI Jacobs DF, Sturtevant BR, Foster JR, Miranda BR, +Dalglish HJ. **2017**. The implications of American chestnut re-introduction on landscape dynamics and carbon storage. *Ecosphere* 8:e01773.
8. *Khurram S, Burney OT, Morrissey RC, Jacobs DF. **2017**. Bottles to trees: plastic beverage bottles as an alternative nursery growing container for reforestation in developing countries. *PLoS ONE* 12: e0177904.
9. *Owings CF, Jacobs DF, Shields JM, Saunders MR, Jenkins MA. **2007**. Individual and interactive effects of white-tailed deer and an exotic shrub on artificial and natural regeneration in mixed hardwood forests. *AoB Plants* 9: plx024.
10. Pan J Jacobs DF, ++Li G. **2017**. Combined effects of short day treatment and fall fertilization on growth, nutrient status and spring bud break of *Pinus tabulaeformis* seedlings. *iForest* 10:242-249.
11. Potter KM, Jetton RM, Bower A, Jacobs DF, Man G, Hipkins VD. **2017**. Banking on the future: Progress, challenges and opportunities for the genetic conservation of forest trees. *New Forests* 48:153-180.
12. *Soto DP, Jacobs DF, Salas C, Donoso PJ, Fuentes C, Puettman KJ. **2017**. Light and nitrogen interact to influence regeneration in old-growth *Nothofagus*-dominated forests in south-central Chile. *Forest Ecology and Management* 384:303-313.
13. Wallin E., Gräns D, Jacobs DF, Lindström A, Verhoef N. **2017**. Short-day photoperiods affect expression of genes related to dormancy and freezing tolerance in Norway spruce seedlings. *Annals of Forest Science* 74:59.
14. Wu D, Chu S, Lai C, Mo Q, Jacobs DF, Chen X, ++Zeng S. **2017**. Application rate and plant species affect sewage sludge utilization as landscape soil-amendments. *Urban Forestry and Urban Greening* 27:138-147.
15. Yu Y, ++Zeng S, Wu D, Jacobs DF, +Sloan JL. **2017**. Soil pH, organic matter, and nutrient content change with the continuous cropping of *Cunninghamia lanceolata* plantations in South China. *Journal of Soils and Sediments* 17:2230-2238.
16. Yu W, Liu Y, Song L, Jacobs DF, Du X, ++Ying Y, Shao Q, Wu J. **2017**. Effect of differential light quality on morphology, photosynthesis and antioxidant enzyme activity in *Camptotheca acuminata* seedlings. *Journal of Plant Growth Regulation* 36:148-160.

17. +Dalglish HJ, Nelson CD, Scrivani JA, Jacobs DF. **2016**. Consequences of shifts in abundance and distribution of American chestnut for reintroduction of a foundation forest tree. *Forests* 7, 4.
18. *Crystal PA, +Lichti NI, Woeste KE, Jacobs DF. **2016**. Discriminant analyses on vegetative versus adaptive traits predict different outcomes for restoration using hybrids. *Frontiers in Plant Science* 7:1741.
19. *Earnshaw KM, Barribault TW, Jacobs DF. **2016**. Alternative field fertilization techniques to promote restoration of leguminous *Acacia koa* on contrasting tropical sites. *Forest Ecology and Management* 376:126-134.
20. ++Li G, Wang J, ++Oliet JA, Jacobs DF. **2016**. Collective fertilization at pre-hardening and in fall facilitates N storage and field performance of *Pinus tabulaeformis* seedlings. *iForest* 9:483-489.
21. *Sloan JL, +Islam MA, Jacobs DF. **2016**. Reduced translocation of current photosynthate precedes changes in gas exchange for *Quercus rubra* seedlings under flooding stress. *Tree Physiology* 36:54-62.
22. +Sloan JL, +Uscola M, Jacobs DF. **2016**. Nitrogen recovery in planted seedlings, competing vegetation, and soil in response to fertilization on a boreal mine reclamation site. *Forest Ecology and Management* 360:60-68.
23. *Sloan JL, Jacobs DF. **2016**. Ontogeny influences developmental physiology of post-transplant *Quercus rubra* seedlings more than genotype. *Annals of Forest Science* 73:987-993.
24. *Bumgarner ML, +Salifu KF, Mickelbart MV, Jacobs DF. **2015**. Effects of fertilization on media chemistry and *Quercus rubra* seedling development under subirrigation. *HortScience* 50:454-460.
25. Jacobs DF, ++Oliet JA, Aronson J, Bolte A, Bullock JM, Donoso PJ, Landhäusser SM, Madsen P, Peng S, Rey Benayas JM, Weber JC. **2015**. Restoring forests: what constitutes success in the twenty-first century? *New Forests* 46:601-614.
26. ++Mariotti B, Maltoni A, Jacobs DF, Tani A. **2015**. Container effects on growth and biomass allocation in *Quercus robur* and *Juglans regia* seedlings. *Scandinavian Journal of Forest Research* 30:401-415.
27. ++Mariotti B, Maltoni A, Jacobs DF, Tani A. **2015**. Tree shelters affect shoot and root system growth and structure in *Quercus robur* during regeneration establishment. *European Journal of Forest Research* 134:641-652.
28. ++Mariotti B, Maltoni A, Chiarabaglio PM, Giorcelli A, Jacobs DF, Tognetti R, Tani A. **2015**. Can the use of large, alternative nursery containers aid in field establishment of *Juglans regia* and *Quercus robur* seedlings? *New Forests* 46:773-794.
29. Macdonald E, Landhäusser SM, Skousen J, Franklin J, Frouz J, Hall S, Jacobs DF, Quideau S. **2015**. Forest restoration following surface mining disturbance: challenges and solutions. *New Forests* 46:703-732.
30. Thiffault N, Coll L, Jacobs DF. **2015**. Natural regeneration after harvesting. Ch. 26 In *Handbook of Forest Ecology*. Routledge, Oxford, UK pp. 371-384.
31. +Uscola M, +Salifu KF, ++Oliet JA, Jacobs DF. **2015**. An exponential fertilization dose response model to promote restoration of the Mediterranean oak *Quercus ilex*. *New Forests* 46:795-812.
32. ++Villar-Salvador P, +Uscola M, Jacobs DF. **2015**. The role of carbohydrate and nitrogen remobilization in the growth and stress tolerance of planted forest trees. *New Forests* 46:813-839.
33. ++Ying Y, Song L, Jacobs DF, Mei L, Liu P, Jin S, Wu J. **2015**. Physiological response to drought stress in *Camptotheca acuminata* seedlings from two provenances. *Frontiers in Plant Science* 6:361.
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166. Jacobs DF, Rose R, Haase DL, Morgan P. **2003**. Influence of nursery soil amendments on water relations, root architectural development, and field performance of Douglas-fir transplants. *New Forests* 26:263-277.
167. Jacobs DF, Steinbeck K. **2001**. Tree shelters improve the survival and growth of planted Engelmann spruce seedlings in southwestern Colorado. *Western Journal of Applied Forestry* 16:114-120.

Submitted Peer-Reviewed Research Journal Articles (7)

1. Lie Z, Xue L, Jacobs DF. Allocation of forest biomass across broad precipitation gradients in China's forests. *Scientific Reports* (revision)
2. *Gauthier MM, Jacobs DF. Environmental and ecophysiological drivers of hardwood plantation diameter growth under non-limiting light conditions. *Forest Ecology and Management*
3. *Lesko J, Jacobs DF. Conversion of introduced conifer plantations to native hardwoods: Influences of light and nutrients on understory regeneration. *New Forests*
4. Maltoni A, ++Mariotti B, Tani A, Martini S, Jacobs DF, Tognetti R. Natural regeneration of *Pinus pinaster* facilitates *Quercus ilex* establishment under severe deer browsing pressure. *New Forests*
5. Skousen J, Dallaire K, Scagline S, Monteleone A, Wilson-Kokes L, Joyce J, Thomas C, Keene T, DeLong C, Cook T, Jacobs DF. Plantation performance of chestnut hybrids and progenitors on reclaimed Appalachian surface mines. *New Forests*

6. *Sloan JL, Jackson GS, Jacobs DF. Endogenous translocation patterns of current photosynthate in post-transplant *Quercus rubra* seedlings. ***Trees-Structure and Function***
7. Wu D, Yu X, Chu S, Jacobs DF, Wei X, Wang C, Long F, Chen X, ++Zeng S. Alleviation of heavy metal phytotoxicity in sewage sludge by vermicomposting with additive urban plant litters. ***Science of the Total Environment*** (revision)

Edited Symposia (4)

1. Jacobs DF, ed. **2015**. *Restoring Forests: What Constitutes Success in the Twenty-First Century?* *New Forests* (Special Issue). Volume 46, Issues 5-6 / November 2015, pp. 601-1011.
2. Jacobs DF, Haase DL, eds. **2013**. *Nutrient Dynamics of Planted Forests*. *New Forests* (Special Issue). Volume 44, Issue 5 / September 2013, pp. 629-810.
3. Jacobs DF, Oliet JA, eds. **2012**. *Restoring Forests: Advances in Techniques and Theory*. *New Forests* (Special Issue). Volume 43, Issues 5-6 / September 2012, pp. 535-978.
4. Jacobs DF, Michler CH, eds. **2008**. *Proceedings of the 16th Central Hardwood Forest Conference*. USDA Forest Service Northern Research Station Gen. Tech. Rep. NRS-P-24. 595 p.

Invited Research Presentations: 79 (of 148 total presentations)

- 2017**
- Can American chestnut restoration improve carbon storage potential in an uncertain future? The American Chestnut Foundation Annual Meeting. **Portland, Maine.**
 - Restoration of temperate and tropical forests. *Department of Horticulture and Landscape Architecture, Purdue University. West Lafayette, Indiana.*
 - The Pu'u Wa'awa'a Resilience Project. *USDA Forest Service, Institute of Pacific Islands Forestry. Hilo, Hawaii.*
 - Using biotechnology to restore keystone species. *IUFRO symposium on Forest Landscape Restoration Under Global Change, International Institute of Tropical Forestry. San Juan, Puerto Rico.*
 - Restoring forests: What constitutes success in the twenty-first century? *Department of Forest and Wood Technology, Linnaeus University, Växjö, Sweden.*
- 2016**
- Applying the target plant concept to regeneration and restoration of *Acacia koa*. Symposium entitled "Acacia koa in Hawaii: Facing the Future", *University of Hawaii at Hilo. Hilo, Hawaii.*
 - Restoring forests: What constitutes success in the twenty-first century? Nāhelehele Dryland Forestry Symposium, **Kona, Hawaii** (keynote).
 - A conceptual framework for restoration of forest trees. Department of Natural Resources and Environmental Management seminar series. *University of Hawaii at Manoa. Manoa, Hawaii.*
 - A conceptual framework for restoration of forest trees: Applications to Hawaii? College of Tropical Agriculture and Human Resources, *University of Hawaii, Komohana Research and Extension Center. Hilo, Hawaii.*
- 2014**
- Can we predict the ecological implications for restoration of an extirpated forest tree species under global change? *Session entitled, Novel Ecosystems and Intervention: Adaptation to Climate Change, IUFRO World Congress, Salt Lake City, Utah.*
 - Importance of stored nitrogen and carbohydrates for seedling outplanting performance. *2nd IUFRO Restoring Forests Congress, Lafayette, Indiana.*
 - Effect of nursery photoperiod manipulation on seedling root development following planting. *Dalarna University. Bolänge, Sweden.*
 - A conceptual framework for restoration of threatened plants: the effective model of American chestnut (*Castanea dentata*) reintroduction. *Swedish University of Agricultural Sciences. Alnarp, Sweden.*
 - Nutrient dynamics of planted forests: advances in techniques and theory. *International Forum on Sustainable Development of Subtropical Forests, Tree Physiology and Environmental Stress. Zhejiang A&F University, Lin An, China.*
- 2013**
- Optimizing seedling quality for restoration after surface mining. *Society for Ecological Restoration 5th World Conference. Madison, Wisconsin.*
 - A conceptual framework for restoration of threatened plants: the effective model of American chestnut (*Castanea dentata*) reintroduction. *Society for Ecological Restoration 5th World Conference. Madison, Wisconsin.*

- Restoration of native species in Hawaii. *North American Forest Ecology Workshop*. **Bloomington, Indiana.**
- Ecology of a disjunct, naturally regenerating stand of American chestnut in central Maine. *North American Forest Ecology Workshop*. **Bloomington, Indiana.**
- Calibration and application of LANDIS PnET-Biosuccession, a complex mechanistic forest growth and distribution model. *North American Forest Ecology Workshop*. **Bloomington, Indiana.**
- A Bayesian approach to forest stem mapping with plot-based survey data on a marked grid. *23rd Annual Conference of the International Environmetrics Society*. **Anchorage, Alaska.**
- Controlled-release fertilization to improve fertilizer use efficiency and optimize growth of tree seedlings on reclaimed oil sands. *Canadian Oil Sands Network for Research and Development, Environmental and Reclamation Research Symposium*. **Edmonton, Alberta, Canada.**
- 2012** --Toward development of silvical strategies for forest restoration of American chestnut (*Castanea dentata*). *2nd Forest Science Forum*, **Beijing, China.**
- Improved fertilizer use efficiency and growth of tree seedlings on reclaimed oil sands. *IUFRO symposium, Nutrient Dynamics of Planted Forests*. **Vancouver, Washington.**
- The role of seedling nutrition on ungulate herbivory patterns. *IUFRO symposium, Nutrient Dynamics of Planted Forests*. **Vancouver, Washington.**
- Forecasting carbon storage of eastern forests: Can American chestnut restoration improve storage potential in an uncertain future? *ASA, CSSA, and SSSA International Meeting*. **Cincinnati, Ohio.**
- Bases ecofisiológicas del establecimiento de las plantas en ambientes mediterráneos. *Symposium on urban and peri-urban forestry*. Pontificia Universidad Católica de Chile, **Santiago, Chile.**
- Toward recovery of a foundation forest species –*Castanea dentata* as an effective model for ecological restoration. *Swedish Agricultural University*, **Umeå, Sweden.**
- Ecophysiological characterization of *Castanea dentata*: a basis for restoration of an American legacy tree. *1st Annals of Forest Science Symposium*, **Champenoux, France.**
- Tree shelter effects on microclimatic conditions and forest seedling development. *Inland Empire Reforestation Council Symposium*. **Couere d'Alene, Idaho.**
- Nursery and field fertilization: Emerging technologies with application to oil sands reclamation. *Canadian Oil Sands Network for Research and Development, Environmental and Reclamation Research Symposium*. **Edmonton, Alberta, Canada.**
- Application of the target seedling concept to regeneration of hardwood forests. *Department of Horticulture and Landscape Architecture*, **Purdue University, West Lafayette, Indiana.**
- 2011** --Hacia el desarrollo de estrategias silvícolas para la restauración forestal del castaño americano (*Castanea dentata*) utilizando híbridos resistentes al chancro. *Congreso Biocastanea*. **University of León, Ponferrada, Spain.**
- Forecasting carbon storage of eastern forests: Can American chestnut restoration improve storage potential in an uncertain future? *China-US Joint Symposium, Global Sustainability Issues in Energy, Climate, Water and Environment*, **West Lafayette, Indiana.**
- Advances in fertilization for hardwood regeneration. *7th Walnut Council Research Symposium*, **Madison, Wisconsin.**
- Restoration of an American legacy tree: challenges of reintroducing *Castanea dentata* using blight-resistant hybrids. *Natural Resources Institute*, **University of Greenwich, United Kingdom.**
- Ecology and restoration of American chestnut. *American Chestnut Ecology and Reintroduction Meeting*, **Ohio University, Athens, Ohio.**
- Synthesis of American chestnut (*Castanea dentata*) biological, genetic, and ecological attributes with application to forest restoration. *Forest Health Initiative Annual Meeting*, **Arlington, Virginia.**
- 2010** -- Restauración de una especie forestal clave de Norteamérica: mejora y silvicultura de *Castanea dentata*. *School of Forest Engineering*, **Technological University of Madrid, Spain.**
- Targeting hardwoods. Target Seedling Symposium, *Western Forest and Conservation Association*, **Portland, Oregon.**
- Restoration of an American legacy tree: breeding and silviculture of *Castanea dentata*. *Department of Forest and Environment*, **Eberswalde University, Germany.**
- Competitive success of natural oak regeneration in clearcuts during the stem exclusion stage. *Federal Research Institute for Rural Areas, Forestry and Fisheries*, **Eberswalde, Germany.**

- Propagation and quality assessment of temperate deciduous hardwood seedlings, *Center for Agrarian Sciences, Western Paraná State University, Brazil.*
- Restoration of an American legacy tree: breeding and silviculture of *Castanea dentata*. *Institute of Silviculture, Freiburg University, Germany.*
- 2009** --Sobrecarga exponencial de nutrientes para la optimización de la fertilización en vivero de plantas de *Quercus ilex*. *5th Spanish Forestry Congress, Ávila, Spain.*
- Physiological quality assessment of temperate deciduous forest tree species. *Ministry of Agricultural, Food, and Forestry Policies Symposium on Nursery Seedling Quality. Vercelli, Italy.*
- Restoration of an American legacy tree: breeding and silviculture of *Castanea dentata*. *Department of Science and Environmental Forestry Technology. University of Florence, Italy.*
- Restoration of an American legacy tree: breeding and silviculture of *Castanea dentata*. *Swedish University of Agricultural Sciences. Alnarp, Sweden.*
- Restoration of threatened forest tree species in the Central United States. *Faculty of Forestry and Wood Sciences. Czech University of Life Sciences. Prague, Czech Republic.*
- Competitive success of natural oak regeneration in clearcuts during stem exclusion. *Seminar Program on Silviculture and Tree Physiology, Department of Forest Science, University of Huelva, Spain.*
- The role of root system quality and function in resistance to planting stress. *Seminar Program on Restoration of Arid Environments. Department of Ecology, Alicante University, Spain.*
- Innovations in afforestation of agricultural bottomlands to restore native forests in the United States. *IUFRO Conference, Innovations and New Horizons in Tree Nursery Stock Production and Forest Restoration. Rome, Italy.*
- Competitive success of natural oak regeneration in clearcuts during stem exclusion. *Seminar Program on Natural Forest Regeneration, School of Forest Engineering, Technological University of Madrid, Spain.*
- Restoration of an American legacy tree: breeding and silviculture of *Castanea dentata*. *Seminar Program on Ecological Restoration, School of Biology, University of Alcalá, Spain.*
- 2008** -- Regeneration and stand dynamics in temperate deciduous forests in north-central USA. *School of Forest Engineering, Technological University of Madrid, Spain.*
- Restoration of an American legacy tree: breeding and silviculture of *Castanea dentata*. *School of Biology and Environmental Sciences. University College Dublin, Ireland.*
- Artificial regeneration of major oak (*Quercus*) species in the eastern United States – a review of the literature. *16th Central Hardwood Forest Conference, West Lafayette, Indiana.*
- Ecological applications of hardwood forest regeneration research. *Warnell School of Forest Resources. University of Georgia, Athens, Georgia.*
- Nursery and field fertilization: Implications for improved forest plantation productivity. *Department of Forestry and Environmental Resources, North Carolina State University, Raleigh, North Carolina.*
- Strategies for restoration of American chestnut. *Department of Biological Sciences. Butler University, Indianapolis, Indiana.*
- Nursery cultural techniques to facilitate restoration of *Acacia koa* in Hawai‘i. *Department of Natural Resources & Environmental Management, University of Hawai‘i at Manoa. Honolulu, Hawaii.*
- Nursery cultural techniques to facilitate restoration of *Acacia koa* in Hawai‘i. *Tropical Conservation Biology and Environmental Sciences, University of Hawai‘i at Hilo, Hilo, Hawaii.*
- 2007** -- Long-term stand dynamics in naturally regenerated hardwood forests. *Advances in Forest and Natural Resource Management Symposium, National Taiwan University, Taiwan.*
- Fine hardwood biotechnology. *Society of In Vitro Biology Conference. Indianapolis, Indiana.*
- Nursery blackout influences on seedling morphology and physiology. *Faculty of Forestry and Environmental Management, University of New Brunswick, Fredericton, New Brunswick.*
- 2006** -- Nursery and field fertilization: influences on seedling quality and environmental stress interactions. *Department of Forest Resources, University of Idaho. Moscow, Idaho.*
- The target seedling concept: an integrative tool to facilitate regeneration success. *Department of Forest Resources, University of Idaho. Moscow, Idaho.*
- Interrelationship of seedling dormancy status and root zone temperature. *Sierra Cascade Intensive Forest Management Cooperative Annual Meeting. Redding, California.*

- 2005** -- Evaluating the efficiency of carbon sequestration in American chestnut. *Edison Electric Institute Natural Resources Workshop. St. Pete Beach, Florida.*
- Strategies for genetic improvement and sustainable management of eastern hardwoods. *Alabama A&M University, Huntsville, Alabama.*
- Fine hardwood tree improvement. *Arbor Day Symposium, Dirksen Senate Building, Washington, DC.*
- Evaluating desiccation sensitivity of northern red oak acorns. *10th Annual Research Symposium, Department of Forestry and Natural Resources, Purdue University, West Lafayette, Indiana.*
- 2004** -- Quantifying root system quality of nursery seedlings. *Western Forestry and Conservation Association, Forest Seedling Root Development Symposium. Eugene, Oregon.*
- Fertilization and seedling root system development. *Western Forestry and Conservation Association, Forest Seedling Root Development Symposium. Eugene, Oregon.*
- Improving disease resistance of butternut (*Juglans cinerea*). *North American Forest Biology Workshop. Houghton, Michigan.*
- Facilitating nutrient acquisition of black walnut and other hardwoods at plantation establishment. *6th Black Walnut Council Research Symposium. West Lafayette, Indiana*
- Effect of seed position and media on germination of black walnut and northern red oak. *6th Black Walnut Council Research Symposium. West Lafayette, Indiana.*
- Transplant shock in oak plantings. *USDA Forest Service Oak Artificial Regeneration Workshop. Huntsville, Alabama.*
- Evaluating the efficiency of carbon sequestration in American chestnut. *Electrical Power Research Institute (EPRI) Workshop on Terrestrial Carbon Sequestration. Washington, DC.*
- Competitiveness of American chestnut in open-field plantings: implications for reintroduction. *21st Annual Meeting of the American Chestnut Foundation. Asheville, North Carolina.*
- 2003** -- Conservation tree plantations. *8th Annual Research Symposium, Department of Forestry and Natural Resources, Purdue University, West Lafayette, Indiana.*

Research Funding: 69 successfully funded research proposals, totaling US\$ 7,177,419

* If co-PI, my portion in parentheses

<i>External</i>		Amount*
2018-19	USDA Forest Service (co-PI) Implementing a disease resistance program for Rapid Ohia Death (with C. Giardina (PI), L. Keith, P. Cannon, R. Sniezko, J. Friday)	\$64,000 <i>(\$10,667)</i>
2015-18	Indiana Department of Natural Resources, Division of Reclamation (PI) Interactions of nursery stocktypes and site preparation on mine reclamation success	\$80,308
2015-18	USDA Forest Service (PI) Optimizing nursery photoperiod to promote root growth of forest tree seedlings after planting (with M. Uscola)	\$30,000
2015-17	Department of Hawaiian Homelands (co-PI) Plasticity of <i>Acacia koa</i> on high elevation sites in Hawaii (with JB Friday and Kyle Earnshaw)	\$17,257 <i>(\$5,752)</i>
2014-19	USDA Forest Service (PI) Hardwood Tree Improvement and Regeneration Center	\$671,072
2014-17	USDA NIFA, Fellowships Grant Program (PI) Prediction and management of American chestnut natural regeneration and blight-induced mortality (with N. Lichti)	\$149,983
2014-16	Hawaii Division of Forestry and Wildlife (co-PI) Improved <i>Acacia koa</i> seed orchards for Hawaii forest restoration and production (with F. Inman-Narahari <i>et al</i>)	\$67,500 <i>(\$13,500)</i>
2014-16	USDA, Forest Service (PI) Integrating spatial processes and tree seed dispersal and insect population dynamics within LANDIS-II	\$30,370
2014-18	USDA, Forest Service (PI) Nursery production in the eastern United States	\$30,000
2013-15	Indiana Department of Natural Resources, Division of Reclamation (PI) Silvicultural applications to mitigate animal browse damage of forest regeneration on mine reclamation sites (with J. Sloan)	\$80,460
2012-18	National Science Foundation (PI) Collaborative research: I/UCRC Center for Advanced Forestry Systems Phase II (with C. Michler and M. Saunders)	\$208,000
2012-18	Industry Support to Hardwood Tree Improvement and Regeneration Center (PI) Collaborative research: I/UCRC Center for Advanced Forestry Systems Phase II (with C. Michler and M. Saunders)	\$248,000

2012-16	Atherton Family Foundation (PI) Tropical Hardwood Tree Improvement and Regeneration Center (with C. Michler and S. Lawson)	\$100,000
2012-15	USDA, Forest Service (PI) Chemical repellents to deter herbivory of planted forest trees (with J. Sloan)	\$65,000
2011-15	USDA NIFA, Climate Change: Carbon Cycle (PI) Forecasting carbon storage of eastern forests: Can American chestnut restoration improve storage potential in an uncertain future? (with E. Gustafson, D. Kashian, B. Sturtevant, H. Zhang, et al.)	\$681,743
2011-15	Spanish Ministry of Science and Innovation (co-PI) Tolerance and ecophysiological strategies of Iberian pines at juvenile stages to drought, low temperature, and nutrient availability (with P. Villar [PI], J. Oliet, R. Savé, J. Castro, and S. Marañón)	\$171,730 (\$28,622)
2011-13	Suncor Energy, Inc. (PI) Controlled-release fertilization to improve fertilizer use efficiency and optimize growth of tree seedlings on reclaimed oil sands	\$274,756
2010-14	National Science Foundation (co-PI) Use of stable isotopes to trace the fate of applied nitrogen in forest plantations (with T. Fox, R. Harrington, B. Strahm, and J. Stape)	\$195,078 (\$39,016)
2010-13	Indiana Department of Natural Resources, Division of Reclamation (PI) Phytotoxicity associated with competition control for establishment of American chestnut and oaks on reclaimed mine sites	\$76,913
2010-11	The American Chestnut Foundation (PI) Effects of <i>Phytophthora cinnamomi</i> on chestnut seedling development under varying soil pH (with K. Zellers)	\$5,000
2009-11	US Department of Interior, Office of Surface Mining (co-PI) Integrating the forestry reclamation approach for mine reclamation in the Midwest (with P. Pope)	\$168,864 (\$84,432)
2009-10	Duke Energy Corporation (co-PI) American chestnut restoration (with C. Michler, J. McKenna, and M. Saunders)	\$20,000 (\$5,000)
2009	The American Chestnut Foundation (PI) Competitive ecophysiology of American chestnut (with K. Zellers)	\$5,400
2008-09	Irish Council for Forest Research and Development (PI) Exponential fertilization of <i>Quercus robur</i> (with C. O'Reilly and J. Schmal)	\$10,162
2008-10	USDA National Resources Conservation Service (PI) Subirrigation for native plant nursery production (with A. Davis, R. Dumroese, and J. Leary)	\$44,991
2008-09	Southern Forest Nursery Cooperative (PI) Cold hardiness assessment of southern pine seedlings (with M. Islam)	\$5,845
2007-12	US Department of Agriculture, Forest Service (PI) Quality assessment of nursery grown forest tree seedlings	\$35,000
2007-09	Indiana Department of Natural Resources, Division of Reclamation (PI) Fertilization of hardwood seedlings on reclaimed mine lands: Browse susceptibility in relation to foliar chemistry	\$71,844
2007-08	National Science Foundation (co-PI) International research experience for undergraduates (with C. Michler)	\$12,000 (\$6,000)
2007-10	The Nature Conservancy (co-PI) Applied research for regenerating oaks (with R. Rathfon and D. Carlson)	\$14,994 (\$4,998)
2007-09	Spanish Ministry of Education and Science (co-PI) Physiological basis of holm oak mineral nutrition and applications to nursery fertilization (with J. Oliet [PI], S. Cuadros, B. Abellanas, M. Fernández, J. Puértolas, J. Peñuelas, L. Benito, and P. Villar)	\$145,050 (\$14,505)
2006-10	Indiana Department of Natural Resources, Division of Forestry (co-PI) Hardwood Ecosystem Experiment (with R. Swihart, S. Broussard, B. Dolan, J. Dunning, Jr., J. Holland, C. Michler, G. Parker, L. Prokopy, and H. Weeks, Jr.)	\$714,000 (\$71,400)
2006-10	US Department of Agriculture, Forest Service (PI) Response of crop trees to thinning in naturally regenerated forest stands (with J. Seifert)	\$87,000
2006	American Forest Technologies (PI) Nutrient loading of grafted black walnut (with K. Salifu)	\$4,500

2006	National Science Foundation (co-PI) International research experience for undergraduates (with C. Michler)	\$6,000 (\$3,000)
2005-09	Oregon Department of Forestry (PI) Influence of mineral nutrition on susceptibility and recovery of planted forest tree seedlings to animal browse	\$217,649
2005-09	US Department of Agriculture, Forest Service (PI) Physiological responses of seedlings to environmental stresses	\$45,000
2005-06	Indiana Department of Natural Resources, Division of Forestry (coPI) Selection for precocity in oak plantations (with K. Woeste)	\$4,500 (\$2,250)
2005-06	Indiana Department of Natural Resources, Division of Reclamation (PI) Nutrient loading of nursery seedlings to improve outplanting performance on mine reclamation sites (with K. Salifu)	\$68,862
2004-11	Indianapolis Airport Authority (PI) Capacity of planted hardwood stands to meet Habitat Conservation Plan requirements (with J. Seifert)	\$520,290
2004-09	Industry support, Hardwood Tree Improvement and Regeneration Center (co-PI). American Forest Technologies, Inc., Indiana and National Hardwood Lumbermen's Associations (with C. Michler and R. Meilan)	\$275,000 (\$91,667)
2004-07	US Department of Agriculture, Forest Service (co-PI) Stand inventory of the Hoosier National Forest (with J. Seifert)	\$182,500
2004	Sierra Cascade Forest Cooperative (PI) Dormancy and soil temperature effects on seedling root growth	\$30,000
2003-06	US Department of Agriculture, Forest Service (co-PI) Natural forest regeneration in the Hoosier National Forest following clearcutting (with J. Seifert)	\$219,475 (\$109,738)
2003-06	US Department of Agriculture, Forest Service (co-PI) Stand dynamics in the Pioneer Mothers Memorial Forest (with J. Seifert)	\$26,500 (\$13,250)
2003	Electric Power Institute and Stry Foundation (PI) Evaluating carbon sequestration of American chestnut	\$11,500
2003	National Science Foundation (co-PI) The formation of a Joint Center for Tree Genetics between Purdue University and Oregon State University (with C. Michler)	\$10,000 (\$5,000)
2002-07	US Department of Agriculture, Forest Service (PI) Development of protocols to assess the quality of nursery-grown hardwood seedlings	\$341,500
2002-04	The American Chestnut Foundation (co-PI) Herbicide tolerance of American chestnut seedlings (with J. Seifert)	\$6,500 (\$3,250)
2002-04	Indiana Department of Natural Resources, Division of Reclamation (PI) Field performance of planted red oak on abandoned mine lands in Indiana (with A. Davis)	\$61,987
2002	The American Chestnut Foundation (PI) Competitiveness of interplanted American chestnut	\$1,200
2002	Hardwood Forestry Fund (PI) Harvest gap size and stocktype effects on northern red oak reforestation success (with R. Rathfon and D. Carlson)	\$5,000
2002	Indiana Department of Natural Resources, Division of Forestry (PI) Effectiveness of conservation tree plantings in Indiana	\$20,000
2000	Tree-Pro (PI) Long-term Engelmann spruce response to tree shelters	\$250
	Subtotal	\$6,640,533
Internal		
2018	College of Agriculture AgSeed (co-PI) Improving the management of Indiana's mixed hardwood forests by characterizing the relationship between productivity and species diversity (with G. McNickle (PI), B. Hardiman, J. Couture, L. L. Farlee)	\$50,000 (\$10,000)
2012-13	Mary S. Rice Farm Fund (co-PI) Invasive species control (with D. Carlson, M. Kraushar, and J. Leuck)	\$11,000 (\$2,750)
2011-12	College of Agriculture Mission Oriented Grant (PI) Development of planting guidelines for butternut restoration (with C. Michler, L. Farlee, J. McKenna, and K. Woeste)	\$22,970
2009, 11	Purdue Research Foundation (PI) International Travel Grants (Ávila, Spain; Madrid, Spain)	\$2,000

2009	Department of Forestry and Natural Resources (PI) LI-Cor 3100C Leaf Area Meter	\$4,825
2008-09	College of Agriculture Mission Oriented Grant (co-PI) Enhancing hardwood regeneration (with D. Carlson, L. Farlee, J. McKenna, C. Michler, R. Rathfon, M. Saunders, and K. Woeste)	\$13,800 <i>(\$2,070)</i>
2008-09	College of Agriculture Mission Oriented Grant (co-PI) Ecological and socioeconomic impacts of forest management (with J. Dunning, J. Holland, B. MacGowan, R. Rathfon, and M. Saunders)	\$8,000 <i>(\$1,600)</i>
2008	Department of Forestry and Natural Resources (PI) LI-Cor 6400 Portable Photosynthesis Instrument	\$15,000
2008	Agricultural Research Program (PI) Simulated browse of black walnut seedlings: morphology (with M. Aghai)	\$500
2008	Agricultural Research Program (PI) Simulated browse of black walnut seedlings: physiology (with O. Kildisheva)	\$500
2007-12	Department of Forestry and Natural Resources and Office of Vice-President for Research (co-PI) Sustaining Hardwood Ecosystem Initiative (with J. Dunning et al.)	\$389,791 <i>(\$38,979)</i>
2005	Agricultural Research Program (PI) Water oak seedling dormancy (with R. Goodman)	\$500
2005	Agricultural Research Program (PI) ¹⁴ C labeling of northern red oak (with J. Sloan)	\$500
2004	Agricultural Research Program (PI) Northern red oak seed viability (with R. Goodman)	\$500
2004	Mary S. Rice Farm Fund (co-PI) Relative contribution of family and sowing density to black walnut seedling growth (with J. Seifert and K. Woeste)	\$4,500 <i>(\$1,500)</i>
2003	Mary S. Rice Farm Fund (co-PI) Response of planted seedlings to simulated deer browsing (with J. Seifert)	\$3,500 <i>(\$1,750)</i>
2002	Mary S. Rice Farm Fund (co-PI) Root volume as a predictor of hardwood seedling growth (with J. Seifert)	\$9,000 <i>(\$4,500)</i>
Subtotal		\$537,886
Total		\$7,177,419

EXTENSION

I conduct an extension program that applies knowledge in forest regeneration and restoration to the practices of nursery seedling propagation, plantation establishment, and forest management. Through synthesis of scientific discoveries into extension presentations, workshops, and publications, I teach conceptual thinking and problem-solving skills. The following summarizes my productivity in extension and outreach: (* indicates that co-author was a graduate student; ** indicates that co-author was an undergraduate student; + indicates co-author was a post-doctoral scientist)

Extension Publications (32) and Symposia (28): 60

1. +Uscola M, Khadduri N, Haase DL, Trobaugh J, Jacobs DF. **2016**. Effect of nursery photoperiod manipulation on Coastal Douglas-fir seedling development: early results. *Tree Planter's Notes* 59:69-75.
2. Rathfon R, Groninger J, Jacobs DF, Burger J, Angel P, Zipper C. **2015**. Tree and shrub species selection for mine reclamation in the Midwestern USA. Appalachian Regional Reforestation Initiative, Forest Reclamation Advisory No. 13, 12 p.
3. Jacobs DF. **2014**. Advances in fertilization for forest regeneration. In *National Proceedings: Forest and Conservation Nursery Associations-2013*. USDA Forest Service Rocky Mountain Research Station Proceedings RMRS-P-72:3-5.
4. Jacobs DF. **2014**. Effect of nursery photoperiod manipulation on Coastal Douglas-fir seedling root development following planting. In *National Proceedings: Forest and Conservation Nursery Associations-2013*. USDA Forest Service Rocky Mountain Research Station Proceedings RMRS-P-72:41-43.

5. Jacobs DF. **2014**. Subirrigation as an innovative new technology to reduce water consumption for native plant nursery production. University of Hawaii-Komohana Research and Extension Center, Tropical Hardwood Tree Improvement and Regeneration Center E-Newsletter: Spring 2014.
6. Jacobs DF. **2012**. Management implications of using tree shelters for restoration of high elevation spruce-fir forests in the Rocky Mountains. In National Proceedings: Forest and Conservation Nursery Associations-2011. USDA Forest Service Rocky Mountain Research Station Proceedings RMRS-P-68:79-81.
7. Jacobs DF. **2011**. Targeting hardwoods. In National Proceedings: Forest and Conservation Nursery Associations-2010. USDA Forest Service Rocky Mountain Research Station Proceedings RMRS-P-65:115-120.
8. *Davis AS, Pinto JR, Jacobs DF. **2011**. Early field performance of *Acacia koa* seedlings grown under subirrigation and overhead irrigation. *Native Plants Journal* 12:94-99.
9. *Schmal JL, Dumroese RK, *Davis AS, Pinto JR, Jacobs DF. **2011**. Subirrigation for production of native plants in nurseries – concepts, current knowledge, and implementation. *Native Plants Journal* 12:81-93.
10. *Burney OT, Jacobs DF. **2010**. Influence of mineral nutrition on susceptibility and recovery of planted seedlings to ungulate browse. In National Proceedings: Forest and Conservation Nursery Associations-2009. USDA Forest Service Rocky Mountain Research Station Proceedings RMRS-P-62:25-29.
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Book Chapters: 12

We published **USDA Agriculture Handbook #730** in 2008 for Native American Tribal Communities growing native plants in small nurseries. The manual received favorable reviews in the journal, *Ecological Restoration* and we received the Outstanding Technology Transfer Publication Award for 2009 from the USDA Forest Service Rocky Mountain Research Station. Sections were adapted for a nursery manual published in Argentina (citations below). In 2014, we published a new nursery manual addressing tropical environments as **USDA Agriculture Handbook #732**. This manual was also named the Outstanding Technology Transfer Publication for 2014 by the USDA Forest Service Rocky Mountain Research Station.

1. Wilkinson KM, Jacobs DF. **2014**. Crop planning: propagation protocols, schedules, and records. Ch. 4 in: *Tropical nursery manual: a guide to starting and operating a nursery for native and traditional plants*. USDA Forest Service Agriculture Handbook 732. pp. 66-87. Washington, DC.
2. Jacobs DF, Landis TD, Luna T, Haase DL. **2014**. Propagation environments. Ch. 5 in:
3. *Tropical nursery manual: a guide to starting and operating a nursery for native and traditional plants*. USDA Forest Service Agriculture Handbook 732. pp 100-121. Washington, DC.
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10. Jacobs DF, Landis TD, Luna T. **2008**. Growing media. Ch. 8 in: *Nursery manual for native plants: a guide for tribal nurseries*. USDA Forest Service Agriculture Handbook 730. pp 76-93. Washington, DC.
11. Jacobs DF, Landis TD. **2008**. Fertilization. Ch. 12 in: *Nursery manual for native plants: a guide for tribal nurseries*. USDA Forest Service Agriculture Handbook 730. pp. 200-215. Washington, DC.
12. Jacobs DF, Landis TD. **2008**. Hardening. Ch. 14 in: *Nursery manual for native plants: a guide for tribal nurseries*. USDA Forest Service Agriculture Handbook 730. pp. 216-227. Washington, DC.

Invited Extension Presentations: 73

- 2018** -- The Tropical Hardwood Tree Improvement and Regeneration Center. Hawaii Native Plants Grower's Meeting. **Waimea, Hawaii.**
- 2017** -- Maritime forest restoration. Cannon's Point Preserve Volunteer's Seminar. **St. Simon's Island, Georgia.**
- 2016** -- The Tropical Hardwood Tree Improvement and Regeneration Center. Hawaii Native Plants Grower's Meeting. **Volcano, Hawaii.**
- 2015** -- Effect of nursery photoperiod manipulation on Coastal Douglas-fir seedling development. Western Forestry and Conservation Nursery Association. **Eugene, Oregon.**
- 2013** -- Advances in fertilization for forest regeneration. Northeast and Southern Nursery Associations Meeting. **Lafayette, Indiana.**
--Effect of nursery photoperiod manipulation on seedling root development following planting. Western Forest and Conservation Nursery Association. **Olympia, Washington.**
- 2012** -- Subirrigation as an innovative new technology to reduce water consumption for native plant nursery production. National Resource Conservation Service. **Honolulu, Hawaii.**

- 2011** -- Reforestation of a salvage-logged high-elevation clearcut: Engelmann spruce seedling response to tree shelters after eleven growing seasons. Western Forestry and Conservation Nursery Association. **Denver, Colorado.**
- Outplanting considerations during drought. Nāhelehele Dry Forest Symposium. **Kona, Hawaii.**
- Influence of stocktype and fertilizer rate on field performance of *Acacia koa* competing with exotic kikuyu grass in a dry tropical forest. Nāhelehele Dry Forest Symposium Field Tour. **Pu'u Wa'awa'a State Forest Reserve, Hawaii.**
- 2010** -- Reviving the American chestnut: Snatching a species from the brink of extinction. Purdue University College of Agriculture Science Café, **Lafayette, Indiana.**
- Gaining ground: The American chestnut in a new century. Tri-State Forest Stewardship Conference. **Sinsinawa, Wisconsin.**
- Fertilizing trees. Indiana Nut Growers' Association Conference. **Indianapolis, Indiana.**
- 2009** -- Fertilization of hardwood seedlings on reclaimed mine lands. Indiana Department of Natural Resources Division of Reclamation Special Seminar. **Jasonville, Indiana.**
- Influence of stocktype and simulated browse on growth of northern red oak seedlings. 100th Northern Nut Growers' Association Conference. **West Lafayette, Indiana.**
- Nursery density and family effects on black walnut growth. 100th Northern Nut Growers' Association Conference. **West Lafayette, Indiana.**
- Influence of mineral nutrition on susceptibility and recovery of planted seedlings to ungulate browse. Western Forestry and Conservation Nursery Association. **Moscow, Idaho.**
- 2008** -- Root-collar diameter and third-year survival of three bottomland hardwoods planted on former agricultural fields in the Lower Mississippi Alluvial Valley. Southern Forest Nursery Association Conference. **Asheville, North Carolina.**
- Using polymer-coated controlled-release fertilizers in reforestation. Idaho Department of Lands Regeneration Workshop. **Moscow, Idaho.**
- Seedling growing regimes and the potential for using blackout techniques to arrest growth. Idaho Department of Lands Regeneration Workshop. **Moscow, Idaho.**
- Assessing seedling quality. Idaho Department of Lands Regeneration Workshop. **Moscow, Idaho.**
- The Target Seedling Concept and the role of stocktype in a reforestation program. Idaho Department of Lands Regeneration Workshop. **Moscow, Idaho.**
- 2007** -- Natural regeneration of clearcuts in the stem exclusion stage on the Hoosier National Forest. Hoosier National Forest Staff Meeting. **Bedford, Indiana.**
- Natural regeneration of clearcuts in the stem exclusion stage on the Hoosier National Forest. Indiana Division of Forestry Annual Meeting. **Angola, Indiana.**
- HTIRC: Keeping Indiana competitive in the USA and global market. Indiana Department of Natural Resources, Division of Forestry Annual Meeting. **Pokagon, Indiana.**
- Effects of fall fertilization on morphology, growth, and cold hardiness of red pine seedlings. Northeastern Forest and Conservation Nursery Association Conference. **Concord, New Hampshire.**
- Performance of nutrient loaded red oak and white oak seedlings on mine lands. Northeastern Forest and Conservation Nursery Association Conference. **Concord, New Hampshire.**
- Nursery cultural techniques to facilitate restoration of *Acacia koa*. USDA Forest Service Forestry Short Course. **Pu'u Wa'awa'a, Hawaii.**
- Inoculating *Acacia koa* with Bradyrhizobium and applying fertilizer in the nursery. USDA Forest Service Forestry Short Course. **Pu'u Wa'awa'a, Hawaii.**
- Natural regeneration of clearcuts in the stem exclusion stage on the Hoosier National Forest. Indiana Society of American Foresters Summer Meeting. **Tell City, Indiana.**
- Crop tree thinning in naturally regenerated clearcuts on the Hoosier National Forest. Indiana Society of American Foresters Summer Meeting. **Tell City, Indiana.**
- Is thawing of frozen root plugs necessary? Joint meeting of the Western and British Columbia Nursery Associations. **Sidney, British Columbia.**
- Is thawing of frozen root plugs necessary? Intermountain Container Grower's Association Meeting. **Moscow, Idaho.**

- New techniques to improve ecological restoration. 21st Annual Surface Mined Land Reclamation Technology Transfer Seminar. **Jasper, Indiana.**
- 2006** -- Current and future innovations in hardwood tree planting. Wisconsin Department of Natural Resources Statewide Forestry Meeting. **Appleton, Wisconsin.**
- Propagation of *Acacia koa* seedlings using subirrigation. Western Forestry and Conservation Nursery Association. **Eugene, Oregon.**
- Water oak seedling dormancy. Southern Forest Nursery Association Biennial Conference. **Tyler, Texas.**
- Seedling quality standards for bottomland hardwood afforestation. Southern Forest Nursery Association Biennial Conference. **Tyler, Texas.**
- Hoosier National Forest oak clearcut study findings 1986-2004. Indiana Society of American Forester's Meeting. **Bedford, Indiana.**
- Is thawing of frozen root plugs necessary? *Symposium entitled: Components of Successful Reforestation Programs: From Seed to Free-to-Grow.* Western Forestry and Conservation Nursery Association. **Eugene, Oregon.**
- Effects of nursery blackout on Douglas-fir seedling development. *Symposium entitled: Components of Successful Reforestation Programs: From Seed to Free-to-Grow.* Western Forestry and Conservation Nursery Association. **Eugene, Oregon.**
- 2005** -- Oak regeneration: even and uneven aged systems. Joint meeting of the Indiana Chapters of the Society of American Foresters and the Wildlife Society. **Indianapolis, Indiana.**
- Successful stock production for forest regeneration. The Thin Green Line: a Symposium on the State-of-the-Art in Reforestation. **Thunder Bay, Ontario.**
- Influence of genotype and sowing density on morphological quality of black walnut seedlings. Northeastern Forest and Conservation Nursery Association Conference. **Springfield, Missouri.**
- Exponential nutrient loading as a means to optimize nursery fertility of oak species. Northeastern Forest and Conservation Nursery Association Conference. **Springfield, Missouri.**
- Evaluation of northern red oak seed viability using X-ray analysis. Northeastern Forest and Conservation Nursery Association Conference. **Springfield, Missouri.**
- American chestnut as a future resource to enhance mine reclamation productivity. 19th Annual Surface Mined Land Reclamation Technology Transfer Seminar. **Jasper, Indiana.**
- 2004** -- Regeneration Research at the Hardwood Tree Improvement and Regeneration Center. Pike Lumber Company Educational Meeting. **West Lafayette, Indiana.**
- Mineral nutrition of conifers. Indiana Christmas Tree Growers' Association Meeting. **Turkey Run State Park, Indiana.**
- Seedling quality standards for afforestation in the lower Mississippi Alluvial Valley. Joint meeting of the Southern and Northeastern Forest Nursery Associations. **Charleston, South Carolina.**
- Variation in nutrient release of polymer-coated fertilizers. Western Forest and Conservation Nursery Association Conference. **Medford, Oregon.**
- Stocktype and harvest gap size influence northern red oak regeneration success. Indiana Society of American Forester's Meeting. **Greencastle, Indiana.**
- Natural regeneration 21-33 years after clearcutting on the Hoosier National Forest. Indiana Society of American Forester's Meeting. **Greencastle, Indiana.**
- Influence of nursery cultural treatments on performance of northern red oak seedlings. 18th Annual Surface Mined Land Reclamation Technology Transfer Seminar. **Jasper, Indiana.**
- Exponential nutrient loading as a means to optimize nursery fertility of oak species. Northeastern Forest and Conservation Nursery Association Conference. **Springfield, Missouri.**
- Fine hardwood tree improvement. National Hardwood Lumbermen's Association 107th Annual Convention. **Toronto, Ontario.**
- 2003** -- Fertilizer basics and beyond. Indiana Arborist Association Conference. **Indianapolis, Indiana.**

- Establishment success of conservation tree plantings in Indiana. Indiana Society of American Foresters Annual Meeting. **Jasper, Indiana.**
- Restoration of a Rocky Mountain spruce-fir forest. Western Forest and Conservation Nursery Association Conference. **Coeur d'Alene, Idaho.**
- Performance of plantation-grown American chestnut in southwest Wisconsin. Indiana Chapter of the American Chestnut Foundation Bi-Annual Meeting. **Indianapolis, Indiana.**
- Success of hardwood tree plantations in Indiana and implications for nursery managers. Northeastern Forest and Conservation Nursery Association Conference. **Springfield, Illinois.**
- Cold hardiness testing of hardwood seedlings. Northeastern Forest and Conservation Nursery Association Conference. **Springfield, Illinois.**
- Recent trends in hardwood seedling quality assessment. Northeastern Forest and Conservation Nursery Association Conference. **Springfield, Illinois.**
- Developing a regional hardwood seedling standard. Auburn University Southern Forest Nursery Management Cooperative Contact Meeting. **Crossnore, North Carolina.**
- Controlled-release fertilizers available for use in reforestation. Forest Nursery Association of British Columbia 23rd Annual Conference. **Courtenay, British Columbia.**
- Variation in nutrient release of polymer-coated fertilizers. Forest Nursery Association of British Columbia 23rd Annual Meeting. **Courtenay, British Columbia.**
- 2002** -- Incorporating controlled-release fertilizer technology into outplanting. Joint meeting of the Southern and Northeastern Forest Nursery Associations. **Gainesville, Florida.**
- Ecophysiological response of Douglas-fir seedlings to polymer-coated fertilizers. Joint meeting of the Western and British Columbia Nursery Associations. **Olympia, Washington.**
- Establishment success of conservation tree plantings in Indiana. Indiana Association of Consulting Foresters Annual Meeting, **Lizton, Indiana.**
- 2001** -- Slow-release fertilization. 23rd Annual Intermountain Container Seedling Growers' Association Meeting. **Hamilton, Montana.**

Extension Workshops: 26

1. Tropical Hardwood Tree Improvement and Regeneration Center 2018 Advisory Committee Meeting Field Tour. Co-conducted workshop and field day. Hilo, HI. 22-23 October 2018. Participants: ~20.
2. Hardwood Tree Improvement and Regeneration Center 2017 Advisory Committee Meeting Field Tour. Co-conducted workshop and field day. West Lafayette, IN. 24 October 2017. Participants: ~50.
3. Tropical Hardwood Tree Improvement and Regeneration Center 2016 Advisory Committee Meeting Field Tour. Co-conducted workshop and field day. Hilo, HI. 4-6 October 2016. Participants: ~20.
4. Koa tree improvement and silviculture workshop. Co-organized and co-conducted workshop for USDA Forest Service and collaborators. 15-19 February 2016. Participants: 12.
5. Hardwood Tree Improvement and Regeneration Center 2015 Advisory Committee Meeting Field Tour. Co-conducted field day. West Lafayette, IN. 27 October 2015. Participants: ~80.
6. Hardwood Tree Improvement and Regeneration Center 2014 Advisory Committee Meeting Field Tour. Co-conducted field day. West Lafayette, IN. 27 March 2014. Participants: ~60.
7. Northeast and Southern Nursery Associations Meeting. Co-conducted field day. West Lafayette, Indiana. 23 July 2013. Participants: ~60.
8. Hardwood Tree Improvement and Regeneration Center 2012 Advisory Committee Meeting Field Tour. Co-conducted field day. West Lafayette, IN. 25 April 2012. Participants: ~50.
9. Southeastern Purdue Agricultural Center Forestry Field Day. Co-conducted workshop. Butlerville, IN. 11 November 2011. Participants: ~35.
10. Emerging Silvicultural Technologies for *Acacia koa* restoration. Organized and co-conducted workshop. USDA Forest Service Institute of Pacific Islands Forestry. Hilo, HI. 3-4 March 2010. Participants: 60.
11. Forestry Workshop for National Guardsmen in USAID Afghanistan Rebuilding Mission. Co-conducted workshop. John S. Wright Forestry Center, IN. 26 January 2010. Participants: 12.
12. Forestry Workshop for National Guardsmen in USAID Afghanistan Rebuilding Mission. Co-conducted workshop. John S. Wright Forestry Center, IN. 12 November 2009. Participants: 30.

13. Tree Planting Demonstration for Mined Land Reclamation. Co-conducted field day. Greene-Sullivan State Forest, IN. 25 September 2007. Participants: 30.
14. 12th Annual British Columbia Nursery and Landscape Association Nursery Growers Short Course. Co-conducted workshop. Abbotsford, British Columbia. 25 January 2005. Participants: 70.
15. *Conference entitled* Managing wildlife for sustainable forests - Managing forests for sustainable wildlife. Joint meeting of the Indiana Chapters of the Society of American Foresters and the Wildlife Society. Moderated session on oak regeneration and delivered session synthesis. Indianapolis, IN. 3-5 March 2005. Participants: ~100.
16. Minnesota Department of Natural Resources Silviculture Workshop. Co-conducted workshop for forestry professionals, delivering seminars on natural oak regeneration, hardwood plantation establishment, and hardwood seedling quality. Cloquet Forestry Center, MN. 13-14 December 2005. Participants: 120.
17. 85th Convention of the American Farm Bureau Meet the Researchers Program. Stationed booth detailing use of controlled-release fertilizer technology to enhance tree plantation establishment. Honolulu, HI. 11-12 January 2004. Participants: ~2000.
18. Tree Planting and Weed Management Workshop for Forestry and Nursery Professionals. Co-organized and co-conducted workshop including both classroom sessions and field tours. W.K. Kellogg Biological Field Station. Hickory Corners, MI. 22-23 June 2004. Participants: 27.
19. Northeastern Tree Improvement Specialist Meeting. Co-organized meeting. Minoqua, WI. 7-10 September 2004. Participants: 20.
20. Hardwood, Shrub, and Forb Seed Conditioning Workshop. Co-organized and co-conducted workshop. Topeka, IL. 14-16 September 2004. Participants: 15.
21. Managing Natural Resources Around Your Home: A Field Day. Co-conducted workshop. Throckmorton Purdue Agricultural Center. 16 October 2004. Participants: 5.
22. 9th Workshop on Seedling Physiology and Growth Problems in Oak Plantings. Co-organized and co-conducted workshop. J.S. Wright Forestry Center, IN. 18-20 October 2004. Participants: 42.
23. LUSTR Forest Renewal Cooperative Workshop on Tree Seedling Nutrition and Fertilization. Co-conducted workshop in seedling fertilization for nursery managers. Weyerhaeuser Learning Center, Dryden, Ontario. 6 August 2003. Participants: 35.
24. Joint Meeting of the Indiana Nut Growers' Association and Indiana Chapters of the American Chestnut Foundation and the Walnut Council. Co-organized and co-conducted meeting. J.S. Wright Forestry Center, IN. 14 September 2003. Participants: ~150.
25. Southeastern Purdue Agricultural Center Forestry Field Day. Co-conducted workshop describing research activities at SEPAC to professional foresters. Butlerville, IN. 18 September 2003. Participants: ~100.
26. Southeastern Purdue Agricultural Center Forestry Field Day. Co-conducted workshop describing research activities to professional foresters. Butlerville, IN. 10 September 2002. Participants: ~60.

Extension Short Courses: 5

1. Tree Crop Improvement Study Tour. Presented lectures on nursery production and plantation establishment, and organized field tours for forest scientists from India as part of 10-day study tour sponsored by USAID and US Forest Service International Programs. 4 September 2014. Participants: 12.
2. Tree Nursery Management. Presented short course to Brazilian graduate students and nursery managers (*translated to Portuguese*). Center for Agrarian Sciences, Western Paraná State University, Brazil. 12-15 April 2010. Participants: 30.
3. Forest Management for the Private Woodland Owner. Presented one of eight evening workshop sessions on *Forest Plantation Culture*. Plainfield, IN. 7 March 2007. Participants: 30.
4. Forest Management for the Private Woodland Owner. Presented one of eight evening workshop sessions on *Forest Plantation Culture*. Plainfield, IN. 20 February 2006. Participants: 35.
5. Tree Nursery Management. Hawaii Community College/University of Hawaii Course No. 032N606, 24 contact hours. Presented 5 of 16 lecture modules, including *Propagation Environments, Crop Planning and Growing Schedules, Growing Media, Fertilization, and Hardening* to nursery managers from throughout Pacific Islands. Co-organized daily field trips. Hilo, HI. 27-30 May 2003. Participants: 30.

News Media: 24

1. Interviewed by Terry Dickson for story entitled “Professors come home to Georgia to plant live oaks in research plots” published by the Florida-Times Union newspaper, 5 January 2016.
2. Interviewed by Helen Thompson for a news feature entitled “*Plant science: The chestnut resurrection*” published in *Nature* 490:23-23, 4 October 2012.
3. Interviewed by Linda McGurk for story entitled “USDA, Canada partnering to promote agroforestry R&D” published by Farm World newspaper, 9 May 2012.
4. Interviewed by Alejandra Martins for story entitled “Para que no haya un mundo sin nueces” published by BBC Mundo (in Spanish), 1 December 2011.
5. Interviewed by Tim Wall for story entitled “Walnut industry may crack under climate pressure” published by Discovery News, 1 December 2011.
6. Interviewed by Brian Wallheimer for story entitled “Walnut trees may not be able to withstand climate change” published as Purdue news release, 28 November 2011.
7. Interviewed by Allan Britnell for story entitled “Bringing back the chestnut” published in the winter 2009/2010 edition of Ontario Nature Magazine.
8. Interviewed by Phil Taylor (Greenwire) for story entitled “American chestnut’s revival may combat climate change” published by The New York Times, 1 July 2009.
9. Interviewed by Katie Matern for story entitled “Hybrid chestnut trees hold promise as carbon sponges” published by Inter Press Service, 16 June 2009.
10. Interviewed by Brian Wallheimer for story entitled “American chestnut restoration may mitigate climate change” published as Purdue news release, 10 June 2009.
11. Interviewed by Bill Rooney for story entitled “Resurrection for the American chestnut”, published in the Lexington News-Gazette (January 2008).
12. Interviewed by James Slinsky (Outdoor Talk Network) for radio program on American chestnut restoration research, broadcast 29 December 2007 nationwide on 60+ affiliate radio stations.
13. Interviewed by Rick Callahan (Associated Press) for article entitled “Growers bid to revive American chestnut”, released 23 November 2007 and disseminated by national media (e.g., Washington Post, Chicago Tribune, Los Angeles Times, Atlanta Journal Constitution, Newsweek).
14. Interviewed by Cathy Lundmark for story entitled “Fighting forest blights: American chestnuts” published in “BioBriefs” column in *BioScience* 57:912 (November 2007).
15. Interviewed by Douglas Main for story entitled “Challenges remain in reintroducing American chestnut” published as Purdue news release, 21 August 2007. Article featured in the 23 August 2007 edition of Purdue Today (distributed to all Purdue faculty and staff) and on the 28 August 2007 Purdue homepage.
16. Interviewed by Douglas Main for story entitled “Return of the king? Research try to bring the American chestnut tree back from the brink.” published in Purdue Agriculture Magazine, summer 2007, p. 8-10.
17. Interviewed by Kevin Cullen for article entitled “A wonderful woods is preserved near here”, published in the Lafayette Journal and Courier, 29 January 2006.
18. Interviewed by Evelyn Kirkwood for article entitled “Chestnuts disappear from open fire”, published in the South Bend Tribune, 25 December 2005.
19. Interviewed by Reni Winter for article entitled “Purdue aiding efforts to breed chestnut tree hybrid”, published in the Lafayette Journal and Courier, 31 October 2005.
20. Interviewed by Rick Callahan (Associated Press) for article entitled “Purdue research highlights American chestnut’s growth potential”, published in the Indianapolis Star, 28 May 2004.
21. Interviewed by Joseph Smith for article entitled “Fast-Growing American Chestnut Should “Do Well” in Restoration Programs”, published in the May 2004 edition of the Society of American Forester’s *Forestry Source*.
22. Interviewed by Peter Monaghan for article entitled “A glance at the April 5 issue of *Forest Ecology and Management: Reviving the American chestnut*”, published in the Magazine and Journal Reader section of the Chronicle of Higher Education, 2 April 2004.
23. Interviewed by Ali Kawa for story entitled “The spreading chestnut trees”, aired on WILL AM-580 (NPR affiliate, University of Illinois), 1 April 2004.
24. Interviewed by Jennifer Cutraro for story entitled “Chestnut trees to spread across landscape again, says Purdue scientist” published as Purdue news release, 29 March 2004.

SERVICE

Purdue University

Department

- Chair, Quantitative Forest Ecologist Faculty Position Search Committee (2018)
- Associate Head of Research (since 2015) and Associate Head (2014-15)
- Vice-Chair, Budget and Steering Committee (2014-present)
- Search Committee, Natural Resources Lab Coordinator and Collections Curator Staff Position (2016)
- Search Committee, Academic Information Technology Specialist Position (2015)
- Chair, Farm Manager Staff Position Search Committee (2013)
- Search Committee, Sustainable Natural Resources Social Sciences Faculty Position (2013)
- Chair, Forest Ecology Faculty Position Search Committee (2007)
- Search Committee, Forestry Specialist Position (2007)
- Search Committee, Forestry Extension and Research Position (2007)
- Primary Promotion Committee (2006-present)
- Faculty Mentoring Committee (2006-present)
- Search Committee, Sustainable Hardwoods Extension Specialist Position (2006)
- Chair, Hardwood Silviculture Faculty Position Search Committee (2006)
- Panel reviewer for FNR Department USDA CSREES Project (2006)
- Search Committee, Laboratory Manager Position (2005)
- Search Committee, Molecular Tree Physiologist Faculty Position (2003)
- Greenhouse Committee (2003-present; Chair 2003-08)
- Chair, Woodlands Management Committee (Member since 2002; Chair 2005-2015)
- Chair, Forest & Woodland Stewardship, Plan of Work Committee (Dec. 2002-August 2004)
- Curriculum Committee (2002-2008)

College of Agriculture

- Area Faculty Promotion Committee (2014-present)
- Showalter Professorship Nominating Committee (2013)
- Organization of Tropical Studies (OTS) delegate (May 2012-present)
- Curriculum and Student Relations Committee (November 2004-May 2005)
- Academic Advisor, Delta Theta Sigma, Agricultural Social-Professional Fraternity (2004-2006)
- Academic Advisor, Society of American Foresters Purdue University Student chapter (2003-2009)

University

- University Senate (2014)
- University Resources Policy Committee (2014)
- Faculty Affairs Committee (2006-2008)
- University Senate (2005-2008)

Science Community

- Editor-in-Chief, *New Forests* (2010-present)
- Associate Editor: *Annals of Forest Science* (2009-2014), *International Journal of Forest Research* (2008-2011), *New Forests* (2007-2010), *Northern Journal of Applied Forestry* (2007-2010), *Native Plants Journal* (2005-2008), Special Issue of *New Forests* on root development (2004)
- Science Advisory Committee, *Bosque* (2008-present)
- Served as scientific reviewer for **83** manuscripts in **34** journals, including: 7th *International Conference on Acid Rock Drainage*; *Acta Agriculturae Scandinavica Section B, Soil and Plant Science*; *American Midland Naturalist*; *Annals of Forest Science* (9); *Applied Vegetation Science*; *Bosque*; *Canadian Journal of Forest Research* (5); *Ecosystems* (2); *Electronic Journal of Biotechnology*; *Environmental and Experimental Botany* (2); *European Polymer Journal*; *Forest Ecology and Management* (16); *Forests*; *Forestry*; *Forest Science* (4); *HortScience* (2); *HortTechnology*; *Journal of Agricultural and Food Chemistry*; *Journal of Arid*

Environments; Journal of the American Chestnut Foundation; Journal of Environmental Management; Journal of Environmental Quality; Journal of Forest Research; Journal of Forestry; Native Plants Journal (5); *New Forests* (11); *Northern Journal of Applied Forestry* (2); *Plant Genome; Plant and Soil* (2); *PLoS One; Scandinavian Journal of Forest Research* (2); *Silva Fennica; Southern Journal of Applied Forestry; Tree Physiology* (2); *Western Journal of Applied Forestry* (2)

- Proposal reviewer: National Science Foundation, Ecosystem Studies (2017), Northeastern State Agricultural Experiment Stations (2013); Canada Foundation for Innovation Leaders Opportunity Fund (2010), U.S. Department of State Science Center (2010), National Science Foundation, Environmental Sustainability (2009), Georgia National Science Foundation (2009), Canadian Natural Sciences and Engineering Research Council (2007), Forest Science Program, British Columbia Ministry of Forests and Range (2006), Slovak Research and Development Agency (2006)
- External evaluator for promotion documents: Northern Arizona University (2017), University of Florida (2012), University of Minnesota (2012), Michigan State University (2011), Brigham Young University (2011), University of Hawaii (2008), Oregon State University (2005), USDA Forest Service (2005, 2006, 2010, 2011, 2016, 2017)
- **Symposia Organizing Committee:** IUFRO 3rd Restoring Forests, Lund, Sweden (2017); IUFRO Forest Regeneration in Challenging Environments, Oregon, USA (2017); *Acacia koa* in Hawaii: Facing the Future, Hawaii, USA (2016); IUFRO Forest Science Publishing, Helsinki, Finland (2015); IUFRO 2nd Restoring Forests, Indiana, USA (2014); IUFRO Nutrient Dynamics of Planted Forests, Washington, USA (2012); IUFRO 1st Restoring Forests, Madrid, Spain (2011); Emerging Silvicultural Technologies for *Acacia koa* Restoration, Hawaii, USA (2010); 16th Central Hardwood Forest Conference, Indiana, USA (2008); 9th Workshop on Seedling Physiology and Growth Problems in Oak Plantings, Indiana, USA (2004)
- Board of Directors, Akaka Foundation for Tropical Forests (2016-present)
- Coordinator, IUFRO Research Group 2.01.15, Whole Plant Physiology (2013-present)
- Deputy, IUFRO Research Group 1.06.00, Restoration of Degraded Sites (2015-present)
- Deputy, IUFRO Research Group 9.01.06, Forest Science Publishing (2015-present)
- Appalachian Regional Reforestation Initiative Academic Team (2005-present)
- Science Council, The American Chestnut Foundation (2002-present)
- President, Indiana Chapter of the American Chestnut Foundation (2003-2006)
- Board of Directors, The American Chestnut Foundation (2003-2006)
- Executive Committee, Walnut Council (2002-2008)
- Chair, Silviculture Committee, Walnut Council (2002-2006)
- Board of Directors, Indiana Hardwood Lumbermen's Association (2005-2008)
- Forestry Committee, Indiana Hardwood Lumbermen's Association (2005-2008)
- Education Committee, Indiana Hardwood Lumbermen's Association (2005-2007)