

CURRICULUM VITAE

Mary A. Arthur

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EDUCATION

Ph.D. Forest Ecology, minor in Soil Science, Cornell University
M.F.S. Forest Science, Yale School of Forestry & Environmental Studies
B.A. Environmental Studies, Colby College

PROFESSIONAL EXPERIENCE

Professor , Department of Forestry, University of Kentucky	2006 to present
Co-Lead , Urban Forest Initiative Working Group	2014 to present
Chair , Natural Resources and Environmental Science Curriculum Steering Committee	2009 to 2019
Co-Director , Greenhouse Residential College	2013 to 2016
Associate Professor , Department of Forestry, University of Kentucky	2000-2006
Visiting Scientist , Institute of Ecosystem Studies, Millbrook, NY	2000-2012
Sabbatical Leave , Institute of Ecosystem Studies, Millbrook, NY	1/00-7/00
Member , UK Biology Program Graduate Faculty	2003-present
Member , UK Soil Science Graduate Faculty	1994-present
Assistant Professor , Department of Forestry, University of Kentucky	1993-2000
Post-doctoral Associate , Boyce Thompson Institute for Plant Research, Ithaca, NY	1990-1992

RESEARCH PROGRAM

Research Funding

Extramural

2020-2023 **Kentucky Division of Forestry**. L. Rieske-Kinney PI, M. Arthur co-PI. Landscape Scale Restoration grant project, "Conservation, protection, and enhancement of forest canopies in rural communities and small municipalities" \$406,338

2019-2021 **Kentucky Division of Forestry**. M. Arthur and L. Rieske-Kinney. Urban Forest Initiative: Modeling replicable urban and community forestry programs in Kentucky, Part 2. \$10,000

2019-2020 **Kentucky Division of Forestry**. M. Arthur and L. Rieske-Kinney. Urban Forest Initiative: Modeling replicable urban and community forestry programs in Kentucky. \$10,000

2018-2021 **USDA Higher Education Challenge Grant**, \$150,000. Ellen Crocker, PI; Co-investigators: L. Rieske-Kinney, M. Arthur, M. Williams, C. Sass. "Undergraduate Certificate in Urban and Community Forestry."

2018-2019 **Lexington-Fayette Urban County Government**, \$34,954. M. Arthur and L. Rieske-Kinney. Stormwater Quality Projects Incentive Grant.

2015-2020 **USDA Forest Service**, Daniel Boone National Forest, \$97,000. Principal Investigator. "Triplett Creek Landscape Restoration"

- 2016-2017 **Kentucky Division of Forestry.** L. Rieske-Kinney and M. Arthur. Investigating Pathways for Central Kentucky Communities to Enhance the Urban Tree Canopy \$20,000.
- 2009-2014 **USDA Forest Service,** Daniel Boone National Forest, \$10,000. Principal Investigator. "Fire ecology research in the Daniel Boone National Forest."
- 2007-2011 **National Science Foundation,** \$34, 813. "Long term ecological research at Hubbard Brook Research Forest." \$27,301, Subcontract from Cary Institute of Ecosystem Studies.
- 2007-2009 **USDA Forest Service,** Southern Research Station, \$16,000. Principal Investigator. "Fire and new oak seedlings."
- 2006-2008 **Kentucky Environmental and Public Protection Cabinet.** Principal Investigator, "Colonization by invasive plant species into urban and successional forest remnants in the Bluegrass Region of central Kentucky." \$7996. Co-PIs – Ryan McEwan and Rob Paratley.
- 2005-2009 **National Science Foundation,** Principal investigator, "Collaborative research: Influences of geology and tree species composition on the response of forest nutrient dynamics to an exotic pest." \$115,000.
- 2004-2006 **Northeastern States Research Cooperative,** Co-principal investigator; subcontract to UK \$30,000. (PI: G.M. Lovett, Institute of Ecosystem Studies).
- 2004-2008 **USDA-USDI Joint Fire Science Program.** Co-principal investigator; subcontract to UK, (PI: D.L. Loftis, U.S. Forest Service.) "Fire in the southern Appalachians: fuels, stand structure and oaks." \$342,000.
- 2003-2007 **National Science Foundation, DEB-Ecosystems.** Co-principal investigator, subcontract to UK, \$80,000. (PI: R.D.Yanai, SUNY-ESF). "Biotic control of calcium supply: Distinguishing sources to regrowing forests."
- 2003-2006 **National Park Service.** Principal investigator. "Establishing baselines for nitrogen cycling in Mammoth Cave National Park Forests." \$50,000.
- 2002-2005 **USDA-USDI Joint Fire Science Program.** Co-principal investigator; subcontract to UK, \$214,000. (PI: D.L. Loftis; U.S. Forest Service). "Fire and oak regeneration in the southern Appalachians."
- 2002 **Colorado State University.** Principal investigator. "Loch Vale Watershed Forest Re-survey." \$4,511.
- 2000-2005 **National Science Foundation, DEB, Ecosystems.** Co-principal investigator; subcontract to UK, \$199,999. (PI: Gary Lovett, Institute of Ecosystem Studies.) "Effects of an Introduced Pest on the C and N Dynamics of a Northern Hardwood Forest."
- 2000-2001 **USDA Forest Service,** Southern Research Station, \$10,000. Principal Investigator. "Fire ecology research in the Daniel Boone National Forest."
- 1996-1999 **USDA National Research Initiative Competitive Grants Program,** Co-principal investigator; subcontract to UK, \$92,708. (PI: G.M. Lovett, Institute of Ecosystem Studies; Co-PI: Kathleen Weathers, Institute of Ecosystem Studies) "Nitrate loss from Catskill watersheds: the role of forest change."
- 1995-2000 **U.S. Forest Service Challenge Cost-share Agreement,** Daniel Boone National Forest, \$14,000. Principal investigator. "The use of prescribed fire in maintaining fire prone communities."
- 1994-1997 **EPA 319 and Kentucky State Natural Resources Environmental Protection,** \$100,000. Principal investigator: M. Arthur, Co-principal investigator, J. Stringer. "Environmental education: Impacts of harvesting practices on water quality in forested ecosystems."

- 1994-1995 **Tennessee Valley Authority**, \$15,416. Principal investigator. "Modelling ozone exposure to northern red oak."
- 1993-1998 **USDA National Research Initiative Competitive Grants Program**, Co-principal investigator, subcontract to UK, \$67,000. (Principal investigator, R.D. Yanai, SUNY-ESF.) "Recent changes in nutrient concentrations in the northern hardwood forest: are they natural or anthropogenic?"
- 1993 **Boyce Thompson Institute for Plant Research**, \$2,200. Principal investigator. "Development of red oak parameters for Tregro." .
- 1991 **New York State Gas and Electric Corporation**, \$75,000. Co-principal investigators; (PI: L.H. Weinstein, Boyce Thompson Institute for Plant Research). "Effects of gypsum on plant uptake of selenium from coal fly ash."
- 1991-1992 **Niagara Mohawk Power Corporation**, \$150,000. Co-principal investigator; PI: L.H. Weinstein, Boyce Thompson Institute for Plant Research). "A survey of selenium concentration in select native plant species and small mammals."
- Intramural*
- 2022 **UK Student Sustainability Council**. \$23,687. C. Hilbrecht, E. Ellingson, M. Arthur Protecting and Connecting Urban Tree Collections in a Changing Climate
- 2020 **UK Student Sustainability Council**. \$13,942. N. Williamson, A. Eades, C. Hilbrecht, M. Arthur and others. TreeCATs: Collegiate Arborist Team and Training Workshop
- 2020 **UK Campus Sustainability Challenge Grant. \$15,500**. M. Arthur, L. Rieske-Kinney, Emily Ellingson and others. Preparing our Urban Forests for our Changing Climate.
- 2019 **UK Campus Sustainability Challenge Grant. \$19,871**. M. Arthur, L. Rieske-Kinney and others. Training Collegiate Arborist Teams (TreeCATs) to expand the visibility of urban tree benefits.
- 2019 **UK Student Sustainability Council**. \$11,160. M. Arthur. TreeCATs: Collegiate Arborist Team and Training Workshop.
- 2018 **UK Campus Sustainability Challenge Grant. \$38,898**. M.A. Arthur, L. Rieske-Kinney, and others. From Roots to Branches: Expanding UK's capacity to care for and nurture urban forests and their people.
- 2017 **UK Campus Sustainability Challenge Grant. \$49,774**. M.A. Arthur, L. Rieske-Kinney. Mobilizing tree ambassadors through campus and community engagement, teaching and research.
- 2016 **UK Sustainability Challenge Grant. \$32,636**. Co-Principal investigator with L. Rieske-Kinney and N. Williamson. "Creating Tree Ambassadors: Fostering a campus and community culture of sustainability through urban trees.
- 2015 **UK Sustainability Challenge Grant. \$17,000**. Co-Principal investigators with L. Rieske-Kinney and N. Williamson. "The Campus Tree Initiative: Enhancing sustainability through engagement with the urban tree canopy on UK campus and beyond ."
- 2009-2011 **USDA-CSREES**, Precision Resource Management. \$49,093. Co-principal investigator with C. McMichael (Morehead State University). "Using remotely-sensed imagery to monitor post-fire forest dynamics."
- 2006 **University of Kentucky**, Precision Resource Management.
- 2006-2008 **USDA-CSREES**, Precision Resource Management – Phase III – Scope 6. \$72,500. Co-principal investigator with doctoral student, M. Poulette. "Spatial patterning of the

- effects of savanna trees and exotic species on soil nutrient and C cycling and soil biota.”
- 2006-2007 **University of Kentucky Faculty Research Support Grant.** “Alteration of belowground processes during ecosystem invasion: *Lonicera maackii* in the forests of central Kentucky. \$14,000. Co-PIs: Mary Arthur, Lynne Rieske-Kinney and Ryan McEwan.
- 2005 **University of Kentucky, College of Agriculture,** \$14,590. Co-principal investigators, L.K. Rieske-Kinney and M.A. Arthur. “Exploring the effects of Amur (bush) honeysuckle on plant community and ecosystem dynamics.”
- 1999-2000 **University of Kentucky Research Committee Grant,** \$4,820. Principal Investigator. “Species control of nutrient dynamics in the mixed mesophytic forest of eastern Kentucky.”
- 1997-1999 **Robinson Forest Initiative,** \$72,121. Principal Investigator. "Forest fire in eastern Kentucky: How the role of fire in the ecosystem is perceived and controlled."
- 1996-1998 **Robinson Forest Initiative,** \$28,049. Principal Investigator. "The response of eastern Kentucky forest ecosystems to prescribed burns and wildfire."
- 1995-1996 **University of Kentucky Research Committee Grant,** \$4,500. Principal investigator. "Use of prescribed fire on ridgetops in the Daniel Boone National Forest."
- 1986-1988 **Edna Bailey Sussmann Fellowship** for graduate research in environmental studies.
- 1986-1987 **Andrew W. Mellon Competitive Grant for Student Research,** Cornell University.

Publications

Refereed journal articles (total: 90 published)

*Authorship by graduate or post-doctoral student denoted by *; undergraduate student or technician author denoted by **.*

- Hanberry, B.B., M.D. Abrams, M.A. Arthur, J.M. Varner. 2020. Reviewing fire, climate, deer and foundation species as drivers of historically open oak and pine forests and transition to closed forests. *Front. For. Glob. Change.* 3:56. doi: 10.3389/ffgc.2020.00056
- Black*, D.E., M.A. Arthur, D.D. Taylor, J.F. Lewis, and W. Leuenberger*. 2019. Using mastication to support woodland restoration in upland oak forests on the Cumberland Plateau, Kentucky. *For. Sci.* 14: <https://doi.org/10.1093/forsci/fxy066>
- Rieske, L, S. Borden, B. Damron**, N. Williamson, M. Arthur, and A. Kinney. 2019. College campus as a living laboratory: Scrubbing scales, saving trees, engaging students. *American Entomologist* 65: 43-49.
- Rounsaville, T.J., R.L. McCulley, and M.A. Arthur. 2019. Allee effects and soil nutrient changes mediated by experimental plantings of a nonindigenous, temperate liana. *Plant Ecology* 220: 861-872; <https://doi.org/10.1007/s11258-019-00960>.
- Yang*, Z., S. Chen, X. Liu, D. Xiong, C. Xu, M.A. Arthur, R.L. McCulley, S. Shi, and Y. Yang. 2019. Loss of soil organic carbon following natural forest conversion to Chinese fir plantation. *Forest Ecology and Management* . <https://doi.org/10.1016/j.foreco.2019.117476>.
- Rounsaville*, T.J., C.C. Baskin, E. Roemmele, M.A. Arthur. 2018. Seed dispersal and site characteristics influence germination and seedling survival of the invasive liana *Euonymus fortune* (wintercreeper) in a rural woodland. *Can. J. For. Res.* 48: 1343-1350.
- Black*, D.E., Z.W. Poynter*, C.A. Cotton, S. Upadhaya*, D.D. Taylor, W. Leuenberger, B.A. Blankenship, and M.A. Arthur. 2018. Post-wildfire recovery of an upland oak-pine forest on

- the Cumberland Plateau, Kentucky. *Fire Ecology* 14. DOI: <https://doi.org/10.1186/s42408-018-0013-9>
- Rounsaville*, T., C. Baskin, E. Roualdes, McCulley, R.L. and M. Arthur. 2018. Seed dynamics of the liana *Euonymus fortunei* and implications for invisibility. *J. Torrey Bot. Soc.* 145: 225-236.
- Yang, Y., R.D. Yanai, C.R. See, and M.A. Arthur. 2017. Sampling effort and uncertainty in leaf litterfall mass and nutrient flux in northern hardwood forests. *Ecosphere* 8(11):e01999.10.1002/ecs2.1999.
- Arthur, M.A., B.A. Blankenship, A. Schorgendorfer, and H.D. Alexander. 2017. Alterations to the fuel bed after single and repeated prescribed fires in an Appalachian hardwood forest. *For. Ecol. Management* 403: 126-136.
- Arthur, M.A. K.C. Weathers, G.M. Lovett, M.P. Weand and W.C. Eddy. 2017. A beech bark disease induced change in tree species composition influences forest floor acid-base chemistry. *Can. J. For. Res.* 47: 875-882.
- Bray, S.R., A.M. Hoyt**, Z. Yang and M.A. Arthur. 2017. Non-native liana, *Euonymus fortunei*, associated with increased soil nutrients, unique soil bacterial communities, and faster leaf decomposition. *Plant Ecology* 218: 329-343.
- Keyser, T.L., M.A. Arthur, D.L. Loftis. 2017. Repeated burning alters the structure and composition of hardwood regeneration in oak-dominated forests of eastern Kentucky, USA. *Forest Ecology and Management* 393: 1-11.
- Crowley, K.F., G.M. Lovett, M.A. Arthur and K.C. Weathers. 2016. Long-term effects of pest-induced tree species change on carbon and nitrogen cycling in northeastern U.S. forests: A modeling analysis. *Forest Ecology and Management* 371: 269-290.
- Lovett, G.M., M.A. Arthur, and K.F. Crowley. 2016. Effects of calcium on the rate and extent of litter decomposition in a northern hardwood forest. *Ecosystems* 19: 87-97.
- Mattingly**, K.Z., R.W. McEwan, R.D. Paratley, S.R. Bray, J.R. Lempke, and M.A. Arthur. 2016. Recovery of forest floor diversity after removal of the non-native invasive plant *Euonymus fortunei*. *Journal of the Torrey Botanical Society* 143: 103-116.
- Varner, J.M., M.A. Arthur, S.L. Clark, D.C. Dey, J.L. Hart and C.J. Schweitzer. 2016. Fire in Eastern North American oak ecosystems: filling the gaps. *Fire Ecology* 12:1-6.
- Arthur, M.A., B.A. Blankenship, A. Schorgendorfer, D.L. Loftis, and H.D. Alexander. 2015. Changes in stand structure and tree vigor with repeated prescribed fire in an Appalachian hardwood forest. *Forest Ecology and Management* 340: 46-61.
- Alexander*, H.D. and M.A. Arthur. 2014. Increasing red maple leaf litter alters decomposition rates and nitrogen cycling in historically oak-dominated forests of the Eastern US. *Ecosystems* 17:1371-1383.
- Rodriguez, A., G.M. Lovett, K.C. Weathers, M.A. Arthur, P.H. Templer, C.L. Goodale, and L.M. Christenson. 2014. Lability of C in temperate forest soils: assessing the role of nitrogen addition and tree species composition. *Soil Biology and Biochemistry* 77:129-140.
- Kim, D., and M. A. Arthur. 2014. Changes in community structure and species-landform relationship after repeated fire disturbance in an oak-dominated temperate forest. *Ecological Research* 29: 661-671.
- Littlefield*, T., C. Barton, M. Arthur, and M. Coyne. 2013. Factors controlling carbon distribution on reforested minelands and regenerating clearcuts in Appalachia, USA. *Science of the Total Environment* 465: 240-247.

- Lovett, G.M., M.A. Arthur, K.C. Weathers, R.D. Fitzhugh, P.H. Templer. 2013. Nitrogen addition increases carbon storage in soils, but not in trees, in an eastern deciduous forest. *Ecosystems* 16:980-1001.
- Lovett, G.M., M.A. Arthur, K.C. Weathers, J.C. Griffin. 2013. Effects of introduced insects and diseases on forest ecosystem in the Catskill Mountains of New York. *Annals of the New York Academy of Sciences* 1298:66-77
- Wilson*, H.N., M.A. Arthur, A. Schorgendorfer, R.D. Paratley, B.D. Lee, and R.W. McEwan. 2013. Site characteristics as predictors of *Lonicera maackii* and other invasive plants in second growth forests of central Kentucky, USA. *Natural Areas Journal* 33: 189-198.
- Yanai, R.D., M.A. Vadeboncoeur, S.P. Hamburg, M.A. Arthur, C.B. Fuss, P.M. Groffman, T.G. Siccama, and C.T. Driscoll. 2013. *Environmental Science and Technology* 47: 11440-11448.
- Arthur, M.A., H.D. Alexander, D.C. Dey, C.J. Schweitzer, and D.L. Loftis. 2012. Refining the oak-fire hypothesis for management of oak-dominated forests of the eastern United States. *J. Forestry* 110: 257-266.
- Arthur, M.A., Bray, S.R., C. Kuchle**, and R.W. McEwan. 2012. The influence of the invasive shrub, *Lonicera maackii*, on leaf decomposition and microbial community dynamics. *Plant Ecology* 213: 1571-1582. doi: 10.1007/s11258-012-0112-7
- Blum, J.D., S.P. Hamburg, R.D. Yanai, and M.A. Arthur. 2012. Determination of foliar Ca/Sr discrimination factors for six tree species and implications for Ca sources in northern hardwood forests. *Plant and Soil* 356: 303-314.
- Crowley, K.F., B.E. McNeil, G.M. Lovett, C.D. Canham, C.T. Driscoll, L.E. Rustad, E. Denny, R.A. Hallett, M.A. Arthur, J.L. Boggs, C.L. Goodale, J.S. Kahl, S.G. McNulty, S.V. Ollinger, L.H. Pardo, P.G. Schaberg, J.L. Stoddard, M.P. Weand, and K.C. Weathers. 2012. Do nutrient limitation patterns shift from nitrogen toward phosphorus with increasing nitrogen deposition across the northeastern United States? *Ecosystems* 15:940-957. doi:10.1007/s10021-012-9550-2
- McEwan, R.W., M.A. Arthur, S.E. Alverson. 2012. Throughfall chemistry and soil nutrient effects of the invasive shrub *Lonicera maackii* in deciduous forests. *Am. Midl. Nat.* 168: 43-55.
- Yanai, R.D., M.A. Arthur, M. Acker, C.R. Levine, and B.B. Park. 2012. Variation in mass and nutrient concentration of leaf litter across years and sites in a northern hardwood forest. *Canadian Journal of Forest Research* 42: 1597-1610.
- Poulette*, M.M. and M.A. Arthur. 2012. The impact of the invasive shrub *Lonicera maackii* on the decomposition dynamics of a native plant community. *Ecological Applications* 22:412-424.
- Srinivasan, M.P., S.K. Gleeson, and M.A. Arthur. 2012. Short-term impacts of nitrogen fertilization on a montane grassland ecosystem in a South Asian biodiversity hotspot. *Plant Ecology and Diversity* 5:289-299.
- Fatemi, F.R., R.D. Yanai, S.P. Hamburg, M.A. Vadeboncoeur, M.A. Arthur, R.D. Briggs, and C.R. Levine. 2011. Allometric equations for young northern hardwoods: the importance of age-specific equations for estimating aboveground biomass. *Canadian Journal of Forest Research* 41:881-891.
- Alexander*, H.D. and M.A. Arthur. 2010. Implications of a predicted shift from upland oaks to red maple on forest hydrology and nutrient availability. *Canadian Journal of Forest Research*: 40: 716-726.
- Green*, S.R. and M.A. Arthur. 2010. Oak and red maple seedling survival and growth following periodic prescribed fire on xeric ridgetops on the Cumberland Plateau. *Forest Ecology and Management* 259: 2256-2266.

- Lovett, G.M., M.A. Arthur, K.C. Weathers and J.M. Griffin. 2010. Long-term changes in forest carbon and nitrogen cycling caused by an introduced pest/pathogen complex. *Ecosystems* 13: 1188-1200.
- McEwan*, R.W., L.G. Arthur-Paratley, L.K. Rieske and M.A. Arthur. 2010. A multi-assay comparison of seed germination inhibition by *Lonicera maackii* and co-occurring native shrubs. *Flora* 205:475-483.
- Royse*, J., M.A. Arthur, A. Schorgendorfer, and D.L. Loftis. 2010. Establishment and growth of oak (*Quercus alba*, *Quercus prinus*) seedlings in burned and fire-excluded upland forests on the Cumberland Plateau. *Forest Ecology and Management* 260: 502-510. Doi: 10.1016/j.foreco.2010.05.005.
- Weand*, M.P., M.A. Arthur, G.M. Lovett, K.C. Weathers, R.L. McCulley. 2010. Effects of tree species and nitrogen addition on forest floor microbial communities and extracellular enzymes. *Soil Biology and Biochemistry* 42: 2161-2173.
- Weand*, M.P., M.A. Arthur, G.M. Lovett, F. Sikora and K.C. Weathers. 2010. The phosphorus status of northern hardwoods differs by species but is unaffected by nitrogen fertilization. *Biogeochemistry* 97:2-3.
- Alexander*, H.D. and M.A. Arthur. 2009. Foliar morphology and chemistry of upland oaks, red maple, and sassafras seedlings in response to single and repeated prescribed fires. *Canadian Journal of Forest Research* 39: 740-754.
- Christensen, L.M., G.M. Lovett, K.C. Weathers and M.A. Arthur. 2009. The Influence of tree species, nitrogen fertilization and soil C:N ratio on gross soil nitrogen transformations. *Soil Sci. Soc. Am. J.* 73: 638-646.
- Fabio* E.S., M.A. Arthur, C.C. Rhoades. 2009. Influence of moisture regime and tree species composition on nitrogen cycling dynamics in hardwood forests of Mammoth Cave National Park, Kentucky, USA. *Canadian Journal of Forest Research* 39: 330-341.
- McEwan*, R.W., M. K. Birchfield**, A. Schoergendorfer and M.A. Arthur. 2009. Leaf phenology and freeze tolerance of the invasive shrub Amur honeysuckle and potential native competitors. *Journal of the Torrey Botanical Society* 136:212-220.
- McEwan*, R.W., L.K. Rieske, and M.A. Arthur. 2009. Potential interaction between invasive woody shrubs and the gypsy moth (*Lymantria dispar*), an invasive insect herbivore. *Biological Invasions* 11: 1053-1058.
- Alexander*, H.D., M.A. Arthur, D.L. Loftis, S.R. Green*. 2008. Survival and growth of upland oak and co-occurring competitor seedlings following single and repeated prescribed fires. *Forest Ecology and Management* 256: 1021-1030.
- Blum, J.D., A.A. Dasch, S.P. Hamburg, R.D. Yanai and M.A. Arthur. 2008. Use of foliar Ca/Sr discrimination and ⁸⁷Sr/⁸⁶Sr ratios to determine soil Ca sources to sugar maple foliage in a northern hardwood forest. *Biogeochemistry* 87: 287-296.
- Hancock**, J.E., M.A. Arthur, K.C. Weathers and G.M. Lovett. 2008. Aboveground net primary production and total belowground carbon allocation along a gradient of beech bark disease impact in the Catskill Mountains, New York. *Canadian Journal of Forest Research* 38: 1267-1274.
- Loucks*, E., M.A. Arthur, J.E. Lyons and D.L. Loftis. 2008. Characterization of fuel before and after a single prescribed fire in an Appalachian hardwood forest. *Southern Journal of Applied Forestry* 32: 80-88.
- Templer, P.H., M.A. Arthur, G.M. Lovett, and K.C. Weathers. 2007. Plant and soil natural abundance ¹⁵N: Indicators of relative rates of nitrogen cycling in temperate forest ecosystems. *Oecologia* 153: 399-406.

- Binkley, D., D.M. Kashian, S.Boyden, M.W. Kaye, J.B. Bradford, M.A. Arthur, P.J. Fornwalt, M.G. Ryan. 2006. Patterns of growth dominance in forests of the Rocky Mountains, USA. *Forest Ecology and Management* 263:193-201.
- Blankenship**, B.A. and M.A. Arthur. 2006. Stand structure over nine years in burned and fire-excluded oak stands on the Cumberland Plateau, Kentucky. *Forest Ecology and Management* 225:134-145.
- Lovett, G.M., C.D. Canham, M.A. Arthur, and K.C. Weathers. 2006. Forest ecosystem responses to exotic pests and pathogens in eastern North America. *BioScience* 56:395-405.
- Newman*, G., M.A. Arthur, and R.N. Muller. 2006. Above- and belowground net primary production in a temperate mixed deciduous forest. *Ecosystems* 9:317-329.
- Chiang*, J., M.A. Arthur and B.A. Blankenship**. 2005. The effect of prescribed fire on gap fraction in an oak forest on the Cumberland Plateau. *Journal of the Torrey Botanical Society* 132: 432-441.
- Yanai, R.D., J.D. Blum, S.P. Hamburg, M.A. Arthur, C.A. Nezat, and T.G. Siccama. 2005. New Insights into Calcium Depletion in Northeastern Forests. *Journal of Forestry* 103:14-20.
- Yanai, R.D., R.P. Phillips, M.A. Arthur, T.G. Siccama, and E.N. Hane. 2005. Spatial and temporal variation in calcium and aluminum in northern hardwood forest floors. *Water, Air and Soil Pollution* 160:109-118.
- Lovett, G.M., K.C. Weathers, M.A. Arthur and J.C. Schultz. 2004. Nitrogen cycling in a northern hardwood forest: do species matter? *Biogeochemistry* 67: 289-308.
- Gilbert**, N.L., S.L. Johnson, S.K. Gleeson, B.A. Blankenship** and M.A. Arthur. 2003. Effects of prescribed fire on physiology and growth of *Acer rubrum* and *Quercus* spp. seedlings in an oak-pine forest on the Cumberland Plateau, KY. *Journal of the Torrey Botanical Society* 130: 253-264.
- Griffin, J.M., G.M. Lovett, M.A. Arthur and K.C. Weathers. 2003. The distribution and severity of beech bark disease in the Catskill Mountains, NY. *Canadian Journal of Forest Research* 33:1754-1760.
- Washburn*, C.S.M. and M.A. Arthur. 2003. Tree species effects on soil nutrient availability in an oak-pine forest. *Canadian Journal of Forest Research* 33:2321-2330.
- Yanai, R.D., S.V. Stehman, M.A. Arthur, C.E. Prescott, A.J. Friedland, T.G. Siccama, and D. Binkley. 2003. Detecting change in forest floor carbon storage. *Soil Science Society of America Journal* 67:1583-1593. .
- Hamburg, S.P., R.D. Yanai, M.A. Arthur, J.D. Blum and T.G. Siccama. 2003. Biotic control of calcium cycling in northern hardwood forests: acid rain and aging forests. *Ecosystems* 6:399-406.
- Kuddes-Fischer*, L.M. and M.A. Arthur. 2002. Response of understory vegetation and tree regeneration to a single prescribed fire in oak-pine forests. *Natural Areas Journal* 22:43-52.
- Lovett, G.M., K.C. Weathers, and M.A. Arthur. 2002. Control of N loss from forested watershed by soil C:N ratio and tree species composition. *Ecosystems* 5:712-718.
- Rieske, L.K., H.H. Housman*, and M.A. Arthur. 2002. Effects of prescribed fire on canopy foliar chemistry and suitability for an insect herbivore. *Forest Ecology and Management* 160:177-187.
- Arthur, M.A., S.P. Hamburg, and T.G. Siccama. 2001. Validating allometric estimates of aboveground living biomass and nutrient contents of a northern hardwood forest. *Canadian Journal of Forest Research* 31:11-17.
- Arthur, M.A. and R.D. Yanai. 2000. Distinguishing the effects of environmental stress and forest succession on changes in the forest floor. *Korean Journal of Ecology* 23:83-88.
- McEwan**, R.W., R.N. Muller, M.A. Arthur and H.H. Housman*. 2000. Temporal and ecological patterns of flowering dogwood mortality in the mixed mesophytic forest of eastern Kentucky. *Journal of the Torrey Botanical Society*. 127:221-229.

- Retzlaff, W.A., M.A. Arthur, N.E. Grulke, D.A. Weinstein and B. Gollands. 2000. Use of a single-tree simulation model to predict effects of ozone and drought on growth of a white fir tree. *Tree Physiology* 20:195-202.
- Yanai, R.D., M.A. Arthur, T.G. Siccama and C.A. Federer. 2000. Challenges of measuring forest floor organic matter dynamics: Repeated measures from a chronosequence. *Forest Ecology and Management* 138:273-283.
- Arthur, M.A. and J.A. Thompson. 1999. Problem-based learning in a Natural Resources Conservation and Management curriculum: A capstone course. *Journal of Natural Resources and Life Sciences Education* 28:97-103.
- Arthur, M.A., T.G. Siccama, and R.D. Yanai. 1999. Calcium and magnesium in wood of northern hardwood forest species: relations to site characteristics. *Canadian Journal of Forest Research* 29:339-346.
- Arthur, M.A. and Y. Wang*. 1999. Soil nutrients and microbial biomass following weed control treatments in a Christmas tree plantation. *Soil Science Society of America Journal* 63:629-637.
- Blankenship*, B.A. and M.A. Arthur. 1999. Prescribed fire affects eastern white pine recruitment and survival on eastern Kentucky ridgetops. *Southern Journal of Applied Forestry* 23:144-150.
- Taylor*, L.A., M.A. Arthur and R.D. Yanai. 1999. Forest floor microbial biomass across a northern hardwood forest successional sequence. *Soil Biology and Biochemistry* 31: 431-439.
- Woodbury, P.B., M.A. Arthur, G. Rubin, L.H. Weinstein, and D.C. McCune. 1999. Gypsum application reduces selenium uptake by vegetation on a coal ash landfill. *Water, Air and Soil Pollution* 110:421-432.
- Yanai, R.D., T.G. Siccama, M.A. Arthur, and C.A. Federer. 1999. Accumulation and depletion of base cations in forest floors in the northeastern US. *Ecology* 80:2774-2787.
- Arthur, M.A., G.B. Coltharp, and D.L. Brown. 1998. Effects of best management practices on forest streamwater quality in eastern Kentucky. *Journal of the American Water Resources Association* 34:481-495.
- Arthur, M.A., R.D. Paratley and B.A. Blankenship*. 1998. Single and repeated fire affect survival and regeneration of woody species in an oak-pine forest. *Journal of the Torrey Botanical Society* 125:225-236.
- Weinstein, D.W., L.J. Samuelson and M.A. Arthur. 1998. Comparison of the response of red oak (*Quercus rubra* L.) seedlings and mature trees to ozone exposure using simulation modeling. *Environmental Pollution* 102:307-320.
- Arthur, M.A., R.N. Muller and S. Costello**. 1997. Species composition in a central hardwood forest in Kentucky eleven years after clearcutting. *American Midland Naturalist* 137:274-281.
- Fahey, T.J. and Arthur, M.A. 1994. Further studies of root decomposition following harvest of northern hardwoods forest. *Forest Science* 40:618-629.
- Siccama, T.G., Hamburg, S.P., Arthur, M.A., Yanai, R.D., Bormann, F.H., and Likens, G.E. 1994. Corrections to the allometric equations and plant tissue chemistry for the Hubbard Brook Experimental Forest. *Ecology* 75:246-248.
- Arthur, M.A. and Fahey, T.J. 1993. Controls on soil solution chemistry in an Engelmann spruce, subalpine fir forest in north-central Colorado. *Soil Science Society of America Journal* 57:1122-1130.
- Arthur, M.A., Tritton, L.M. and Fahey, T.J. 1993. Dead bole mass and nutrients remaining 23 years after clearfelling of a northern hardwood forest. *Canadian Journal of Forest Research* 23:1298-1305.
- Arthur, M.A. and Fahey, T.J. 1993. Throughfall chemistry in an Engelmann spruce, subalpine fir forest in north-central Colorado. *Canadian Journal of Forest Research* 23:738-742.

- Arthur, M.A., Rubin, G., Woodbury, P.B., and Weinstein, L.H. 1993. Gypsum amendment to soil can reduce selenium uptake by alfalfa grown in the presence of coal fly ash. *Plant and Soil* 148:83-90.
- Arthur, M.A. and Fahey, T.J. 1992. Biomass and nutrients in an Engelmann spruce - subalpine fir forest in north-central Colorado: pools, annual production and internal cycling. *Canadian Journal of Forest Research* 22:315-325.
- Arthur, M.A., Schneider, R.E., Rubin, G. and Weinstein, L.H. 1992. Uptake and accumulation of selenium by terrestrial plants growing on a coal fly ash landfill: Part 1. Corn. *Environmental Toxicology and Chemistry* 11:541-547.
- Arthur, M.A., Rubin, G., Woodbury, P.B., Schneider, R.E., and Weinstein, L.H. 1992. Uptake and accumulation of selenium by terrestrial plants growing on a coal fly ash landfill: Part 2. Forage and root crops. *Environmental Toxicology and Chemistry* 11:1289-1299.
- Arthur, M.A., Rubin, G., Schneider, R.E., and Weinstein, L.H. 1992. Uptake and accumulation of selenium by terrestrial plants growing on a coal fly ash landfill: Part 3. Forbs and grasses. *Environmental Toxicology and Chemistry* 11:1301-1306.
- Denning, A.S., Baron, J., Mast, M.A., and Arthur, M.A. 1991. Hydrologic pathways and chemical composition of runoff during snowmelt in Loch Vale Watershed, Rocky Mountain National Park, Colorado, USA. *Water, Air, and Soil Pollution* 59:107-123.
- Arthur, M.A. and Fahey, T.J. 1990. Mass and nutrient content of decaying boles in an Engelmann spruce/subalpine fir forest, Rocky Mountain National Park, Colorado. *Canadian Journal of Forest Research* 20:730-737.
- Fahey, T.J., Hughes, J.W., Mou Pu, and Arthur, M.A. 1988. Root decomposition and nutrient flux following whole-tree harvest of northern hardwood forest. *Forest Science* 23: 744-768.

Peer-reviewed conference proceedings (2)

- McNab, W.H., D.L. Loftis, M.A. Arthur, and J.E. Lyons. 2007. Evaluation of tree species composition as a tool for classifying moisture regimes in oak forests of eastern Kentucky. *In: Buckley, D.S., Clatterbuck, W.K. (Eds.), Proceedings of the Fifteenth Central Hardwood Forest Conference, February 27-March 1, 2006, Knoxville, TN. Gen. Tech. Rep. SRS-101. USDA Forest Service, Southern Research Station, Asheville, NC.*
- Blankenship*, B.A. and M.A. Arthur. 1999. Microbial and soil nutrient response to prescribed fire in an oak-pine ecosystem in eastern Kentucky. *In Stringer, Jeffrey, W. and D.L. Loftis, eds. Proceedings, 12th Central Hardwood Forest Conference, February 28-March 2, 1999, Lexington, KY. Gen. Tech. Rep. SRS-24, Asheville, NC, USDA Forest Service, Southern Research Station, pp. 39-47.*

Book Chapters (4)

- Arthur, M.A., J. Morgan Varner, Charles W. Lafon, Heather D. Alexander, Daniel C. Dey, Craig A. Harper, Sally P. Horn, Todd F. Hutchinson, Tara L. Keyser, Marcus A. Lashley, Christopher E. Moorman, and Callie J. Schweitzer. Accepted. Fire ecology and management in eastern broadleaf and Appalachian forests. *In: B. Collins and C.H. Greenberg, Past Present and Future Fire Ecology and management Across US Forested Ecosystems, Springer-Nature.*
- Lovett, G.M., Weathers, K.C. and Arthur, M.A. 2001. Is nitrate in stream water an indicator of forest ecosystem health in the Catskills? *In: M.S. Adams, ed., Catskill Ecosystem Health, Purple Mountain Press, Fleischmanns, NY, pp. 22-30.*
- Arthur, M.A. 1992. Vegetation. *In Biogeochemistry of a Subalpine Ecosystem: Loch Vale Watershed. Edited by J. Baron, Ecological Studies Series 90, Springer-Verlag, NY.*

Baron, J., Walthall, P.M., Mast, M.A., and Arthur, M.A. 1992. Soils. In Biogeochemistry of a Subalpine Ecosystem: Loch Vale Watershed. Edited by J. Baron, Ecological Studies Series 90, Springer-Verlag, NY.

Mentoring of Graduate Students

Dissertation director:

Zhijie Yang, PhD. 2020. Plant-soil Interactions Dominate Soil Microbial Respiration and Soil Organic Carbon Sequestration in a Subtropical Moist Evergreen Broadleaved Forest in China.

Todd Rounsaville, PhD. 2017. Topic: Invasion dynamics of the exotic liana *Euonymus fortunei* (Turcz.) Hand.-Mazz. (wintercreeper)

Megan Poulette, Ph.D. 2012. Topic: Spatial patterning of the effects of savanna trees and exotic species on soil nutrient and C cycling and soil biota

Matthew Weand, Ph.D. 2010. Topic: Interactions between N and P cycling and microbial communities in northern hardwood forests

Heather Alexander, PhD. 2009. Topic: Oak regeneration failure: Impacts on N cycling and effects of prescribed fire

Thesis director:

Scott Culbert, MS. Current student. Long-term vegetation and microclimate responses to a wildfire of varying severity in an upland oak-pine forest.

Jordan Winkenback, MS. 2020. The Role of Fire and a Fire-free Interval in the Restoration of Upland Oak Communities on the Cumberland Plateau, Kentucky.

Devin Black, MS. 2017. Topic: Managing upland oak forests with disturbance and the implications for non-native species invasions.

Zach Poynter, MS. 2017. Topic: Vegetation response to repeated prescribed burning and varied wildfire severity in upland forests on the Cumberland Plateau, Kentucky

Suraj Upadhaya. 2015. Topic: Using remotely sensed data to evaluate the ecological and economic impacts of wildfire in the Daniel Boone National Forest, Kentucky. Co-advised with Marco Contreras Abe Levin-Nielsen, co-advised with Songlin Fei, 2012

Heather Wilson, MS. 2011. Topic: Plant community response to Amur honeysuckle removal in Bluegrass urban remnant forests

Jacob Royse. 2008. Establishment and development of hardwood seedlings in response to prescribed fire in a central Appalachian forest.

Marty Acker. 2006. Base cation concentration and content in litterfall and woody debris across a northern hardwood forest chronosequence.

Eric Fabio. 2006. Influence of moisture regime and tree species on nitrogen cycling and decomposition dynamics in deciduous forests of Mammoth Cave National Park, Kentucky, USA.

Tara Littlefield (Co-advised with Chris Barton). 2007. Carbon and nutrient dynamics in regenerating forests within the eastern Kentucky coal fields.

Stephanie Green. 2005. The effects of prescribed fire on stand structure, canopy cover and seedling populations in oak dominated forests on the Cumberland Plateau, KY.

David Lyon. 2004. Persistent effects of eastern redcedar on calcareous glade soils and plant community.

Elizabeth Loucks. 2004. The effects of landscape scale prescribed fire on fuel loading and tree health in an Appalachian hardwood forest, Kentucky.

Jyh-min Chiang. 2002. Prescribed fire effects on understory light environment and seedling performance of oak and red maple in eastern Kentucky.

Greg S. Newman. 2002. Carbon allocation and interannual variation in net primary production in a temperate mixed deciduous forest.

Linda Kuddes-Fischer. 1999. Response of understory vegetation and tree regeneration to a single prescribed fire in an oak-pine ecosystem.

Carol S.M. Washburn 1999. Tree species effects on soil nutrient availability and the response to fire in an oak-pine forest.

Beth Blankenship. 1997. Response of eastern white pine, soil nutrients and microbial biomass to prescribed fire in the Red River Gorge.

Laurie Taylor. 1996. An assessment of microbial biomass across a northern hardwood forest successional sequence.

Yating Wang. 1996. Effects of four weed management strategies on soil microbial biomass and nutrients in a Christmas tree plantation.

Post-doctoral fellow:

Ryan McEwan, 2006-2008.

Non-thesis M.S. degrees directed:

Nic Williamson, MS. Topic: Improving awareness of the ecological, social, and economic importance of urban trees on the University of Kentucky campus.

Greg Abernathy, 1999.

Heather Housman. 2001.

Amy Thompson. 2000.

Professional Activities

Editorial, Reviewing and Professional Society Responsibilities

Associate Editor:

Canadian Journal of Forest Research, 2017-2021

Biogeochemistry, 2011-2013

Ecology, 2006-2009

Soil Science Society of America Journal, 2004-2010

Forest Science, 2001-2005

Journal of Environmental Quality, 1995-1998

Panelist:

National Science Foundation grant panels

Department of Energy panel, Ecosystem Sciences

Joint Fire Science Program panel

U.S. Environmental Protection Agency, Peer Review Panel for STAR Fellowships

Member, American Institute of Biological Sciences (AIBS) Nominating Committee, 2002.

Ad hoc Proposal Reviews:

National Science Foundation

USDA-NRI

Austrian Science Fund

External reviewer for tenure/promotion: 1-3/year

Peer review teams:

National Science Foundation, Peer review of H.J. Andrews Forest Long Term Ecological Research site, Corvallis, OR. August 2011.

National Science Foundation, Peer review of H.J. Andrews Forest Long Term Ecological Research site, Corvallis, OR. July 2005.

Bent Creek Experimental Forest, USDA Forest Service, Technical Assistance Visit, December 6-7, 2004.

U.S. Environmental Protection Agency, Peer Review Team to review research plan for a proposed E.P.A. research project, Corvallis, OR. July 1999.

Manuscript reviewer for: *Biogeochemistry*, *Bioscience*, *Canadian Journal of Botany*, *Canadian Journal of Forest Research*, *Ecological Applications*, *Ecological Monographs*, *Ecology*, *Forest Ecology and Management*, *Forest Science*, *Journal of Ecology*, *Journal of the Torrey Botanical Society*, *Soil Science Society of America Journal*.

Book Reviewer:

Yale University Press: *Science Writing*, Robert Goldbort. (2004, 2005)

John Wiley and Sons: *Forest Ecology*, Barnes, B.V., D.R. Zak, S.R. Denton and S.H. Spurr. (1997)

Invited Presentations and Seminars

William H. Martin Appalachian Research Symposium, Keynote presentation, June 2019

Fujian Normal University, Fujian Province, China, August 2016

Fujian Normal University, Fujian Province, China, June 2012

Wildflower weekend, Keynote address, Natural Bridge State Park, May 2012

Miami University of Ohio, Department of Biology, Oxford, OH, April 2012

Tiachung University, Taichung, Taiwan, March 2011

Taiwan University, Taipei, Taiwan, March 2011

Dunghua University, Dungha, Taiwan, March 2011

North American Forest Ecology Workshop, Richmond, VA, June 2011

Kentucky Prescribed Fire Council, First Annual Meeting, Greenville, KY, September 2009

Kentucky Prescribed Fire Council, June 2008.

Virginia Tech, Department of Forestry. November 2007.

Eastern Kentucky University, Department of Biology. September 2006.

Centre College, Department of Biology, Centre, Kentucky. March 2006.

Alabama A&M University, Department of Forestry. January 2006.

Northern Kentucky University, Department of Biology. November 2004.

University of Louisville, Department of Biology. 2002.

Eastern Kentucky University, Department of Biology. 2002.

Ohio University, Department of Environmental and Plant Biology. 2002.

Colorado State University, Natural Resources Graduate Student Colloquium. 2001.

Institute of Ecosystem Studies, Millbrook, NY. 2000.

Ohio State University, Dept. of Evolution, Ecology, and Organismal Biology, 2000.

Third International Conference on Long-Term Ecological Research in East Asia-Pacific Region in Seoul, Korea, 1999

University of Northern Iowa, Department of Biology. 1999.

Bryn Mawr, Environmental Sciences Group. 1999.

Cornell University, Department of Natural Resources. 1999.

University of Illinois, Department of Biology. 1995.

University of New Hampshire, Department of Natural Resources. 1994.

University of Louisville, Biology Department. 1994.

Institute of Ecosystem Studies, Millbrook, NY. 1993.

Professional Service

Extramural Advisory Committees:

Member, Advisory Board of the USDA-USDI Joint Fire Science Program-funded Consortium of Appalachian Fire Managers and Scientists, 2015-present.

Member, Steering Committee member for the 2015 5th Fire and Oaks conference, held in Alabama, 2015.

Prescribed Fire Task Force, Convened by the Kentucky Division of Forestry, 2001- 2003.

Steering Committee, Conference on "Fires, People, and the Central Hardwood Landscape," held March 12-14, 2000.

Natural Areas Scientific Advisory Committee, Bernheim Arboretum and Research Forest, Bardstown, KY. 1999-2003.

Research Advisory Committee, National Outdoor Leadership School, Lander, WY. 1990-2001.

Advisory Board, Raven Run Nature Sanctuary, Lexington, KY. 1994-1997

Presentations and trainings:

Fire Ecology module of the National Advanced Silviculture Program, Morehead, KY, May 2015.

Invited presentation, KY-TN Prescribed Fire Council Meeting, July 2016.

Invited presentation: 5th Fire in Eastern Oaks Conference, Tuscaloosa, Alabama, May 2015.

Fire Ecology module of the National Advanced Silviculture Program, Mountain Module, May 2015.

Timber Quality Workshop, Oak Woodlands and Forests Fire Consortium, October 16-7, 2013, Poplar Bluffs, MO.

Workshop on Ecological Burning (Rx 301), September 24, 2011, Greenville, KY.

Cumberland Plateau Prescribed Fire Workshop, August 11-13, 2008. Planned, organized and convened two-day workshop with Daniel Boone National Forest partners, held at Natural Bridge State Park.

Fire ecology in upland oak ecosystems. Presentation for USFS NASP training, June 2008, Asheville, NC.

Fire and oak ecosystems on the Cumberland Plateau. Training presentation for Rx-310, *Introduction to Fire Effects* class, December 5, 2007, London, KY.

Fire ecology and management in the Cumberlands. Presentation to the *Scientific Foundations of Conservation Planning in the Cumberland Plateau and Mountains* conference, Knoxville, TN, November 13-14, 2007.

Prescribed fire and oak regeneration, Presentation to Oak Regeneration and management, Professional Forestry Workshop, October 3-4, 2007, Lexington, KY.

Fire ecology and research in Appalachian hardwood forests. One-day presentation as part of the US Forest Service PASS (Program of Advanced Silvicultural Studies) Training, Mountain Module Section, May 2006, Asheville, NC.

Fire ecology and management in the central hardwood forest. Two-day presentation as part of the US Forest Service PASS Training, June 2004, Asheville, NC.

Fire and oak regeneration in the central Appalachians. Presented to the Joint Fire Science Program Annual Scientists Meeting, Phoenix, AZ, March 2003.

Prescribed fire effects in oak-pine forests. Presented to East Kentucky Chapter, Society of American Foresters, September 2001.