

CHRISTOPHER DOUGLAS BARTON

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Professor of Forest Hydrology and Watershed Management
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(a) Professional Preparation

Institution and Location	Major	Degree	Year
Centre College, Danville, KY	Biology	B.S.	1989
University of Kentucky, Lexington, KY	Plant and Soil Science	M.S.	1997
University of Kentucky, Lexington, KY	Soil Science	Ph.D.	1999

(b) Appointments

2013-Present	Professor, Department of Forestry, University of Kentucky, Lexington, KY.
2015–2018	Director, University of Kentucky Appalachian Center, Lexington, KY.
2008–2013	Associate Professor, Department of Forestry, University of Kentucky, Lexington, KY.
2003–2008	Assistant Professor, Department of Forestry, University of Kentucky, Lexington, KY.
2002–2003	Research Hydrologist, USDA Forest Service, Charleston, SC.
1999–2002	Postdoctoral Research Soil Scientist, USDA Forest Service, Charleston, SC.

(c) Current Research

Barton, Christopher, James Fox, Kenton Sena (UK Group) and others. 2024-2028. Collaborative Research: RII Track-2 FEC: The Flooding in Appalachian Streams and Headwaters (FLASH) Initiative: Mitigating impacts of climate change and flash flooding in Appalachia. National Science Foundation EPSCoR Track 2, \$1,082,580.

Barton, Christopher. 2023-2027. Recovery of the Federally Threatened White Fringeless Orchid (*Platanthera integrilabia*) on the Daniel Boone National Forest in Kentucky. KY Energy and Environmental Cabinet, \$60,985. Barton PI.

Crocker, M, E. Santillan-Jimenez, I. Escobar, C. Agouridis, C. Barton, T. Mark, S. DeBolt, L. Moe and J. Landon. 2019-2025. NRT: IN FELLOWS & an Academy of Innovators at the Nexus of Food, Energy & Water Systems. National Science Foundation. \$2,998,456. Barton-col.

(d) Synergistic activities

1. President and Founder of Green Forests Work, a 501(c)3 organization established to reforest land affected by surface mining in Appalachia. Since 2009 Green Forests Work has planted over 7 million trees and engaged over 25,000 volunteers in service-learning projects.
2. Fulbright Distinguished Chair in Science, Technology and Innovation. Position is affiliated with the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in Brisbane, Australia, Jan 1 – June 30, 2023.
3. National Academies of Science, Engineering and Medicine's Committee on Earth Resources. Jan 2022 – December 2027.
4. Served as major Professor on 24 M.S. and 4 Ph.D. (plus two current) students. All have performed studies on water and forest resources in the Appalachian region.
5. Major Awards: • Kentucky Water Research Institute, William Barfield Award for Outstanding Contributions in Water Resources Research; 2023, American Society of Mining and Reclamation, William T. Plass Lifetime Achievement Award; 2020, Kentucky Department of Environmental Protection's Environmental Excellence Award for Resource Caretaker; 2018, American Society of Mining and Reclamation, Richard and Lela Barnhisel Researcher of the Year Award; 2015, United States Environmental Protection Agency; Scientific and Technological Achievement Award; Providing Science to Inform Decisions on Compensatory Mitigation of Headwater Streams Affected by Surface Mining; 2014, United States Department of Interior; Partners in Conservation Award; Appalachian

Regional Reforestation Initiative; 2012. Association of Public and Land-Grant Universities; Exemplary Program Award; UK Mined Land Reforestation Project; 2011. United States Department of Interior; Presidential Migratory Bird Federal Stewardship Award; Appalachian Regional Reforestation Initiative; 2011.

6. Serve on editorial board of the International Journal of Mining, Reclamation and Environment and the International Journal of Phytoremediation.

(e) Recent Publications (2019-2025)

Anna M. Branduzzi, **Christopher D. Barton**, Carol C. Baskin, Robert Paratley, Todd Kuntz. 2025. Plant Community Change Postsoil Decompaction on a 40-Year-Old Legacy Surface Mine in West Virginia, USA: A Vegetation and Seed Bank Study. Reclamation Sciences. In-press.

Emily N. Byers, Tiffany L. Messer, Craig Tobias, Daniel N. Miller, **Christopher Barton**, Jason Unrine, Carmen Agouridis. 2025. Isotopically tracing the impact of water contaminant “cocktails” on nitrogen pathways in constructed treatment wetlands. Water Research. In-press:
<https://doi.org/10.1016/j.watres.2025.124294>

Emily Nottingham Byers, Tiffany L. Messer, Jason Unrine, **Christopher Barton**, Carmen Agouridis, Daniel N. Miller. 2025. The occurrence and persistence of surface water contaminants across different landscapes, Science of The Total Environment, Volume 958, 2025, 177837.
<https://doi.org/10.1016/j.scitotenv.2024.177837>.

Emily N. Byers, Tiffany L. Messer, Daniel N. Miller, **Christopher Barton**, Jason Unrine, Carmen Agouridis. 2025. Contaminant mixtures and their impact on nitrate removal in wetlands: A mesocosm study. Journal of Environmental Management, Volume 383, 2025, 125518, ISSN 0301-4797.
<https://doi.org/10.1016/j.jenvman.2025.125518>.

Sherman, Lauren; **Christopher D. Barton**; Jacquelyn C. Guzy; Rebecca N. Davenport; John J. Cox; Jeffery L. Larkin; Todd Fearer; Jillian C. Newman; Steven J. Price. 2024. Wetland Creation and Reforestation of Legacy Surface Mines in the Central Appalachian Region (USA): A Potential Climate-Adaptation Approach for Pond-Breeding Amphibians? Water, DOI: [10.3390/w16091202](https://doi.org/10.3390/w16091202)

Hackworth, Zachary; John J Cox; Jeffery L Larkin; Wendy Leuenberger; Joshua M Felch; Allison G Davis; **Christopher D Barton**. 2024. Ten-Year Response of Riparian-Associated Songbirds to Implementation of Streamside Management Zones in Watershed-Scale Harvests in the Appalachian Mountains. Journal of Forestry, DOI: [10.1093/jofore/fvae008](https://doi.org/10.1093/jofore/fvae008)

Price, Steven, Rebecca Davenport, Lauren Sherman, Jeffery Larkin, John Cox, Jillian Newman, **Christopher Barton**. 2024. Response of Red-backed Salamander (*Plethodon cinereus*) to the Forestry Reclamation Approach on Legacy Surface Mines in the Monongahela National Forest (West Virginia). Ecological Restoration, Volume 42, Number 2, June 2024, pp. 105-107. DOI: 10.3368/er.42.2.105

Rhodes, Benjamin and **Christopher Barton**. 2024. Comparing the response of red spruce plantings on legacy coal mines and old-field restorations sites in the WV highlands. Natural Areas Journal. 44(2) : 65-75. <https://doi.org/10.3375/2162-4399-44.2.65>

Snyder, Briana, **Christopher Barton**, Steven Price, Michael Lacki and Zach Hackworth. 2024. Bat activity on high elevation reforested coal mines in the Monongahela National Forest, WV. Ecological Restoration, Volume 42, Number 2, June 2024, pp. 108-122. DOI: 10.3368/er.42.2.108

Sena, Kenton L., Jerrica K. Flynn, Wendy Leuenberger, Randall Kolka, and **Christopher D. Barton**. 2023. Long-term changes in coarse woody debris abundance in three Appalachian headwater streams with differing best management practices. Frontiers in Forest and Global Change. Volume 6 – 2023, <https://doi.org/10.3389/ffgc.2023.1242878>

Mahoney, D.T., J.R. Christensen, H.E. Golden, C.R. Lane, G.R. Evenson, E. White, K.M. Fritz, E. D'Amico, **C.D. Barton**, T.N. Williamson, K.L. Sena, C.T. Agouridis. 2023. Dynamics of streamflow permanence in a headwater network: insights from catchment-scale model simulations. *Journal of Hydrology*. 2023, 129422, <https://doi.org/10.1016/j.jhydrol.2023.129422>.

Williamson, Tanja N., Kenton L. Sena, Megan E. Shod and **Christopher D. Barton**. 2023. Four decades of regional wet deposition, local bulk deposition, and stream-water chemistry show the influence of nearby land use on forested streams in Central Appalachia. *Journal of Environmental Management*. 332, 117392. <https://doi.org/10.1016/j.jenvman.2023.117392>

Barton, Christopher, Patrick Angel, Geoffrey Bell, Theresa Burriss and Sarah Hall. 2023. Bringing Back the Forest: University outreach, community engagement, and partnerships for the reforestation of coal mines in Appalachia. Pp, 24-33. *In*. Rebecca Adkins Fletcher, Rebecca-Eli Long, and William Schumann (Eds), *Engaging Appalachia: A Guidebook for Building Capacity and Sustainability*. University Press of Kentucky, Lexington, KY.

Branduzzi, Anna M., **Christopher D. Barton**, Carol C. Baskin, and Allison G. Davis. 2023. Evaluating the use of woody debris to enhance native plant establishment from seeds on legacy coal mines in West Virginia (USA). *Native Plants Journal*. 23(3): 272-287.

Lambert, M, A.N. Drayer, W. Leuenberger, S.J. Price and **C. D. Barton**. 2021. Evaluation of created wetlands as amphibian habitat on a reforested surface mine. *Ecological Engineering*. <https://doi.org/10.1016/j.ecoleng.2021.106386>

Hutton, J.M., S.J. Price, S.C. Richter and **C.D. Barton**. 2021. Diet composition: A proximate mechanism explaining stream salamander declines in surface waters with elevated specific conductivity. *Global Ecology and Conservation*. <https://doi.org/10.1016/j.gecco.2021.e01719>

Sena, K.L., Yeager, K.M., **Barton, C.D.**, Lhotka, J.M., Bond, W.E., and Schindler, K.J. 2021. Development of Mine Soils in a Chronosequence of Forestry-Reclaimed Sites in Eastern Kentucky. *Minerals* 2021, 11, 422. <https://doi.org/10.3390/min11040422>

Sena, Kenton L., T.N. Williamson, and **C.D. Barton**. 2021. The Robinson Forest environmental monitoring network: Long-term evaluation of streamflow and precipitation quantity and stream-water and bulk deposition chemistry in eastern Kentucky watersheds. *Hydrological Processes*. 2021; 35:e14133. <https://doi.org/10.1002/hyp.14133>

Zipper, Carl, Carmen Agouridis, **Christopher Barton** and Jeff Skousen. 2021. Conversion Options for Mining-Affected Lands and Waters in Appalachia. Pp, 167-192. *In*. Carl E. Zipper and Jeff Skousen (Eds), *Appalachia's Coal-Mined Landscapes: Resources and Communities in a New Energy Era*. Springer Nature, Switzerland.

Zipper, Carl, Jeff Skousen and **Christopher Barton**. 2021. The Appalachian Coalfield's Energy Transition and Prospects. Pp, 337-351. *In*. Carl E. Zipper and Jeff Skousen (Eds), *Appalachia's Coal-Mined Landscapes: Resources and Communities in a New Energy Era*. Springer Nature, Switzerland.

Williamson T.N., and **C.D. Barton**. 2020. Hydrologic modeling to examine the influence of the forestry reclamation approach and climate change on mineland hydrology, *Science of the Total Environment* (2020), <https://doi.org/10.1016/j.scitotenv.2020.140605>

Bowker, Daniel, Jeffrey Stringer and **Christopher Barton**. 2020. Influence of timber harvesting operations and streamside management zone effectiveness on sediment delivery to headwater streams in Appalachia. *Forests* 2020, 11, 623; doi:10.3390/f11060623

Kenton Sena, Joshua Metzmeier, Brandon Smith, Beth Hansen, and **Chris Barton**. 2020. Climate Change and Invasive Species: Challenges and Opportunities for Forest Establishment on Appalachian Surface Mines. *Journal of Sustainable Forestry*. DOI: 10.1080/10549811.2020.1768872

Hutton, J. M., Price, S. J., Bonner, S. J., Richter, S. C., and **Barton, C. D.** 2020. Occupancy and Abundance of Stream Salamanders Along a Specific Conductance Gradient. *Freshwater Science*. 39(3):443–446. DOI: 10.1086/709688.

Branduzzi, A.M., **C.D. Barton** and A. Lovell. 2020. First-Year Survival of Native Wetland Plants in Created Vernal Pools on an Appalachian Surface Mine. *Ecological Restoration*. 38:2.

Dement, W.T., Z.J. Hackworth, J.M. Lhotka and **C.D. Barton**. 2020. Plantation development and colonization of woody species in response to post-mining spoil preparation methods: A 19-year evaluation. *New Forests* doi:10.1007/s11056-019-09769-y

William Burgos, Luis E Castillo Meza, Charles A Cravotta III, Travis L Tasker, Nathaniel R Warner, W L Daniels, Zenah W Orndorf, Timothy Bergstresser, Amy Douglass, George A Kimble, Joelle Streczywik, **Christopher Barton**, Stephanie Fulton and Aaron A Thompson. 2020. Batch extraction methods to estimate total dissolved solids (TDS) release from coal refuse and overburden. *Applied Geochemistry*: 115, 104540. <https://doi.org/10.1016/j.apgeochem.2020.104540>

Barton, Christopher. 2020. Facilitated Transport of Zinc on Plastic Colloids Through Soil Columns. Chapter 8. Pp, 127 – 135. *In*. N. S. Bolan, M. B. Kirkham, C. Halsband, D. Nugegoda and Y. S. Ok (Eds), *Particulate Plastics in Terrestrial and Aquatic Environments*. CRC Press.

Hall, Sarah L., **Christopher D. Barton**, Kenton L. Sena and Patrick Angel. 2019. Reforesting Appalachian surface mines from seed: A five-year black walnut pilot study. *Forests*: 10(7), 573; <https://doi.org/10.3390/f10070573>

Fritz, Ken M., Greg J. Pond, Brent R. Johnson and **Chris D. Barton**. 2019. Coarse particulate organic matter dynamics in ephemeral tributaries of a Central Appalachian stream network. *Ecosphere*: 10(3):e02654. 10.1002/ecs2.2654. <https://doi.org/10.1002/ecs2.2654>

Sena, Kenton, Jian Yang, Alysia Kohlbrand, Tyler Dreaden and **Christopher Barton**. 2019. Landscape variables influence *Phytophthora cinnamomi* distribution within a forested Kentucky watershed. *Forest Ecology and Management*: 436 39-44. <https://doi.org/10.1016/j.foreco.2019.01.008>

Fletcher, Dean; Lindell, Angela; Seaman, John; Stankus, Paul; Fletcher, Nathaniel; **Barton, Christopher**; Biemiller, Richard; McArthur, J. 2019. Sediment and Biota Trace Element Distribution in Streams Disturbed by Upland Industrial Activity. *Environmental Toxicology and Chemistry*: 38(1) 115-131. <https://doi.org/10.1002/ect.4287>