

Leland K. Werden

CONTACT INFORMATION	Universitätstrasse 25 Zürich 8006, Switzerland	<i>E-mail:</i> lwerden@gmail.com <i>Website:</i> www.lwerden.com
RESEARCH INTERESTS	Restoration ecology, ecosystem ecology, nature-based solutions, climate change, forest ecology, biogeochemistry, plant ecophysiology, <i>ex situ</i> conservation, nature tech	
EDUCATION AND EXPERIENCE	Senior Scientist , Global Ecosystem Ecology Group, ETH Zürich, Switzerland 2024 - present	
	Postdoctoral Fellow , Global Ecosystem Ecology Group, ETH Zürich, Switzerland 2021 - 2024 Sponsoring scientist: Dr. Thomas W. Crowther	
	Director of Science , Plant-for-the-Planet, Tutzing, Germany 2021 - 2022	
	NSF Postdoctoral Fellow , Lyon Arboretum, University of Hawai'i, Honolulu, HI 2018 - 2021 Sponsoring scientist: Dr. Rakan A. Zahawi	
	Ph.D. , Plant and Microbial Biology, University of Minnesota, St. Paul, MN 2012 - 2017 Advisor: Dr. Jennifer S. Powers	
	B.A. , Environmental Science, Boston University, Boston, MA 2004 - 2008 Biology minor, Distinction in Biology, Phi Beta Kappa, Cum Laude	
	Researcher , Harvard University, Cambridge, MA 2008 - 2012 Supervisors: Dr. Steve C. Wofsy and Dr. J. William Munger	
	Undergraduate Research Assistant , Boston University, Boston, MA 2005 - 2008 Advisor: Dr. Adrien C. Finzi	
	REU Intern , Harvard Forest, Petersham, MA Summer 2007 Advisors: Dr. Steven C. Wofsy and Dr. J. William Munger	
AWARDS AND FELLOWSHIPS	United States National Science Foundation Postdoctoral Research Fellowship in Biology (\$138,000 over two years) April 2019 Graduate Research Fellowship (\$134,000 over three years) April 2012	
	Oak Spring Garden Foundation Fellowship in Plant Conservation Biology (\$10,000 + 2 week residency) December 2024	
	University of Minnesota Huempfer Fellowship (\$6,565) April 2017 Doctoral Dissertation Fellowship (\$25,000) March 2016 Best presentation award at Plant and Microbial Biology annual retreat April 2016 CBS Graduate Excellence Fellowship (\$45,000 over three years) March 2012	
	Missouri Botanical Garden Delzie Demaree Travel Award (\$500) October 2016	
EXTERNAL GRANTS	Science for Nature and People Partnership (\$298,123) May 2024 SNAPP Working Group and Post-doc Grant Co-PI with L. Toro, J. Powers, J. Delgado	
	Google Carbon Removal Research Awards (\$450,000) June 2023 Co-PI with D. Dent (PI) and T. Crowther	

RAIN foundation - Nancy and Lynn Carpenter Fund

Establishing the Las Hermanas Carpenter Scholarship at ETH Zürich (\$290,000) **April 2023**
Co-PI with R. Cole (PI) and T. Crowther

Yale University

Yale Center for Natural Carbon Capture Workshop Grant (\$22,000) **April 2023**
Co-organizer with L. Toro, M. Wong, D. Cusack, J. Powers, L. McCulloch

United States National Science Foundation: Division Of Environmental Biology

Spatial and temporal patterns of secondary tropical forest succession (\$596,552) **June 2020**
PIs K. Holl and R. Zahawi **I made substantial intellectual contributions to and wrote large components of this grant, however I am not officially listed as a co-PI.*

Doctoral Dissertation Improvement Grant (\$19,500) **April 2016**

Garden Club of America

Award in Tropical Botany (\$5,500) **March 2016**
Fellowship in Ecological Restoration (\$8,000) **March 2014**

International Association for Bear Research & Management

IBA Research & Conservation Grant with M. Ditmer and J. Vincent (\$2,500) **April 2014**

PEER-REVIEWED
PUBLICATIONS

* indicates undergraduate, ** master's student, *** or PhD student mentee

[Google Scholar stats - Dec. 2025](#): Lead author: 13 | Senior author: 2 | Citations: 1821 | h-index: 21

In my field, the first author is the lead author, and the final author is the senior author. I had my first senior-author publication in 2025.

47. Bravo-Monasterio, P., Martelli-Moya, E., Bustamante, M. **Werden, L.K.** 2026. Overcoming the mismatch between restoration planning and implementation: The critical role of smallholders in Chile. *Journal of Applied Ecology. In press.*

46. Delgado, G., van den Hoogen, J., Dent, D., Bradford-Lawrence, T., **Werden, L.K.**, Diaz, C., Jimenez Fajarado, J.A., Mendez, A., Navarrete Chacon, G., Coto, M., Vahlas, L., Crowther, T. 2026. Large-scale recovery in Costa Rica's payment for ecosystem service program. *Global Change Biology. In press.*

45. Rubio-Cuadrado, A., Menéndez-Miguélez, M., Cañellas, I., de Miguel, S., Erdozain, M., Hoffmann, J., Lapin, K., **Werden, L.K.**, Alberdi, I. 2026. Restoration information: A European database of ecological restoration knowledge from stakeholder surveys. *One Ecosystem* 11: e161148. DOI: 10.3897/oneeco.11.e161148

44. Erdozain, M., Alberdi, I., Aszalós, R., Bollmann, K., Detsis, V., Diaci, J., Dodan, M., Efthimiou, G., Gálhidy, L., Haase, M., Hoffmann, J., Jaymond, D., Johann, E., Jorgensen, H., Krumm, F., Kuuluvainen, T., Lachat, T., Lapin, K., Lindner, M., Madsen, P., Nichiforel, L., Pach, M., Paillet, Y., Palaghianu, C., Palau, J., Pemán, J., Peric, S., Raum, S., Schüler, S., Skrzyszewski, J., Svensson, J., Teeuwen, S., Vacchiano, G., Vandekerkhove, K., Cñellas, I., Menéndez-Miguélez, M., **Werden, L.K.**, Fleckenstein, S., Sotirov, M., Kazungu, M., Hunziker, M., Keersmaeker, L., Àvila, A., de-Miguel, S. 2025. The role of social, policy and economic forces in shaping forest restoration practices in Europe. 2026. *Land Use Policy* 161: 107876. DOI: j.landusepol.2025.107876

43. Toro, L., **Werden, L.K.** (equal contribution), Addo-Danso, S., Andersen, K., Batterman, S., Bradford, M., Bragadini, M., Choksi, P., Cole, R., Comita, L., Cusack, D., Dent, D. H., Dietherich, L., Fisher, J. B., Fleischer, K., Flores, M., Fuchslueger, L., Huanca-Nunez, N., Lienau, J., McCulloch, L., Morrissey, E., Powers, J. S., Sanchez-Julia, M., Valverde-Barrantes, O., Weissflog, A., Wong, M. 2025. Integrating belowground recovery into tropical forest restoration design and monitoring.

Bioscience 75(11): 937-952. DOI: 10.1093/biosci/biaf097

42. ***Gee, A., **Werden, L.K.**, Verduzco, O., Nie, R., Waring, B. 2025. Secondary succession of a seasonally dry tropical forest is taxonomically stochastic but functionally deterministic. *Forest Ecology and Management* 598(15): 123184. DOI: j.foreco.2025.123184
41. **Weber, M., Strijbis, J., Osner, N., Périquet-Pearce, S., Crowther, T.W., **Werden, L.K.** 2025. An open-source method for spatially and temporally explicit herbivory monitoring in semi-arid savannas. *Journal of Environmental Management* 337. DOI: j.jenvman.2025.124690
40. ***Calderón-Morales, E., **Werden, L.K.**, Smith-Martin, C.M., Waring, B.G., Cordero-Solorzano, R., Powers, J.S. 2025. Physiological and Growth Responses of Tropical Dry Forest Tree Seedlings to Water and Nutrient Additions: Comparisons Between Nitrogen Fixers and Non-Fixers. *Biotropica* 57:e70075. DOI: 10.1111/btp.70075
39. Lapin, K., Hoffmann, J., Dyderski, M., Roche, J., Lakatos, F., Menéndez-Miguélez, M., DeMiguel, S., Erdozain, M., Svensson, J., **Werden, L.K.**, Cañellas, I., Zoric, M., Alberdi, I. Challenges, Motivations, and Perspectives of Practitioners on Forest Restoration across Seven European Countries. *Restoration Ecology* 33(8): e70160. DOI: 10.1111/rec.70160
38. Menéndez-Miguélez, M., Rubio-Cuadrado, A., Bauhus, J., Cañellas, I., Crowther, T., de Miguel, S., Erdozain, M., Hoffmann, J., Kremer, K., Sotirov, M., Lapin, K., Lundhede, T., Jacobs, S., Pötzelsberger, E., **Werden, L.K.**, Alberdi, I. 2025. A comprehensive analysis of forest restoration practices across Europe: Ecological, economic, social and policy dimensions. *Ecological Indicators* 173. DOI: 10.1016/j.ecolind.2025.113348
37. Smith-Martin, C.M., Johnson, K.M., Urquhart, S., Carins-Murphy, M.R., Rodriguez Dominguez, C.M., Lucani, C., Corso, D., Choat, B., Gauthey, A., Perez-Martinez, L.V., McAdam, S.A.M., **Werden, L.K.**, Brodribb, T.J. 2025. Increasing air-filled vessels has little influence on vulnerability to drought-induced embolism in species with long maximum xylem vessel lengths but low vessel connectivity. *Tree Physiology*. DOI: 10.1093/treephys/tpaf041
36. Schwartz, N., Powers, J.S., **Werden, L.K.**, Hansen, W.D., Aing, C., Luch, P., Fajeau, M., Chhang, P., Seab, K., Sokh, H. 2025. Seeing the savanna through the trees: vegetation structure, composition and function along a forest savanna boundary in Cambodia. *Biotropica* 57 (1). DOI: 10.1111/btp.70000
35. **Werden, L.K.**, Cole, R.J., *Schönhofer, K., Averill, C., Holl, K.D., Zahawi, R.A., Schweizer, D., Calvo-Alvarado, J.C., Hamilton, D., Joyce, F.H., San-José, M., Hofhansl, F., Briggs, L., Rodríguez, D., Tingle, J., Chiriboga, F.E., Broadbent, E.N., Quirós Cedeño, G., Crowther, T.W. 2024. Assessing innovations for upscaling forest landscape restoration. *One Earth* 7(9): 1515-1528. DOI: 10.1016/j.oneear.2024.07.011
34. Cole, R.J., **Werden, L.K.** (equal contribution), Chiriboga, F.E., *Quirós Cedeño, G., *Mendez Quiros, K., Crowther, T.W. 2024. Forest restoration in practice across Latin America. *Biological Conservation* 294. DOI: 10.1016/j.biocon.2024.110608 **Media coverage from Carbon Pulse*
33. Hasler, N., Williams, C.A., Denney, V.C., Ellis, P.W., Terasaki Hart, D.E., Wolff, N.H., Yeo, S., Crowther, T.W., **Werden, L.K.**, Cook-Patton, S.C. 2024. Accounting for albedo change to identify climate positive tree cover restoration. *Nature Communications*. DOI: 10.1038/s41467-024-46577-1 **Media coverage from World Economic Forum, MSN, and others*
32. Erdozain, M., Alberdi, I., Aszalós, R., Bollmann, K., Detsis, V., Diaci, J., Dodan, M., Efthimiou, G., Gálhidy, L., Haase, M., Hoffmann, J., Jaymond, D., Johann, E., Jørgensen, H., Krumm, F.,

- Kuuluvainen, T., Lachat, T., Lapin, K., Lindner, M., Madsen, P., Nichiforel, L., Pach, M., Paillet, Y., Palaghianu, C., Palau, J., Pemán, J., Perić, S., Raum, S., Schüller, S., Skrzyszewski, J., Svensson, J., Teeuwen, S., Vacchiano, G., Vandekerckhove, K., Cañellas, I., Menéndez-Miguélez, M., **Werden, L.K.**, Àvila, A., de-Miguel, S. 2024. The Evolution of Forest Restoration in Europe: A Synthesis for a Step Forward Based on National Expert Knowledge. *Current Forestry Reports* 11(4): 1-19. DOI: 10.1007/s40725-024-00235-3
31. Schweizer, D., Cole, R.J., **Werden, L.K.**, *Quirós Cedeño, G., *Navarro, K., *Esquivel, J.M., Rodriguez, D., Max, S., Chiriboga, F.E., Zahawi, R.A., Holl, K.D., Crowther, T.W. 2024. Review and assessment of smartphone apps for forest restoration monitoring. *Restoration Ecology*: e14136. DOI: 10.1111/rec.14136
30. Menéndez-Miguélez, M., Rubio-Cuadrado, A., Cañellas, I., Erdozain, M., de Miguel, S., Lapin, K., Hoffmann, J., Svensson, J., **Werden, L.K.**, Alberdi, I. 2024. How to measure outcomes in forest restoration? A European review of success and failure indicators. *Frontiers in Forests and Global Change* 7. DOI: 10.3389/ffgc.2024.1420127
29. Smith, G.R., Bello, C., Bialic-Murphy, L., Clark, L., Delavaux, C., Fournier de Laurière, C., van den Hoogen, J., Lauber, T., Ma, H., Maynard, D., Mirman, M., Mo, L., Rebindaine, D., Reek, J., **Werden, L.K.**, Wu, Z., Yang, G., Zhao, Q., Zohner, C., Crowther, T. 2024. Ten simple rules for using large language models in science, version 1.0. *PLOS Computational Biology* 20(1): e1011767. DOI: 10.1371/journal.pcbi.1011767
28. **Werden, L.K.**, Averill, C., Crowther, T.W., *Calderón-Morales, E., Toro, L., Alvarado J., P., Gutiérrez L., M., Mallory, D.E., Powers, J.S. 2023. Belowground traits mediate tree survival in a tropical dry forest restoration. *Philosophical Transactions B* 378: 20210067. DOI: 10.1098/rstb.2021.0067
27. Kulikowski II, A.J., Zahawi, R.A., **Werden, L.K.**, Zhu, K., Holl, K.D. 2023. Restoration interventions mediate tropical tree recruitment dynamics over time. *Philosophical Transactions B* 378: 20210077. DOI: 10.1098/rstb.2021.0077
26. **Werden, L.K.**, **Zarges, S. (equal contribution), Holl, K.D., Oliver, C.L., Oviedo-Brenes, F., Rosales, J.A., Zahawi, R.A. 2022. Assisted restoration interventions drive the functional recovery of tropical wet forest tree communities. *Frontiers in Forests and Global Change* 5: 935011. DOI: 10.3389/ffgc.2022.935011
25. San-José, M., **Werden, L.K.**, Joyce, F., Reid, J.L., Holl, K.D., Zahawi, R.A. 2022. Effects of landscape structure on restoration success in tropical premontane forest. *Scientific Reports* 12: 13452. DOI: 10.1038/s41598-022-16542-3
24. Vargas G., G., Kunert, N., Hammond, W.M., Berry, Z.C., **Werden, L.K.**, Smith-Martin, C., Wolfe, B., Toro, L., Mondragón-Botero, A., Pinto-Ledezma, J., Schwartz, N.B., Uriarte, M., Sack, L., Anderson-Teixeira, K., Powers, J.S. 2022. Leaf habit affects the distribution of drought sensitivity but not water transport efficiency in the tropics. *Ecology Letters* 25 (12): 2637-2650. DOI: 10.1111/ele.14128
23. Schwartz, N.B., Medvigy, D., Tijerin, J., Perez, D., Rivera-Polanco, D., Pereira, D., Vargas G., G., **Werden, L.K.**, Du, D., Arnold, L., Powers, J.S. 2022. Intra-annual variation in microclimatic conditions in relation to vegetation type and structure in two tropical dry forests undergoing secondary succession. *Forest Ecology and Management* 511: 120132. DOI: 10.1016/j.foreco.2022.120132
22. Díaz-Páez, M., **Werden, L.K.**, Zahawi, R.A., Usuga, J., Polanía, J. 2022. Vegetative propagation of native tree species: an alternative restoration strategy for the tropical Andes. *Restoration*

Ecology 30 (7): e13611. DOI: 10.1111/rec.13611

21. **Werden, L.K.**, Holl, K.D., Chaves-Fallas, J.M., Oviedo-Brenes, F., Rosales, J.A., Zahawi, R.A. 2021. Degree of intervention affects interannual and within-plot heterogeneity of seed arrival in tropical forest restoration. *Journal of Applied Ecology* 58 (8): 1693-1704. DOI: 10.1111/1365-2664.13907

20. Zahawi, R.A., **Werden, L.K.**, San-José, M., Rosales, J.A., Flores, J., Holl, K.D. 2021. Proximity and abundance of mother trees affects recruitment patterns in a long-term tropical forest restoration study. *Ecography* 44: 1-12. DOI: 10.1111/ecog.05907

19. San-José, M., **Werden, L.K.**, Peterson, C.J., Oviedo-Brenes, F., Zahawi, R.A. 2021. Large tree mortality leads to major aboveground biomass decline in a tropical forest reserve. *Oecologia* 197: 795-806. DOI: 10.1007/s00442-021-05048-w

18. Cusack, D.F., +36 others including **Werden, L.K.** 2021. Tradeoffs and Synergies in Tropical Forest Root Traits for Nutrient and Water Acquisition. *Frontiers in Forests and Global Change* 4: 704469. DOI: 10.3389/ffgc.2021.704469

17. **Werden, L.K.**, Holl, K.D., Rosales, J.A., Sylvester, J.M., Zahawi, R.A. 2020. Effects of dispersal- and niche-based factors on tree recruitment in tropical wet forest restoration. *Ecological Applications* 30 (7): e02139. DOI: 10.1002/eap.2139

16. **Werden, L.K.**, *Calderón-Morales, E., Alvarado J., P., Gutiérrez L., M., Nedveck, D.A., Powers, J.S. 2020. Using large-scale tropical dry forest restoration to test successional theory. *Ecological Applications* 30 (6): e02116. DOI: 10.1002/eap.2116

15. **Werden, L.K.**, Sugii, N.C., Weisenberger, L., Keir, M.J., Koob, G., Zahawi, R.A. 2020. *Ex situ* conservation of threatened plant species in island biodiversity hotspots: a case study from Hawai'i. *Biological Conservation* 243. DOI: 10.1016/j.biocon.2020.108435

14. Powers, J.S., Vargas-G, G., Brodribb, T.J., Schwartz, N.B., Perez-Aviles, D., Smith-Martin, C.M., Becknell, J.M., Aureli, F., Blanco, R., Calderón-Morales, E., Calvo-Alvarado, E.J.C., Calvo-Obando, A.J., Chavarría, M.M., Carvajal-Vanegas, D., Jiménez-Rodríguez, C.D., Chacon, E.M., Schaffner, C.M., **Werden, L.K.**, Xu, X., Medvigy, D. 2020. A catastrophic tropical drought kills hydraulically vulnerable tree species. *Global Change Biology* 26(5): 3122-3133. DOI: 10.1111/gcb.15037

13. Ditmer, M.A., **Werden, L.K.**, Tanner, J.C., Vincent, J.B., Callahan, P., Iaizzo, P.A., Laske, T.G., Garshelis, D.L. 2019. Bears habituate to the repeated exposure of a novel stimulus, unmanned aircraft systems. *Conservation Physiology* 7 (1): 1-7. DOI: 10.1093/conphys/coy067 **Media coverage from Mongabay*

12. **Werden, L.K.**, Becknell, J.M., Powers, J.S. 2018. Edaphic factors, successional status, and functional traits drive habitat associations of trees in naturally regenerating tropical dry forests. *Functional Ecology* 32 (12): 2766-2776. DOI: 10.1111/1365-2435.13206

11. **Werden, L.K.**, Alvarado J., P., *Zarges, S., *Calderón M., E., *Schilling, E.M., Gutiérrez L., M., Powers, J.S. 2018. Using soil amendments and plant functional traits to select native tropical dry forest species for the restoration of degraded Vertisols. *Journal of Applied Ecology* 55 (2): 1019-1028. DOI: 10.1111/1365-2664.12998 **Media coverage from Minnesota Daily*

10. **Werden, L.K.**, Waring, B.G., Smith-Martin, C.M., Powers, J.S. 2018. Tropical dry forest trees and lianas differ in leaf economic spectrum traits but have overlapping water-use strategies. *Tree Physiology* 38 (4): 517-530. DOI: 10.1093/treephys/tpx135

9. Treuer, T.L.H., *Choi, J.J., Janzen, D.H., Hallwachs, W., Perez-Aviles, D., Dobson, A.P., Powers, J.S., Shanks, L.C., **Werden, L.K.**, Wilcove, D.S. 2018. Accelerated Tropical Forest Regeneration using Low-Cost Agricultural Waste. *Restoration Ecology* 26 (2): 275-283. DOI: 10.1111/rec.12565
*Media coverage from *Scientific American, Mongabay, Huffington Post, Popular Science*
8. Smith-Martin, C.M., Gei, M.G., Bergstrom, E., Smith, Becklund, K.K., Becknell, J.M., Waring, B.G., **Werden, L.K.**, Powers, J.S. 2017. Effects of soil type and light on height growth, biomass partitioning, and nitrogen dynamics of 22 species of tropical dry forest tree seedlings: comparisons between legumes and non-legumes. *American Journal of Botany* 104 (3): 399-410. DOI: 10.3732/ajb.1600276
7. Uriarte, M., Schwartz, N., Powers, J.S., Marin-Spiotta, E., Liao, W., **Werden, L.K.** 2016. Impacts of climate variability on tree demography in second growth tropical forests: the importance of regional context for predicting successional trajectories. *Biotropica* 48 (6): 780-797. DOI: 10.1111/btp.12380
6. **Werden, L.K.**, Vincent, J.B., Tanner, J.C., Ditmer, M.A. 2015. Not quite free yet: clarifying UAV regulatory progress for ecologists. *Frontiers in Ecology and the Environment* 13 (10): 534-535. DOI: 10.1890/15.WB.019
5. Ditmer M.A., Vincent, J.B., **Werden, L.K.**, Tanner, J.C., Laske, T.G., Iaizzo, P.A., Fieberg, J.R., Garshelis, D.L. 2015. Bears Show a Physiological but Limited Behavioral Response to Unmanned Aerial Vehicles. *Current Biology* 25: 1-6. DOI: 10.1016/j.cub.2015.07.024
*Media coverage from *Washington Post, Newsweek, National Geographic, Popular Science, CBC, NPR, BBC, ABC, and others*
4. Powers, J.S., Becklund, K.K., Gei, M.G., Iyengar, S., *Meyer, R., O'Connell, C.S., *Schilling, E.M., Smith, C.M., Waring, B.G., **Werden, L.K.** 2015. Nutrient addition effects on tropical dry forests: a mini-review from microbial to ecosystem scales. *Frontiers in Earth Science* 3 (34). DOI: 10.3389/feart.2015.00034
3. *Vargas, G.G., **Werden, L.K.**, Powers, J.S. 2015. Explaining Legume Success in Tropical Dry Forests Based on Seed Germination Niches: A New Hypothesis. *Biotropica* 47 (3): 277-280. DOI: 10.1111/btp.12210
2. Vincent, J.B., **Werden, L.K.**, Ditmer, M.A. 2015. Barriers to adding UAVs to the ecologist's toolbox. *Frontiers in Ecology and the Environment* 13 (2): 74-75. DOI: 10.1890/15.WB.002
1. Rodgers, V.L., Wolfe, B.E., **Werden, L.K.**, Finzi, A.C. 2008. The invasive species *Alliaria petiolata* (garlic mustard) increases soil nutrient availability in northern hardwood-conifer forests. *Oecologia* 157 (3): 459-471. DOI: 10.1007/s00442-008-1089-8

MANUSCRIPTS IN
REVIEW AND
PREPARATION

** Full drafts available on request **

San-José, M., **Werden, L.K.**, Holl, K.D., Zahawi, R.A. Restoration fosters later-successional seed rain, yet large seeds remain scarce after two decades. *In revision.*

McElderry, R.M., Fournier de Lauriere, C., Brettell, I., van den Hoogen, J., Maynard, D., Bello, C., Bialic-Murphy, L., Delavaux, C.S., Dent, D., van Galen, L.G., Lauber, T., Paz, A., Smith, G., **Werden, L.K.**, Zohner, C., Crowther, T.W. Assessing the multidimensional complexity of biodiversity using a globally standardized approach. *In revision.* <https://ecoevorxiv.org/repository/view/5837/>

Löfqvist, S. (equal contribution*), Adam, E.***, Delgado, G.***, zu Ermgassen, S.O.S.E., Thompson, B.S., Engert, J., Carter, H., Xu, L., Bello, C., Brancalion, P. H. S., Chirinda, N., Dent, D., Kedward, K., Lopez, O. R., Perez-Cardenas, N., Pusparini, W., Quaglino, R.**, Ruiz-Agudelo, C.

A., Runge, K., Sze, J.S., Shrikanth, S., Smith, J., Suarez Perez, I., Thind, P., **Werden, L.K.** (equal contribution*). A new policy discourse arc to drive more equitable and impactful COP climate and biodiversity finance commitments. *In review.*

Charlesworth, T.E.S., **Werden, L.K.**, van den Hoogen, J., Vlasceanu, M., Crowther, T.W. Representing nature in language around the world and across history: Signatures, variability, and consequences for sustainable development. *In review.*

***Gee, A., **Werden, L.K.**, Verduzco, O., Waring, B. The role of small-scale environmental heterogeneity in the restoration of tropical dry forests. *In revision.*

Yang, Xianyu, Liu, Rong, Zuidema, Pieter A., Runge, Katharina, Jimenez, Yohana, **Werden, L.K.**, Liu, Ao, Li, Shouzhong, Crowther, Thomas, Bialic-Murphy, Lalasia. Decadal post-logging transient population dynamics: implications for pioneer species recovery in subtropical forests. *In revision.*

***Gee, A., **Werden, L.K.**, Waring, B. Interacting abiotic and biotic gradients mediate tropical dry forest succession: natural enemy pressure increases seedling mortality most in the low-resource environment of late succession. *In review.*

Bialic-Murphy, L., van Galen, L.G., Kivlin, S.N., Lauber, T., Mutz, J., Perkowski, E.A., Smith, N.G., van den Hoogen, J., **Werden, L.K.**, Yang, X., Kalisz, S., Crowther, T.W. Fungal diversity-plant productivity relationships in the Anthropocene. *In review.*

Joyce, F.H., Zahawi, R.A., **Werden, L.K.**, Zarges, S., Ferreira, M.P., Broadbent, E., Rosales, J.A., Holl, K.D. Aboveground biomass accumulation over two decades across a gradient of tropical forest restoration interventions. *In review.*

Miao, X., Bousfield, C.G., Morton, O., **Werden, L.K.**, Stephen, T., Crowther, T.W., Balmford, A., Ryan, C.M., Edwards, D.P. Restoration drives both positive and negative leakage in sub-Saharan Africa. *In review.*

Zahawi, R.A., **Werden, L.K.** (equal contribution). Drone-derived structural indicators reveal persistent trade-offs between canopy development and heterogeneity over a decade of tropical forest restoration. *In preparation.*

Vetch, F., Rappaport, D., Bassiouni, M., Dent, D.H., **Werden, L.K.**. Drivers of forest structural complexity recovery across a gradient of restoration interventions in the Brazilian Atlantic Forest. *In preparation.*

Engert, J.E., **Werden, L.K.**, Dent, D.H. Forest gain linked to spillovers in forest loss at local and neighborhood scales. *In preparation.*

Shteto, G., **Werden, L.K.**, Villa, M., Tiburcio, J., Cherif, E. Assessing UAV direct-seeding for tropical forest restoration: early-stage growth and cost-effectiveness. *In preparation.*

Löfqvist, S., Dent, D.H., Zu Ermgassen, S., Thompson, B., Crowther, T.W., **Werden, L.K.**. Towards equitable and ecologically sound nature-based credit markets - remaining challenges and ways forward. *In preparation.*

Quaglino, R., Cole, R. J., Quirós Cedeño, G., Rodriguez, D., Tingle, J., Manyard, D., Crowther, T., **Werden, L.K.** Growth and structure recovery across a gradient of functional diversity in tropical forest restoration. *In preparation.*

Cole, R.J., Quirós Cedeño, Zahawi, R.A., Briggs, L., Crowther, T.W., **Werden, L.K.**. Soil amend-

ments for scaling assisted forest restoration on degraded tropical lands. *In preparation*.

Clémence, S., Oluoch, W.A., Kluger, D.M., Thomas, S., Elliott, T., **Werden, L.K.**, Crowther, T.W., West, T.A.P., Baylis, K., Wuepper, D. Who restores and how matters more than where: evidence from 1,483 restoration projects. *In preparation*.

OTHER AUTHORED PUBLICATIONS 10. Bartholomew, D., +219 others including **Werden, L.K.** 2025. The need for a site-based biodiversity standard measuring and certifying impacts from nature-nased projects. Plants, People, Planet. *In press*.

9. Kulenkampff, A., Oldani, B., Pipan, G., Pulido Mendez, D., Mundy, J., Tamvakou, M., Emery, T., Felenbok, R., **Werden, L.K.** 2025. Nature as a Shock Absorber: A Financial Materiality Assessment of Forestry-linked Sovereign Indicators in Ghana.

8. **Werden, L.K.**, Brettell, I.B., Runge, K., Mahmoud, N., Crowther, T.W., Dent, D.H. 2024. Rio Synergies: The role of non-state actors in enhancing synergies between the Rio Conventions. **Report released at COP28 with support of the Race to Zero and Race to Resilience campaigns of the UNFCCC Climate Champions*.

7. Forest Declaration Assessment Partners. 2024. Forest Declaration Assessment: Forests under fire. Climate Focus (coordinator and editor). Accessible at www.forestdeclaration.org **I am an author on Chapter 4: Restoration*.

6. Nicolle, W., Deiner, K., **Werden, L.K.**, Fernandez, M. 2024. Bloom or bust: Aligning technology and finance to address biodiversity challenges. UBS Sustainability and Impact Institute. **I was featured on the Monocle Podcast describing this work: [click here](#)*.

5. **Werden, L.K.**, Brettell, I. 2024. Methoden bei der Wiederherstellung von Wäldern (Methods for Restoring forests). Wald + Landschaft an der ETHZ (Forest + landscape at the ETHZ). Schweizerische Zeitschrift für Forstwesen 175.

4. Wilson, S.J., Waring, B.G., Fagan, M., Root-Bernstein, M., **Werden, L.K.** 2024. Editorial: To plant, rewild, or ignore? Linking forest restoration methods to longterm ecological trajectories and ecosystem services. *Frontiers in Forests and Global Change*. DOI: 10.3389/ffgc.2024.1491218

3. Wilson, S.J., Alexandre, N.S., Holl, K.D., Reid, J.L., Zahawi, R.A., Celentano, D., Sprenkle-Hyppolite, S., **Werden, L.K.** 2021. Applied nucleation restoration guide for tropical forests. Conservation International. Arlington, VA.

2. Estrada-Villegas, S., DeMalach, N., Martinez Ramos, M., Ladwig, L.M., Meiners, S.J., **Werden, L.K.**, Schnitzer, S.A. 2020. Review of the symposium Determinism and Stochasticity in Ecological Succession. ESA-Louisville, 2019. *Bulletin of the Ecological Society of America* 101 (3): e01687. DOI: 10.1002/bes2.1687

1. Choi, J.J., Treuer, T.L.H., **Werden, L.K.**, Wilcove, D.S. 2018. Organic Wastes and Tropical Forest Restoration. *Tropical Conservation Science* 11: 1-5. DOI: 10.1177/1940082918783156

REPORT CONTRIBUTIONS Forest Declaration Assessment Partners 2023. Off track and falling behind: Tracking progress on 2030 forest goals. Climate Focus (coordinator and editor). Accessible at www.forestdeclaration.org ** I contributed to Chapter 1: Overarching forest goals*

Gann, G. D., Walder, B., Manirajah, S. M., Roe, S. 2022. Restoration Project Information Sharing Framework v.1. Society for Ecological Restoration and Climate Focus. Washington, D.C.

** I contributed to the generation of the indicators and gave feedback on the overall framework*

Zürich Insurance Group. 2022. Net positive: Why biodiversity metrics make for more effective carbon market. Zürich, Switzerland.

** I contributed insights on and reviewed the ecological science within this paper*

BOARD
MEMBERSHIP

Tropical Landscape and Climate Program: 2025 - current.

I am a founding board member on TLCP, a US-based non-profit focused on providing scholarships and capacity building for restoration practitioners in Latin America.

Plant-for-the-Planet: 2022 - current.

I serve as the chief scientific advisor (pro bono) for Plant-for-the-Planet's restoration implementation work in Mexico and globally.

Green Again Madagascar: 2025 - current.

I am on Green Again's scientific advisory board (pro bono), informing their restoration work in Madagascar.

ImpactHero: Impact Brain Board: 2022 - 2024.

I served as a key advisor (pro bono) for ImpactHero's conservation and restoration work.

INTERNAL
GRANTS

University of Minnesota

Doctoral Dissertation Conference Grant (\$1,070)

May 2017

Thesis Research Travel Grant (\$5,000)

February 2016

Carolyn Crosby Fellowship (\$1,500)

January 2013

Bell Museum - University of Minnesota

Dayton Fellowships (3x totaling \$3,900)

March 2014 - April 2016

Plant and Microbial Biology Graduate Program - University of Minnesota

Conference Travel Grants (4x totaling \$3160)

July 2013 - March 2017

Exceptional Travel Grant (\$2,500)

January 2017

Institute on the Environment (IoE) - University of Minnesota

IoE Mini Grant with Mark Ditmer, John Vincent, and Jessie Tanner (\$3,400)

March 2016

IoE Mini Grant with Mark Ditmer, John Vincent, and David Burge (\$2,800)

December 2013

Boston University

Undergraduate Research Supplies Grants (2x totaling \$2,130)

Sept. 2007 - May 2008

Undergraduate Research Summer Research Grant (\$3,500)

June - August 2006

INVITED
PRESENTATIONS

Werden, L.K. Good practice in conservation and restoration & innovations to scale. ETH Global Cooperation and Sustainable Development. Zurich, Switzerland. November, 2025.

Werden, L.K. Improving global restoration outcomes and capacity. Oak Spring Garden Foundation. Upperville, VA. October, 2024.

Werden, L.K. Innovations to upscale forest landscape restoration. ETH Zurich & University of Zurich Interaction Seminar. Zurich, Switzerland. September, 2024.

Werden, L.K. Improving global restoration outcomes and capacity. Nature Tech Collective Seminar. Virtual. June, 2024.

Werden, L.K. The global restoration and conservation movement through an ecological lens. New England Biolabs Seminar. Ipswich, MA. September, 2023.

Werden, L.K. Refining restoration practice with globally distributed experiments. reNature Science Symposium. Virtual. May, 2023.

Werden, L.K., Averill, C., Crowther, T.W., Calderón-Morales, E., Toro, L., Alvarado J., P., Gutiérrez L., M., Mallory, D.E., Powers, J.S. Belowground traits mediate tree survival in a tropical dry forest restoration. 2022 Association for Tropical Biology and Conservation meeting. Cartagena, Colombia. July, 2022.

Werden, L.K. & Dent D.H. (equal contribution), The importance of protecting and restoring global forests. Google Anthropocene Talks. Virtual. July, 2022.

Werden, L.K.. A holistic approach towards improving forest restoration outcomes. Plant-for-the-Planet Youth Summit Talk. Virtual. January, 2021.

Werden, L.K., Holl, K.D., and R.A. Zahawi. Influences of dispersal- and niche-limitation on the seed-to-seedling transition in tropical wet forest restoration. Ecological Society of America meeting. Louisville, KY. August, 2019.

Werden, L.K. Using large-scale restoration to test ecological theory. Chicago Botanic Garden, Plant Science and Conservation Department. Glencoe, IL. May, 2019.

Werden, L.K. Using plant functional traits to understand community assembly and restoration outcomes in tropical dry forests. Ecology, Evolution and Conservation Biology seminar series. University of Hawai'i at Manoa. Honolulu, HI. December, 2018.

Werden, L.K. and J.S. Powers. Resource acquisition strategies predict seedling performance in a tropical dry forest restoration. 2017 Association for Tropical Biology and Conservation meeting. Merida, Mexico. July, 2017.

Werden, L.K. Restoring tropical dry forests: Are soil amendments and plant functional traits useful tools? Dissertation Fellowship Symposium. Minneapolis, MN. January, 2017.

Werden, L.K. and J.S. Powers. Using plant functional traits and soil amendments to restore a tropical dry forest. 2016 Plant Biology annual retreat. St. Paul, MN. April, 2016. **Received Best oral presentation award*

Werden, L.K. Using plant traits and soil amendments to restore a tropical dry forest. St. Olaf College Conservation Biology class. Northfield, MN. May, 2016.

CONTRIBUTED
PRESENTATIONS
AND POSTERS

Werden, L.K. Simple innovations to scale assisted forest restoration: the promise of improving outcomes with cost-efficient low-tech approaches. IUFRO World Conference. Stockholm, Sweden. June, 2024.

Werden, L.K. Using micropropagation for Hawaiian plant conservation. Presentation at Lyon Arboretum, University of Hawai'i, annual symposium. Honolulu, HI. October, 2019.

Werden, L.K. and J.S. Powers. Resource acquisition strategies of tropical dry forest tree species predict seedling performance in a large-scale Vertisol restoration project. Presentation at 2017 Society for Ecological Restoration meeting. Foz do Iguacu, Brazil. August, 2017.

Werden, L.K. and J.S. Powers. Resource acquisition strategies of tropical dry forest tree species predict seedling performance in a large-scale restoration experiment. Presentation at 2017 Ecological Society of America meeting. Portland, OR. August, 2017.

Werden, L.K. Using soil amendments and plant functional traits to select native tropical dry forest tree species for Vertisol restoration. Poster at 2017 University of Minnesota Doctoral Research Showcase. Minneapolis, MN. April, 2017.

Werden, L.K. Restoring native tropical dry forest on Vertisols. Poster at 2017 Minnesota Native Plants Symposium. Chaska, MN. April, 2017.

Werden, L.K., and J.S. Powers. Restoring tropical dry forest on degraded Vertisol soils: Are soil amendments and plant functional traits useful tools? Poster at 2016 Missouri Botanical Garden annual meeting. St. Louis, MO. October, 2016.

Werden, L.K., and J.S. Powers. Using plant functional traits and soil amendments to restore degraded Vertisol soils in a tropical dry forest. Presentation at 2016 Association for Tropical Biology and Conservation meeting. Montpellier, France. June, 2016.

Werden, L.K., Waring, B.G., Smith, C.M., Powers, J.S. Maintenance of Leaf Water Potential by Tropical Dry Forest Tree and Liana Species During a Severe Drought. Poster at 2015 American Geophysical Union Conference. San Francisco, CA, December, 2015.

Werden, L.K., Gutiérrez L., M., Powers, J.S. La enmienda de suelos degradados Vertisoles aumenta la supervivencia de plántulas en una restauración de bosque seco tropical (The amendment of degraded Vertisol soils increases seedling survival in a tropical dry forest restoration). Poster in Spanish and English at 2015 Investigadores Area de Conservación Guanacaste (iACG) meeting. Horizontes Experimental Forest Station, Costa Rica, June, 2015.

Werden, L.K. Restauración del bosque seco en los suelos Vertisoles de Horizontes (Restoration of dry forest in Vertisol soils at Horizontes). Presentation in Spanish at the Charla y Cafe. Program for Biological Education, Santa Rosa National Park, Costa Rica, July, 2014.

Werden, L.K., Becknell, J.M., Powers, J.S. Defining life history strategies of tropical dry forest tree species: Implications for future restoration projects. Poster at 2013 Society for Ecological Restoration Meeting. Madison, WI, October, 2013.

Werden, L.K., Becknell, J.M., Powers, J.S. Using forest inventory data to define life history strategies of tropical dry forest tree species. Poster at 2013 Association for Tropical Biology and Conservation Annual Meeting. San Jose, Costa Rica, June, 2013.

Werden, L.K., Connell, T., Sanchez, L., Wofsy, S.C., Munger, J.W. Quantifying the Impact of an Ice Storm on the Carbon Budget of a Mixed Deciduous Forest in Central Massachusetts. Poster at 2009 Ameriflux meeting, Washington D.C., September, 2009.

Werden, L.K. Linking foliar nitrogen concentrations to long-term carbon uptake at Harvard Forest. Presentation at 2007 Harvard Forest REU Symposium, Petersham, MA, August, 2007.

Werden, L.K., Rodgers, V.L., Finzi, A.C. The effects of *Alliaria petiolata* (Garlic Mustard) on three aspects of soil nutrient cycling. Poster at BU UROP, Boston, MA, September, 2006.

MENTORSHIP AND
ADVISING

** indicates pursuing or received M.A./M.S.; * indicates pursuing or received Ph.D.

ETH Zürich, Zürich, Switzerland

Graduate/undergraduate mentorship and advising (11 students):

- *Elodie Adam (PhD at ETH Zürich – I serve as the primary advisor for their PhD thesis)
- *Sara Löfqvist (Post-doc at ETH Zürich – I serve as their primary advisor)
- **Gerald Quirós Cedeño (Licenciatura student at UNED, Costa Rica – I served as the primary

advisor for their licenciatura and thesis, for which they graduated 'with distinction')

- *Florian Vetsch (Master's student at ETH Zürich – I served as the primary advisor for their master's internship and thesis)
- *Rachele Quaglino (Master's student at ETH Zürich – I served as the primary advisor for their master's thesis)
- *Manuel Weber (Master's student at ETH Zürich – I served as the primary advisor for their master's thesis)
- **Louis Froidevaux (Bachelor's student at ETH Zürich – I served as the primary advisor for their bachelor's thesis)
- *Anna Gee (PhD student at Imperial College London – I served as an advisor for their work in Mexico)
- *William Verbiest (Master's student at ETH Zürich – I served as the advisor for their field internship in Mexico)
- **Katrin Schöenhofer (Bachelor's student at University of Augsburg – I served as the advisor for their Erasmus+ internship at ETH Zürich and as the primary advisor for their master's thesis)
- **Beatrix Junghardt (Master's student at ETH Zürich – I served as the advisor for their final term paper)

University of Hawai'i, Honolulu, HI

Graduate student advisory committee (1 student):

- *Sebastian Zarges (Master's fieldwork in Costa Rica, from University of Göttingen, Germany)

Undergraduate mentorship and advising (2 students):

- Alejandra Pérez Enríquez (student at the Costa Rican National University)
- Benjamin Robinson (student at University of Hawaii)

University of Minnesota, St. Paul, MN

Undergraduate mentorship and advising (7 students):

- Erik Schilling (University of Minnesota Junior Scientist)
- *German Vargas, *Erick Calderón Morales, Gabriela Quesada (students at the Costa Rican National University)
- *Sebastian Zarges (student at the University for Sustainable Development Eberswalde, Germany – Intern in Costa Rica and I served as a committee member for his senior thesis)
- *Laura Toro (student at the University of Antioquia, Colombia)

Harvard University, Cambridge, MA

Undergraduate mentorship and advising (7 students):

- *Tamsin Connell, *Fiona Jevon, *Jakob Lindaas (Harvard Forest REU Interns)
- **Lauren Sanchez (NOAA GCEP intern Middlebury College Senior Thesis)
- Kendall Sherman, Yi Fan, Jan Eng (Harvard University Work Study students)

TEACHING EXPERIENCE

ETH Zürich, Zürich, Switzerland

Co-lecturer (Ecosystem Conservation and Restoration - HS2022)

Fall 2022, 2023, 2024

I have co-taught this course three times with Thomas Crowther, Lalasia Bialic-Murphy, and Jaboury Ghazoul. As part of this course I designed and currently lead coursework on the fundamentals of conservation biology and restoration ecology. I also designed the structure of the student final projects and I currently supervise and hold open office hours for all student final projects (30 students per class).

United Nations Development Program

Guest course facilitator

Fall 2022

Answered participant questions on ecosystem restoration and practice for the UNDP Ecosystem Restoration Massive Open Online Course.

University of Minnesota, St. Paul, MN

Teaching Assistant (Foundations of Biology I Laboratory)

Fall 2017

Independently taught a semester long undergraduate laboratory section in Bioinformatics and laboratory technique. Helped students to learn lab techniques, formulate scientific questions, make observations, develop hypotheses, and design and conduct experiments (20 students per class).

Teaching Assistant (Tropical Ecosystems Ecology)

May 2013

Assisted with a two-week undergraduate field course in NW Costa Rica. Helped students with field techniques, basic statistics, and the preparation of a final independent research report (20 students per class).

Guest Lecture (Tropical Forests: Conservation, Carbon, and Conflict)

November, 2015

Lecture on applied reforestation in Costa Rica.

Guest Lecture (Ecology and Society)

October, 2014

Lecture on ecosystem nutrient cycling.

Universidad de Costa Rica, San Jose, Costa Rica

Guest Lecture (in Agroecology)

September, 2015

Lecture in Spanish about Vertisol restoration.

PEDAGOGY
TRAINING

University of Minnesota, St. Paul, MN

Preparing Future Faculty Program (Teaching in Higher Education Course)

Spring 2013

Attended a semester long course and received training in active-learning pedagogy, developed a teaching philosophy and designed and taught lessons for a course in Ecological Restoration.

Writing Instruction Training (CBS Writing Workshop)

September 2017

Attended a workshop on responding to and evaluating student writing assignments, creating grading rubrics, and identifying and preventing plagiarism.

WORKSHOPS LED

Innovations in monitoring tropical forest restoration - Science for Nature and People Partnership. Bogota, Colombia May 12-16, 2025.

Refining belowground restoration practice - Yale Center for Natural Carbon Capture. Yale University, New Haven, USA, October 3-5, 2023.

INVITED
WORKSHOPS

Towards a Future with Climate and Ecological Restoration. Imperial College London, London, UK, June 18-19, 2024.

Exploring new dimensions of forest ecosystems with structural diversity. NEON headquarters (held virtually), Colorado, May 18-20, 2020 (NSF funded).

PARTNERS (People and Reforestation in the Tropics, a Network for Education, Research, and Synthesis) RCN climate change and reforestation working group. Columbia University, New York, January 19-23, 2015 (NSF funded).

INTERNATIONAL
COURSEWORK

Xishuangbanna Tropical Botanical Garden (XTBG), Mengla, China

Next Generation Tropical Forest Surveys in Asia

July - August 2013

This NSF and Chinese Academy of Sciences field course included lectures on forest conservation in Asia, and the development of projects focusing on the use of next generation technology for forest surveys. Full scholarship received for the course and transportation to and from XTBG.

Universidad San Francisco de Quito, Quito, Ecuador

Boston University Tropical Ecology Program

January - May 2007

Four months of coursework, field visits, and development of independent field projects in Ecuador. Included a one month stay at the Tiputini Biological Station in the Ecuadorian amazon.

PROFESSIONAL MEMBERSHIPS *Association for Tropical Biology and Conservation* **2013 - present**
Society for Ecological Restoration **2013 - present**
Ecological Society of America **2016 - present**

PEER REVIEW Acta Oecologica (2), Agricultural and Forest Meteorology (2), Annals of the Brazilian Academy of Sciences (1), Biodiversity and Conservation (1), Biological Conservation (6), Biotropica (16), Brazilian Journal of Botany (1), Conservation Biology (1), Conservation Science and Practice (1), Drones (1), Ecological Applications (2), Ecological Indicators (1), Ecological Management & Restoration (1), Ecology Letters (2), Environmental and Experimental Botany (1), Ecology and Evolution (2), Environmental Pollution (1), Forest Ecology and Management (5), Forests (1), Frontiers in Environmental Science (1), Frontiers in Forests & Global Change (2), Frontiers in Plant Science (1), Functional Ecology (3), Global Ecology and Conservation (1), Heliyon (1), Instituto Humboldt Colombia (1), International Journal of Biometeorology (1), International Journal of Forestry Research (1), IUFRO: World Forests, Society and Environment Program (1), Journal of Applied Ecology (8), Journal of Ecology (1), Journal of Environmental Management (1), Journal of Plant Ecology (1), Journal of Tropical Ecology (1), Land Degradation & Development (4), Madera y Bosques (1), Methods in Ecology and Evolution (2), Nature Reviews Biodiversity (1), New Forests (1), New Phytologist (1), Oecologia (1), Oikos (1), Pedobiologia (1), People and Nature (1), Perspectives in Ecology and Conservation (1), Perspectives in Plant Ecology, Evolution, and Systematics (1), Philosophical Transactions B (2), Plant Ecology (1), Plants, People, Planet (2), Restoration Ecology (15), Revista Ambiente & Água (1), Revista de Biología Tropical (1), Science of the Total Environment (3), Southern Forests: a Journal of Forest Science (1), Sustainable Development (1), Sustainable Environment (1), Trees (1), Trees, Forests and People (3), Trends in Ecology & Evolution (1)

JOURNAL EDITING **Frontiers in Forests and Global Change**
Guest subject editor **2021-2022**
"To plant, rewild, or ignore? Linking forest restoration methods to long-term ecological trajectories and ecosystem services" special issue.

GRANT REVIEW PANELS Garden Club of America (2), Oak Spring Garden Foundation (1), U.S. Department of Energy (1)

ADDITIONAL TRAINING **Project Management for Research course**
ETH Zürich **Fall 2022**
Course on project management specifically tailored for scientific research and large-scale projects.

Near-term Ecological Forecasting Initiative (NEFI) summer course
Boston University **Summer 2018**
NSF-funded short course in Ecological Forecasting and Bayesian statistics. One of 15 attendees selected from ~150 applicants.

Boreas Leadership Program
University of Minnesota Institute on the Environment **2012 - 2016**
Completed workshops in science communication, meeting organization, and public speaking.

PROFESSIONAL SERVICE **People and Reforestation in the Tropics network (PARTNERS)**
Blog editor **August 2017 - March 2019**
Edited science outreach blog posts for the NSF-funded PARTNERS Research Coordination Network (<http://partners-rcn.org/>).

UMN Phytograds

Treasurer and committee chair

2016 - 2017

Treasurer for the UMN Phytograds Graduate Student Organization and chair of the three-minute thesis and graduate student/post-doc lounge organizational committees.

OUTREACH

ETH Zürich Global Experiments Network (GEN)

Co-founder and co-leader

2021-current

Co-designed and led over 10 online and three in person capacity building workshops for forest restoration practitioners in collaboration with R. Cole. The online workshop series was formalized in 2024 as a collaboration with Restor.eco (non-profit spin-off of the Crowther Lab) using a grant from the RAIN Foundation to R. Cole, myself, and T. Crowther. In total the in-person workshops have reached over 100 practitioners and the online workshops have reached over 1,000. Workshops have covered topics such as scalable biodiversity monitoring, nursery practices, and innovations in forest restoration. For more information: [click here](#).

Collaborative Earth

Lab Leader

2022-2025

While there have been significant advances in the understanding of where forests are likely to naturally regenerate, the rates of recovery under natural vs. assisted restoration are incredibly variable and often sparsely documented. To address this, I lead an effort of over 20 volunteers aiming to quantify potential carbon capture and plant biodiversity recovery of forest, savannah, and mangrove assisted restoration projects through a large-scale synthesis of the grey literature. For more information: [click here](#). As part of this effort we have refined tools for systematic literature review: [see here](#). And are now creating a tool to synthesize and summarize the knowledge using LLMs: [see here](#).

Lyon Arboretum Micropropagation Lab

Guest course and tour leader

2018-2021

Contributed to various educational tours and short courses on global ex-situ plant conservation.

Market Science

Event designer and leader

May 2016

Designed and implemented tropical plant and animal outreach session with C. M. Smith, and assisted B. Fallon with plant ecophysiology session.

World Food Prize

High school judge

May 2016

Judged essays written by Minneapolis high school students about sustainable food production.

University of Minnesota Biology Saves the World

Focal Scientist

May 2016

Mentored freshman undergraduate students interested in pursuing tropical research.

Global Leadership Adventures

Guest field course leader and lecturer

June - August 2014 & 2015

Gave lectures on Costa Rican tropical dry forest restoration to a group of high school students from the USA, and designed and led two half-day field courses which included modules on site preparation and tree seedling planting.

Minnesota Middle School Science Olympiad

Event writer and judge

March/October 2013 & February 2016

Created and judged events on experimental design, forensics, and ecology for middle school students.

SKILLS

Languages:

Spanish (advanced), English (fluent)

Statistical languages and other software:

R, Python, S-Plus, SAS, R markdown, Sweave, Visual Basic, ESRI ArcGIS, QGIS, Grass GIS, Google Earth Engine, ImageJ, L^AT_EX, Linux, Mac, PC

Instrumentation:

LI-6400, LAI-2000, Lachat-8000, elemental analysis, FieldSpec 3, PMS Pressure Chamber, GC FID, UV-VIS, IRGA, canopy foliage sampling, gas and energy flux techniques