

# Audrey Barker Plotkin

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## Professional Experience

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2015–present	Senior Scientist & Site Manager, Harvard Forest, Harvard University
2002 – 2015	Site & Research Coordinator, Harvard Forest, Harvard University
1998 – 2001	Research Assistant, Harvard Forest, Harvard University
1998	Legislative Intern, University of Maine, College of Natural Sciences, Forestry, and Agriculture & Maine State Legislature
1995 – 1997	Research and Teaching Assistant, University of Maine, Departments of Forest Ecosystem Science and Forest Management
1995	Assistant Manager, Grindstone Farm, Pulaski, New York
1994	Research Fellow/Intern Coordinator, The Land Institute, Salina, KS

## Professional Certifications

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2009 – present	Massachusetts Licensed Forester #385
2019	Trained Facilitator, <i>Entering Research</i> (Center for the Improvement of Mentored Experiences in Research)

## Education

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### University of Massachusetts, Amherst, Massachusetts.

PhD in Environmental Conservation, May 2024. Dissertation title: “Causes and Consequences of Tree Mortality from Invasive Insects” Advisor: Bethany Bradley.

### University of Maine, Orono, Maine

MS in Forestry, May 1998. Thesis title: "Influences of age and canopy position on the growth efficiency of eastern white pine (*Pinus strobus* L.)" Advisor: Robert Seymour.

### The Land Institute, Salina, Kansas

Post-Baccalaureate Intern, 1993. Interdisciplinary, post-graduate curriculum in natural systems agriculture.

### Carleton College, Northfield, Minnesota

BA in Biology, *magna cum laude*, distinction in major, Natural History Concentration, June 1992.

## Publications (\* indicates undergraduate advisee)

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### Journal Articles

**Barker Plotkin, A.**, Orwig, D. A., MacLean, M. G., Ellison, A. M. 2024. Logging response alters trajectories of reorganization after loss of a foundation tree species. *Ecological Applications* 34: e2957. <https://doi.org/10.1002/eap.2957>

Rastetter, E.B., B.L. Kwiatkowski, D.W. Kicklighter, **A. Barker Plotkin**, H. Genet, J.B. Nippert, K. O'Keefe, S.S. Perakis, S. Porder, S.S. Roley, R.W. Ruess, J.R. Thompson, W.R. Wieder, K. Wilcox, and R.D. Yanai. 2022. N and P constrain C in ecosystems under climate change: Role of nutrient redistribution, accumulation, and stoichiometry. *Ecological Applications*. e2684. <https://doi.org/10.1002/eap.2684>

Morelli, T.L., C.J. Brown-Lima, J.M. Allen, E.M. Beaury, E.J. Fusco, **A. Barker-Plotkin**, B.B. Laginhas, B. Quirion, B. Griffin, B. McLaughlin, L. Munro, N. Olmstead, J. Richburg, & B.A. Bradley. 2021. Translational Invasion Ecology: Bridging research and practice to address one of the greatest threats to biodiversity. *Biological Invasions* 23(11):3323-3335.

**Barker Plotkin, A.**, Blumstein, M., Laflower, D., Pasquarella, V. J., Chandler, J. L., Elkinton, J. S., Thompson, J. R. 2021. Defoliated trees die below a critical threshold of stored carbon. *Functional Ecology* 10.1111/1365-2435.13891: 12 pp.

*Shortlisted for [Haldane Prize](#); Press: [Northern Woodlands](#); [NEPM radio](#); [Harvard Gazette's 2021-2022 Notable Moments](#)*

Ellison, A. M., **Barker Plotkin, A.**, Patel, M. V., Record, S. 2021. Broadening the ecological mindset. *Ecological Applications* 10.1002/eap.2347: 3 pp.

Pasquarella, V. J., Mickleby, J. G., **Barker Plotkin, A.**, Maclean, R. G., Anderson, R. M., Brown, L. M., Wagner, D. L., Singer, M. S., & Bagchi, R. 2021. Predicting defoliator abundance and defoliation measurements using Landsat-based condition scores. *Remote Sensing in Ecology and Conservation* 7(4): 592-609. <https://doi.org/10.1002/rse2.211>

\*Conrad-Rooney, E., **A. Barker-Plotkin**, V.J. Pasquarella, J. Elkinton, J. L. Chandler, and J. Hatala Matthes. 2020. Defoliation severity is positively related to soil solution nitrogen availability and negatively related to soil nitrogen concentrations following a multi-year invasive insect irruption. *AoB PLANTS*. plaa059. <https://doi.org/10.1093/aobpla/plaa059>

Finzi, A. C., Giasson, M.-A., **Barker Plotkin, A.**, Aber, J. D., Boose, E. R., Davidson, E. A., Dietze, M. C., Ellison, A. M., Frey, S. D., Goldman, E., Keenan, T. F., Melillo, J. M., Munger, J. W., Nadelhoffer, K. J., Ollinger, S. V., Orwig, D. A., Pederson, N., Richardson, A. D., Savage, K., Tang, J., Thompson, J. R., Williams, C. A., Wofsy, S. C., Zhou, Z., Foster, D. R. 2020. Carbon budget of the Harvard Forest Long-Term Ecological Research site: pattern, process, and response to global change. *Ecological Monographs* 10.1002/ECM.1423: 95 pp. **(co-first author)**. [Cover story of November 2020 issue](#)

Sass, E.M., A.W. D'Amato, D.R. Foster, **A. Barker Plotkin**, S. Fraver, P.K. Schoonmaker, and D.A. Orwig. 2018. Long-term influence of disturbance-generated microsites on forest

structural and compositional development. *Canadian Journal of Forest Research* 48:1-8.  
<https://doi-org.ezp-prod1.hul.harvard.edu/10.1139/cjfr-2018-0097>

Trotsiuk, V., N. Pederson., D.L. Druckenbrod, D.A. Orwig, D.A. Bishop, **A. Barker Plotkin**, S. Fraver, and D. Martin-Benito. 2018. Testing the efficacy of tree-ring methods for detecting past disturbances. *Forest Ecology and Management* 425: 59-67.

**Barker Plotkin, A.**, P.K. Schoonmaker, \*B. Leon, and D.R. Foster. 2017. Microtopography and ecology of pit-mound structures in second-growth versus old-growth forests. *Forest Ecology & Management* 404C:14-23.

Case, B., H. Buckley, **A.A. Barker Plotkin**, D. Orwig, and A. Ellison. 2017. When a foundation crumbles: forecasting forest dynamics following the decline of the foundation species *Tsuga canadensis*. *Ecosphere* 8(7): e01893. 10.1002/ecs2.1893

D'Amato, A., D.A. Orwig, D.R. Foster, **A. Barker Plotkin**, P.K. Schoonmaker, and \*M. Wagner. 2017. Long-term structural and biomass dynamics of virgin *Tsuga canadensis*-*Pinus strobus* forests after hurricane disturbance. *Ecology* 98: 721-733.

Case, B.S., H.L. Buckley, **A. Barker Plotkin**, and A.M. Ellison. 2016. Using codispersion analysis to quantify temporal changes in the spatial pattern of forest stand structure. *Chilean Journal of Statistics* 7:3-15.

Dye, A., **A. Barker Plotkin**, D. Bishop, A. Hessler, N. Pederson, B. Poulter. 2016. Comparing tree-ring and permanent plot estimates of aboveground woody production in three Eastern U.S. Forests. *Ecosphere* 7(9):e01454. 10.1002/ecs2.1454

Faison, E.K., S. DeStefano, D.R. Foster, and **A. Barker-Plotkin**. 2016. Functional response of ungulate browsers in disturbed eastern hemlock forests. *Forest Ecology and Management* 362: 177-183.

Ellison, A.M., **A.A. Barker Plotkin**, and S. Khalid. 2015. Foundation species loss and biodiversity of the herbaceous layer in New England forests. *Forests* 7, 9; doi:10.3390/f7010009.

\*Eisen, K. and **A. Barker Plotkin**. 2015. Forty years of forest measurements support steadily increasing aboveground biomass in a maturing, *Quercus*-dominant northeastern forest. *Journal of the Torrey Botanical Society* 142: 97-112.

Ellison, A.M., M. Lavine, \*P.B. Kerson, **A.A. Barker Plotkin**, and D.A. Orwig. 2014. Building a foundation: land-use history and dendrochronology reveal temporal dynamics of a *Tsuga canadensis* (Pinaceae) forest. *Rhodora* 116:377-427. doi: 10.3119/14-04

**Barker Plotkin, A.**, D. Foster, J. Carlson, and A. Magill. 2013. Survivors, not invaders, control forest development following simulated hurricane. *Ecology* 94:414-423.  
<http://dx.doi.org/10.1890/12-0487.1>

Orwig, D.A., **A.A. Barker Plotkin**, E.A. Davidson, H. Lux, K.E. Savage, and A.M. Ellison. 2013. Foundation species loss affects vegetation structure more than ecosystem function in a northeastern USA forest. *PeerJ* 1:e41; DOI 10.7717/peerj.41

Farnsworth, E.J., **A.A. Barker Plotkin** and A.M. Ellison. 2012. The relative contributions of seed bank, seed rain, and understory vegetation dynamics to the reorganization of *Tsuga canadensis* forests after loss due to logging or simulated attack by *Adelges tsugae*. *Canadian Journal of Forest Research* 42(12): 2090-2105. 10.1139/cjfr-2012-0305

**Barker Plotkin, A.** and P.B. Tomlinson. 2010. The flowering of botany at the Harvard Forest. *Plant Science Bulletin* 56(2):78-84.

Ellison, A.M., **A.A. Barker-Plotkin**, D.R. Foster, and D.A. Orwig. 2010. Experimentally testing the role of foundation species in forests: the Harvard Forest Hemlock Removal Experiment. *Methods in Ecology and Evolution* 1: 168-179. DOI: 10.1111/j.2041-210X.2010.00025.x

**Barker Plotkin, A.** and D. Foster. 2006. Sustaining long-term research through changing times at the Harvard Forest. Pages 41-53 in Irland, L.C., A.E. Camp, J.C. Brissette, and Z.R. Donohew (editors). *Long-term Silvicultural & Ecological Studies: Results for Science and Management*. GISF Research Paper 005, Yale University.

Fajvan, M., **A. Barker Plotkin**, and D.R. Foster. 2006. Modeling tree regeneration height growth after an experimental hurricane. *Canadian Journal of Forest Research* 36:2003-2014.

Turner, B.L. II., S. Cortina Villar, D. Foster, J. Geoghegan, E. Keys, P. Klepeis, D. Lawrence, P. Macario Mendoza, S. Manson, Y. Ogneva-Himmelberger, **A. Barker Plotkin**, D. Perez Salicrup, R. Roy Chowdhury, B. Savitsky, L. Schneider, B. Schmook, and C. Vance. 2001. Deforestation in the southern Yucatan peninsular region: an integrative approach. *Forest Ecology and Management* 154:353-370.

### **Book Chapters**

**Barker Plotkin, A.**, J. O'Keefe and D. Foster. 2015. Harvard University Forest, Massachusetts, United States of America. Pages 69-77 in J. Siry, P. Bettinger, K. Merry, D. Grebner, K. Boston, and C. Cieszewski (editors). *Forest Plans of North America*. Academic Press, San Diego, CA.

Foster, D.R., B. Baiser, **A. Barker Plotkin**, A.W. D'Amato, A.M. Ellison, D.A. Orwig, W.W. Oswald, and J.R. Thompson. 2014. *Hemlock: A Forest Giant on the Edge*. Yale University Press, Yale University.

**Barker Plotkin, A.** 2013. The farm ecosystem: in perfect harmony. In Dover, M., C. Hanna and R. Reid, editors. *Earth Matters: Essays on the Nature of the Pioneer Valley*. Levellers Press, Amherst, MA.

Chowdhury, R. R., L. Schneider, with Y. Ogneva-Himmelberger P. Marcario Mendoza, S. C. Villar, and **A. Barker Plotkin**. 2004. Land Cover and Land Use: Classification and Change Analysis. In B. L. Turner, J. Geoghegan, and D. R. Foster (Eds.), *Integrated Land Change Science and Tropical Deforestation in Southern Yucatán: Final Frontiers*. Oxford University Press, New York.

Foster, D., S. Cooper-Ellis, **A. Barker Plotkin**, G. Carlton, R. Bowden, A. Magill, and J. Aber. 2004. Simulating a catastrophic hurricane. Pages 235-258 in D. Foster and J. Aber (Eds.), *Forests in Time: The Environmental Consequences of 1000 Years of Change in New England*. Yale University Press, New Haven, CT.

Boose, E. R., D. R. Foster, **A. Barker Plotkin**, and B. Hall. 2003. Geographical and historical variation in hurricanes across the Yucatan Peninsula. Pages 495-516 in A. Gómez-Pompa, M. F. Allen, S. L. Fedick, and J. J. Jiménez (Eds.), *Lowland Maya Area: Three Millennia at the Human-Wildland Interface*. Haworth Press, New York.

### **Book Reviews**

**Barker Plotkin, A.** 2015. Seeing the forest and the trees as the world changes. Book Reviews. *Ecology* 96:2029–2030. <http://dx.doi.org/10.1890/BR15-28.1>

### **Outreach, Policy, and Technical Publications**

Buonaiuto, D., **A. Barker Plotkin**, S. Bois, M. Brinka, E. Colberg, T.L. Morelli. 2024. Where there is a when there is a way: Shifting phenology and windows of opportunity for control. Regional Invasive Species & Climate Change Research to Practice Paper, University of Massachusetts, Amherst, [10.7275/hd7v-h449](https://doi.org/10.7275/hd7v-h449)

O’Uhuru, A., **A. Barker Plotkin**, J. Dalaba, W. Pfadenhauer, A. Suzzi, and T.L. Morelli. 2022. “Are you Sleeping? Are you Sleeping? Predicting Invasion Potential of Non-Native Plants” Northeast RISCC Management Challenge, University of Massachusetts, Amherst, <https://doi.org/10.7275/7mep-fp25>

**Barker Plotkin, A.**, M. Graham MacLean, C. Cheng, E. Cousins, B. Lopez, A. O’uhuru. 2021. “Forest Pest Risk is Heating Up.” Northeast RISCC Management Challenge, University of Massachusetts, Amherst, <https://doi.org/10.7275/p217-7g43>

B.B. Laginhas, T.L. Morelli, **A. Barker-Plotkin**, E.M. Beaury, E. Cousins, S. Joubran, M. Nelson, S. Talbot, and B.A. Bradley. 2020. “Nuisance Neonatives: Guidelines for assessing range-shifting species” Northeast RISCC Management Challenge, University of Massachusetts, Amherst, <https://doi.org/10.7275/8n20-kk32>

Bradley, B.A., A. Bayer, B. Griffin, S. Joubran, B.B. Laginhas, L. Munro, S. Talbot, J.M. Allen, **A. Barker-Plotkin**, E.M. Beaury, C. Brown-Lima, E.J. Fusco, H. Mount, B. Servais, and T.L. Morelli. 2020. “Gardening with climate-smart native plants in the Northeast” Northeast RISCC Management Challenge, University of Massachusetts, Amherst, <https://doi.org/10.7275/mvej-dr35>

Beaury, E.M., **A. Barker-Plotkin**, C. Brown-Lima, E.J. Fusco, B. Griffin, S. Joubran, B.B. Laginhas, M.G. MacLean, and L. Munro, M. Nelson, S. Talbot, and B.A. Bradley. 2020. "Taking Action: Managing invasive species in the context of climate change" Northeast RISCC Management Challenge, University of Massachusetts, Amherst, <https://doi.org/10.7275/k8q5-4f71>

Faison, E. K., Orwig, D. A., Foster, D. R., Silver, E., Hall, B., Donahue, B. M., **Barker Plotkin, A.** 2014. Wildlands and Woodlands Stewardship Science: Manual for long-term forest monitoring. [https://harvardforest1.fas.harvard.edu/sites/harvardforest.fas.harvard.edu/files/publications/pdfs/Faison\\_W&WStewardshipScienceManual\\_2014.pdf](https://harvardforest1.fas.harvard.edu/sites/harvardforest.fas.harvard.edu/files/publications/pdfs/Faison_W&WStewardshipScienceManual_2014.pdf)

O'Keefe, J., **A. Barker Plotkin**, and D. Foster. 2008. The Harvard Forest Land Use Master Plan for the Second Century. <http://harvardforest.fas.harvard.edu/sites/harvardforest.fas.harvard.edu/files/publications/HF-masterplan-exec-summary.pdf>

**Barker, A.A.** 1998. A review of the current forestry audit programs in the Northeast. Report to the Joint Standing Committee on Agriculture, Conservation and Forestry. Office of Policy and Legal Analysis, Augusta, Maine.

## Grant Funding

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2024-2026	REU Site: Exploring Dynamic Ecosystems across Space and Time at the Harvard Forest, National Science Foundation DBI (PI), \$504,194.
2020-2023	REU Site: Summer Research Program in Ecology at the Harvard Forest: Diverse data networks for diverse data scientists, National Science Foundation DBI (PI), \$534,595. REPS Supplement 2021-2022, \$48,840
2019-2024	LTER: From Microbes to Macrosystems: Understanding the response of ecological systems to global change drivers and their interactions, National Science Foundation DEB (Co-PI; PI Jonathan Thompson), \$6,762,000
2019-2020	RAPID: Is Carbon Starvation a Proximal Cause of Tree Mortality from Defoliation? National Science Foundation DEB (Senior Personnel; PI Jonathan Thompson), \$99,340
2015-2019	REU Site: A forest full of Big Data: the Harvard Forest Summer Research Program in Ecology, National Science Foundation DBI (Co-PI as of September 2017), \$776,713
2011-2017	Working Forest Initiative, Massachusetts Department of Conservation & Recreation, total of \$23,152
2007-2008	Landowner Incentive Program, Massachusetts Division of Fisheries & Wildlife, \$37,405

## **Fellowships and Awards**

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Frank M. West Forestry Scholarship, University of Massachusetts, 2021

Dean's Distinction, Harvard University FAS, 2019

Ralph H. Griffin Memorial Scholarship 1997

George F. Dow and Fred Griffiee Scholarship 1996

Small Woodland Owners Association of Maine E. Parker Johnson Graduate Scholarship  
1996

New England-Atlantic Provinces Quebec Fellowship 1995-1996

National Merit Scholar 1988-1992

## **Selected Invited Presentations**

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UMass Extension Landscape, Nursery and Urban Forestry Program Invasive Insect Webinar Series, Online (1/2023)

Leadership Courage to Transform Workplace Climate (Panelist), AGU Virtual Town Hall Session (12/2022)

Monadnock Region Natural History Conference, Keene, NH (11/2022)

Oak Resiliency Learning Exchange Webinar & Field Tour (10/2021)

Iowa State Natural Resources Department Seminar, Online (4/2021)

Northeastern Forest Pest Council & Northeast Forest Fire Compact, Portland, ME (1/2020)

Northeast Natural History Conference, Cromwell, CT (5/2017)

University of Vermont, Biology Department Seminar, Burlington, VT (2/2015)

Harvard Forest Annual Ecology Symposium, Petersham, MA (2022, 2021, 2020, 2019, 2016, 2014, 2011, 2002, 2001)

Pine Barrens Research Forum, Brookhaven National Laboratory, Upton, NY (10/2013)

## **Service and Outreach**

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Leadership Team, Northeast Regional Invasive Species and Climate Change Network (2020 – 2024)

Program Committee for 2022 New England Society of American Foresters' Annual Meeting

Harvard Forest Code of Conduct Writing Team (2022)

External Reviewer for Carleton College Arboretum Program (2022)

Reviewer for NSF Graduate Research Fellowship Program (2022)

Harvard Forest Schoolyard Ecology Program, K-12 teacher field trips and presentations (2016 – present)

Reviewer for *Ecological Monographs, Ecosphere, Forest Ecology & Management, Northern Journal of Applied Forestry, PeerJ, Forests, Society & Natural Resources*

Organizer and fundraiser for North Amherst Community Farm Capital Campaign (2014-2016)

Forestry consultant to MassArt Graduate Program in Architecture and Drumlin Farm (2010)

Farmer selection panel for Grow Food Northampton (2010-2011)

## **Undergraduate Mentoring**

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Director of the Harvard Forest Summer Research Program in Ecology since 2019. This program offers an 11-week summer research experience to undergraduates from across the United States. More than two-thirds of the participants are from groups underrepresented in STEM. Students work in research teams with mentors (PIs, post-docs, and graduate students) and other undergraduates to develop team science skills.

**Undergraduate Mentees** (underlined names denote students who completed an honors thesis or journal article)

2024: Andra Benson; Willow Rhimyr

2023: Ainhoa Bezerra; Katherine Knight

2022: Abigail Guinan (UMass); Ellie Kerns; Matthew Peña; Grace Shiffrin

2021: Josiah Gummesson (UMass)

2019: Emma Conrad-Rooney; Sofia Kruszka; Samantha Matson; Nathan Oalican

2018: Emilio Arias; Saloni Shah

2017: Molly Leavens; Aaron Aguila

2015: Olutoyin Demuren; Katrina Fernald

2014: Jessica Robinson; Claudia Villar-Leeman

2013: Patrick O'Hara; Christine Pardo; Hannah Wiesner

2012: Anne Cervas

2011: Katherine Eisen; Collette Yee

2010: Meredith Kueny; Lianna Lee

2009: Brendan Gallagher; Susan Irizarry; Alanna Kasarjian; Margaret Wagner

2008: Cassandra Rivas; Jhessye Moore-Thomas

2007: Nicole Mercier; Jan Ng

2006: Brynne Simmons

2005: Bennet Leon; Natalie Levy; Mathew Trumbull

2004: Peter Bettman-Kerson; Kelley Sullivan



2003 & 2001: Kristin Wilson

2002: Jacqueline Guzman

2000: Sarah Martell

## **Professional Memberships**

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Ecological Society of America

Phi Kappa Phi

Sigma Xi

Phi Beta Kappa