Evan M. Gora

Cary Institute of Ecosystem Studies, Millbrook, New York, USA
Smithsonian Tropical Research Institute, Ancón, Panama City, Republic of Panamá
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Disturbance Ecology and Decomposition (DEAD) Lab

Ecosystem science, community ecology, and plant ecophysiology

Ecological effects of lightning on plants – causes and consequences of plant mortality – biotic, environmental, and biogeochemical controls of decomposition – forest carbon cycling

EDUCATION

2018 **PhD. Biology**, University of Louisville, Advisor: Dr. Stephen Yanoviak
Guy Stevenson Award – University-wide award to the most outstanding doctorate

2013 **B.S. Biology**, University of Pittsburgh, Advisor: Dr. Walter Carson
Honors Degree in Biology, **Major** in Economics, **Minor** in Chemistry

PROFESSIONAL POSITIONS

2022-pres. Adjunct Professor, University of Louisville

2023-2024 **Assistant Scientist,** Cary Institute of Ecosystem Studies

2021-2023 **Research Fellow,** Cary Institute of Ecosystem Studies

2020-pres. **Earl S. Tupper Postdoctoral Fellow,** Smithsonian Tropical Research Institute

2018-2020 Postdoctoral Associate**,** University of Louisville

2017 NSF Graduate Research Intern, Smithsonian Institution

2015-2018 **NSF Graduate Research Fellow,** University of Louisville

2015-2016 **STRI Fellow,** Smithsonian Tropical Research Institute

2013-2014 Research Technician, University of Louisville

2013 Research Technician, University of Pittsburgh

PEER-REVIEWED PUBLICATIONS

†Authors contributed equally; Denotes mentee

29. **Gora, E.M.**, D.M. DeFillipis, and S.A. Schnitzer. Patterns and inferred causes of liana mortality in a tropical forest. In Press. *Proceedings of the Royal Society B*.

28. Delavaux, C.S., T.W. Crowther, J.D. Bever, P. Weigelt, and **E.M. Gora**. Mutualisms weaken the latitudinal diversity gradient among oceanic islands. *Nature* 627: 335–339. doi: https://doi.org/10.1038/s41586-024-07110-y

27. **Gora, E.M.** Dead wood cycling on Barro Colorado Island: stocks, fluxes, and the process of decomposition. 2024. In *The First 100 Years of Research on Barro Colorado Island: Plant and Ecosystem Science*. Helene C. Muller-Landau and S. Joseph Wright, editors. Smithsonian Contributions to Botany No. XXX. Smithsonian Institution Scholarly Press.

26. Yanoviak, S.P., **E.M. Gora**, C. Gutierrez, J.C. Burchfield, and P.M. Bitzer. The ecological effects of lightning in a tropical forest. 2024. In *The First 100 Years of Research on Barro Colorado Island: Plant and Ecosystem Science*. Helene C. Muller-Landau and S. Joseph Wright, editors. Smithsonian Contributions to Botany No. XXX. Smithsonian Institution Scholarly Press.

25. Adams, B.J., **E.M. Gora,** M.C. Donaldson-Matasci, E.J.H. Robinson, and S. Powell. 2023. Competition and habitat availability interact to structure arboreal ant communities across scales of ecological organization. *Proc. Roy. Soc. B*. 290:20231290.

24. Barrera-Bello, Á.M., J.M. Lucas, and **E.M. Gora**. 2023. Suspended sections within downed deadwood are drier, have altered decomposer communities, and slower decomposition. *Ecosystems*. doi: 10.1007/s10021-023-00874-w

23. **Gora, E.M.,** S.A. Schnitzer, P.M. Bitzer, J.C. Burchfield, C. Gutierrez, and S.P. Yanoviak. Lianas increase lightning-caused disturbance severity in a tropical forest. 2023. *New Phytologist*. 238: 1865-1875.

22. Richards, J.H., **E.M. Gora**, C. Gutierrez, J.C. Burchfield, P.M. Bitzer, and S.P. Yanoviak. 2022. Tropical tree species differ in damage and mortality from lightning. *Nature Plants*. 8: 1007–1013. doi: 10.1038/s41477-022-01230-x

21. **Gora, E.M.**, P.M. Bitzer, J.C. Burchfield, C. Gutierrez, and S.P. Yanoviak. 2021. The contributions of lightning to biomass turnover, gap formation, and plant mortality in a tropical forest. *Ecology*. 102: e03541. doi: 10.1002/ecy.3541

20. **Gora†, E.M.,** and A. Esquivel-Muelbert†. 2021. Implications of size-dependent tree mortality on tropical forest carbon dynamics. *Nature Plants*. 7: 384–391. doi: 10.1038/s41477-021-00879-0

19. **Gora, E.M.**, J.C. Burchfield, H.C. Muller-Landau, P.M. Bitzer, and S.P. Yanoviak. 2020. Pantropical geography of lightning-caused disturbance and its implications for tropical forests. *Global Change Biology*. 26: 5017– 5026. doi: 10.1111/gcb.15227

18. **Gora, E.M.**, H.C. Muller-Landau, P.M. Bitzer, J.C. Burchfield, S.P. Hubbell, and S.P. Yanoviak. 2020. A mechanistic and empirically supported lightning risk model for forest trees. *Journal of Ecology*. 108: 1956– 1966. doi: 10.1111/1365-2745.13404
--*Harper Prize finalist* for best paper by an early career scientist

17. **Gora, E.M**, and S.P. Yanoviak. 2020. Lightning-caused disturbance in the Peruvian Amazon. *Biotropica*. 52: 813-817. doi: 10.1111/btp.12826

16. Parlato, B.P., **E.M. Gora**, and S.P. Yanoviak. 2020. Lightning damage facilitates beetle colonization of tropical trees. *Annals of the Entomological Society of America*. saaa015. doi: 10.1093/aesa/saaa015

15. Yanoviak†, S.Y., **E.M. Gora**†, P.M. Bitzer, J.C. Burchfield, H.C. Muller-Landau, M. Detto, S. Paton, and S.P. Hubbell. 2020. Lightning is a major cause of large tree mortality in a neotropical forest. *New Phytologist*. 225: 1936-1944. doi: 10.1111/nph.16260 (co-first author)

14. Lucas, J.M., **E.M. Gora**, A. Salzberg, and M. Kaspari. 2019. Antibiotics as chemical warfare across multiple taxonomic domains and trophic levels. *Proc. Roy. Soc. B*. 286: 20191536. doi: 10.1098/rspb.2019.1536 (Cover)

13. **Gora**, **E.M.,** and J.M. Lucas. 2019. Dispersal and nutrient limitations of decomposition above the forest floor: evidence from experimental manipulations of epiphytes and macronutrients. *Functional Ecology*. 33: 2417-2429. doi: 10.1111/1365-2435.13440

12. Adams, B.J., **Gora, E.M.**, and S.P. Yanoviak. 2019. Do lianas shape ant communities in an early successional tropical forest? *Biotropica*. 51: 885-893. doi: 10.1111/btp.12709

11. **Gora, E.M.**, J.M. Lucas, and S.P. Yanoviak. 2019. Microbial composition and decomposition rates vary with microclimate from the ground to the canopy in a tropical forest. *Ecosystems*. 22(6): 1206-1219. doi: 10.1007/s10021-019-00359-9 (Cover)

10. **Gora, E.M.**, R.C. Kneale, M. Larjavaara, and H.C. Muller-Landau. 2019. Dead wood necromass in a moist tropical forest: Stocks, fluxes, and spatiotemporal variability. *Ecosystems*. 22(6): 1189-1205. doi: 10.1007/s10021-019-00341-5

9. Gripshover, N., S.P. Yanoviak, and **E.M. Gora**. 2018. A functional comparison of swimming behavior in two temperate forest ants (*Camponotus pennsylvanicus* and *Formica subsericea*) (Hymenoptera: Formicidae). *Annals of the Entomological Society of America* 111(6): 319-325. doi: 10.1093/aesa/say026.

8. **Gora, E.M.**, E.J. Sayer, B.L. Turner, and E.V.J. Tanner. 2018. Decomposition of coarse woody debris in a long-term litter manipulation experiment: a focus on nutrient availability. *Functional Ecology* 32(4): 1128-1138. doi: 10.1111/1365-2435.13047.

7. **Gora, E.M.**, P.M. Bitzer, J.C. Burchfield, S.A. Schnitzer, and S.P. Yanoviak. 2017. Effects of lightning on trees: a predictive model based on *in situ* electrical resistivity. *Ecology and Evolution* 7: 8523–8534. doi: 10.1002/ece3.3347.

6. Lucas, J.M., **E.M. Gora**, and A. Alonso. 2017. A view of the global conservation job market and how to succeed in it. *Conservation Biology* 31(6): 1223-1231. doi: 10.1111/cobi.12949.

5. Yanoviak, S.P., **E.M. Gora**, J.M. Burchfield, P.M. Bitzer, and M. Detto. 2017. Quantification and identification of lightning damage in tropical forests. *Ecology and Evolution* 7(14): 5111-5122. doi: 10.1002/ece3.3095.

4. **Gora, E.M.**, N. Gripshover, and S.P. Yanoviak. 2016. Orientation at the water surface by the carpenter ant *Camponotus pennsylvanicus* (De Geer, 1773) (Hymenoptera: Formicidae). *Myrmecological News* 23: 33-39. doi: 10.25849/myrmecol.news_023:033

3. **Gora, E.M.** and S.P. Yanoviak. 2015. Electrical properties of temperate forest trees: a review and quantitative comparison with vines. *Canadian Journal of Forest Research* 45(3): 236-245, doi: 10.1139/cjfr-2014-0380.

2. Yanoviak, S.P., **E.M. Gora**, J. Fredley, P.M. Bitzer, R.M. Muzika, and W.P. Carson. 2015. Direct effects of lightning in temperate forests: a review and preliminary survey in a hemlock-hardwood forest of the northern United States. *Canadian Journal of Forest Research* 45(10): 1258-1268. doi: 10.1139/cjfr-2015-0081.

1. **Gora, E.M.**, L.L. Battaglia, H. Schumacher, and W.P. Carson. 2014. Patterns of coarse woody debris volume among 18 late-successional and mature forest stands in Pennsylvania. *Journal of the Torrey Botanical Society* 141(2): 151-160. doi: 10.3159/TORREY-D-13-00066.1.

GRANTS AND AWARDS

**Funding amounts in parentheses were awarded to collaborative institutions

Funded

2024-2027 NSF DEB, Population and Community Ecology Cluster (co-PI) $771,664
Title: *Using the vertical dimension of forests to test tradeoffs and principles of community ecology*

2024-2026 Cary Science Innovation Fund (lead-PI) $73,233
Title: *Revealing the mechanisms controlling wood decomposition in species-rich tropical forests*

2023-2026 CNPq, Brazil (senior personnel) ($59,542)
Title: *Integrating soil hydrology and hydraulic traits to understand the mortality risks of giant trees to droughts*

2023-2025 NASA: Commercial Smallsat Data Scientific Analysis (co-I) ($472,992)
Title: *Monitoring the distribution, phenology, and mortality of selected tropical tree species from space*

2023-2025 Smithsonian: Life on a Sustainable Planet (Senior personnel) ($75,000)
Title: *Building the basis for automated species identification of tropical plants from spectral and laser scanning data*

2023-2026 NSFDEB-NERC, Ecosystem Science Cluster (lead-PI) $1,438,401
Title: *NSFDEB-NERC: Gigante: Quantifying and upscaling the causes and drivers of giant tree death*

2023-2024 Yale Natural Carbon Capture workshop grant (Senior personnel) ($37,686)
Title: *Capturing carbon in tropical forests: Unraveling the productivity-mortality paradox to maximize carbon sequestration*

2022-2025 NSF DEB, Ecosystem Science Cluster (lead-PI) $653,285
Title: *Lightning-caused disturbance and patterns of recovery in tropical forests*

2022-2023 Royal Society Research Grant (Senior personnel) ($26,350)
Title: *Understanding mortality rates and drivers of Amazonian mega-flora*

2021-2023 UKRI Global partnerships seedcorn fund (Senior personnel) ($138,500)
Title: *Lightning in African tropical forests: from tree mortality to carbon dynamics*

2020-2023 Smithsonian Earl S. Tupper Postdoctoral Fellowship $202,200
Title: *Is resistance futile? Mechanisms of lightning-caused tree death and interspecific differences in survival*

2019-2020 Smithsonian ForestGEO Research Grant (PI) $12,000
Title: *Wood decomposition in species-rich tropical forests*

2018 Guy Stevenson Award *"to the most outstanding graduating PhD university-wide"*

2018 Clay Memorial Scholarship $1,000

2017-2018 Graduate Research Internship, National Science Foundation $5,000

2016	Carl C. Cornett Entomological Fund Award	$2,500
2016	Research Grant, UofL Graduate Network in Arts and Sciences	$100
2015-2016	Young Explorer's Grant, National Geographic Society	$4,750
2015-2016	Short-term Fellowship, Smithsonian Tropical Research Institute	$8,000
2015-2018	Graduate Research Fellowship, National Science Foundation	$138,000
2014-2018	University Graduate Fellowship, UofL (Partially Declined)	$72,000
2015	Beechmont Garden Club Award	$1000
2015	Research Grant, UofL Graduate Student Council	$280
2015	Graduate Student Publication Award	$150
2014	Carl C. Cornett Entomological Fund Award	$2,500
2013	Honors Degree in Biology, University of Pittsburgh	
	Total funding:	**$3,386,063 ($810,070)**

MEDIA EXPOSURE

2024 "Rampaging vines are slowly strangling tropical forests" – *Science News Explores*

2023 "Embark on a Journey to the Smithsonian's Tropical Research Station" – *Smithsonian Magazine*

2023 "In the tropics, woody vines make lightning more deadly for forests" – NSF

2023 "The striking impact of lightning in tropical forests" – *The London Times*

2022 "'One Missisippi'.... How lightning shapes the climate" – *NPR Shortwave podcast*

2022 "Certain Tree Species Are More Susceptible to Death by Lightning" – *The Scientist*

2021 "How Will the Biggest Tropical Trees Respond to Climate Change?" – *Smithsonian Magazine*

2020 "Death by Lightning Is Common for Tropical Trees" – *Scientific American*

2020 "800 millions d'arbres tropicaux foudroyés chaque année" – *Universcience (Le Blob)*

2020 "Lightning strikes more than 100 million times per year in the tropics" – *NSF Research News*

2020 "Ka Boom" – *Smithsonian Tropical Research Institute News*

2020 "New study finds lightning destroys 832 million trees each year in tropics alone" – *The Weather Network*; reproduced by *Yahoo news*, *MSN*, and other online outlets

2020 "Lightning is silently killing trees – and it's going to get worse" – *New Scientist*

2020 "Study of Tropical Forest Insects Leads to Discovery of Killer Lightning" – *Weather.com*

2019 "Lightning Discovered To Be Main Killer Of Tropical Trees" - *Forbes*

2019 “Millionen Regenwaldbäume sterben bei Gewittern” - *Deutchlandfunk*

2019 “Forest giants are the trees most at risk” – *Science*
--Reproduced in Kuwaiti science outlet *Al Oloom*

2018 “A&S student Evan Gora to speak at winter commencement” – *UofL Today*

2018 “Not all doom and gloom: Q&A with conservation job market researchers” - *Mongabay*

2018 “How Two Land-Dwelling Ant Species Paddle Through Water” – *Entomology Today*

2017 “Tallest Tropical Trees Died Mostly from Lightning” – *EOS*

2017 “Tallying the Tropical Toll on Trees from Lightning” – *Science*

2016 “I Think, Therefore I Explore” – *The Thinker*

2015 “Determined to Discover” – *University of Louisville Alumni Magazine*

2015 “Where Will Lightning Strike Next?” – *SICB Highlights*