Abbreviated Curriculum Vitae

GREGORY S. GILBERT

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Environmental Studies Department
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Professional positions

Distinguished Professor of Environmental Studies, UC Santa Cruz (2024-present)
Agronomist, UCSC Agricultural Experiment Station (2024-present)
Professor, Environmental Studies Department, UC Santa Cruz (2006-2024)
Research Associate, Smithsonian Tropical Research Institute, Panamá (1997-present)
Associate Professor, Environmental Studies Department, UC Santa Cruz (2001-2006)
Assistant Professor, Environmental Studies Department, UC Santa Cruz (2000-2001)
Assistant Professor and Forest Pathologist, Department of Environmental Science, Policy and Management., UC Berkeley (1996-1999)
Research Affiliate-Biologist, Smithsonian Tropical Research Institute, Panama. (1995-1996)

Education

Postdoctoral fellow, Smithsonian Tropical Research Institute, Panamá (1991 - 1995) (advisors S.P. Hubbell, R. Foster, S.J. Wright).
Ph.D. University of Wisconsin-Madison, 1991 Plant Pathology; Soil Science minor; (advisors J. Parke and J. Handelsman)
M.S. University of Wisconsin-Madison, 1988 (Plant Pathology; major professor Jennifer Parke)
B.S. SUNY College of Environmental Science and Forestry, 1985 (Environ. & Forest Biology)
Tropical Ecosystems Course, Organization for Tropical Studies, Costa Rica, 1989
SeaMester Program in Coastal Ecology, Long Island University, 1984

Research interests

Plant disease ecology; Phylogenetic ecology; Global change ecology; Fungal & plant community ecology; Invasion biology; Disease risk analysis; Inquiry-based learning

Professional Service (significant leadership)

Director, UCSC Forest Ecology Research Plot (2007-)
Faculty Director, UCSC Campus Natural Reserve (2008-)
Department Chair, Environmental Studies Department, UC Santa Cruz (2016-2020)
Affiliated Faculty, departments of Ecology & Evolutionary Biology; Education; Latin American & Latino Studies; Dolores Huerta Research Center for the Americas, UC Santa Cruz (present)
Steering Committee, UCSC CITRIS Institute for Drone Education & Research (CIDER) (2021-)
Steering Committee, UCSC New Gen Learning collaborative (2019-)
Director, Santa Cruz-Watsonville Inquiry Based Learning in Environmental Sciences, (SCWIBLES) NSF GK-12 Graduate Training Program (2010-2015)
Editorial Board, Ecology and Ecological Monographs (2004-2016)

Board of Directors, Vice-Chair for Research, Organization for Tropical Studies (2004-2010)

Honors and Awards

Robert Headley Presidential Chair for Integral Ecology and Environmental Justice (2021-2023)
Golden Apple Excellence in Teaching (2013)
UCSC Chancellor's Achievement Award for Diversity (2012)
Elected Fellow, California Academy of Sciences (2010)
Pepper-Giberson Endowed Chair of Environmental Studies (2008-2013)
Gamma Sigma Delta (Agriculture); Sigma Xi (Science); Xi Sigma Pi (Forestry)

Membership in Professional Associations

Ecological Society of America; Mycological Society of America; Botanical Society of America; American Phytopathological Society; American Society of Naturalists

Current and recent teaching

ENVS 100/L Ecology and Society
ENVS 104A/L Environmental Field Methods
ENVS 163/L Plant Disease Ecology

Current Ph.D Students

Edith Lai (2022-) Ecology of plant-microbe interactions (co-advised with I.M.Parker; EEB)
Karla Jasso (2024-) Forest disease ecology

Previous Graduate Students and Postdocs

Elizabeth Rennie (M.A. 2025) Fire-disease interactions in California coastal woody plants
Jon Detka (Ph.D. 2023) A drone's view of plant disease ecology and privacy ethics
Zackery Shearin (M.S. 2021) Pathogen spillover in grassland communities
Shannon Lynch (Ph.D. 2020) Predicting the spread and impacts of invasive shothole borer-Fusarium complexes
Erica Mullins (M.A. 2020) Phylogenetic network structure of plant-pathogen interactions
Taryn Farber (M.A. 2020) Endophyte-pathogen interactions in urban forests
Jennifer Harrower (Ph.D. 2019) Species interactions and climate change in the loss of Joshua trees and the role of eco-art for understanding multispecies connections.
Sharifa Crandall (Ph.D. 2016) Fungal ecology and ecosystem-based management of special forest products
Minxia Liang (Postdoc 2015) Analysis of fungal community structure in forest communities
Heather Briggs (Ph.D. 2015) Competitive context drives pollinator behavior: Linking foraging plasticity, natural pollen deposition, and plant reproduction
Jennie Ohayon (Ph.D. 2015) New battlegrounds over science, risk, and environmental justice: factors influencing the cleanup of military Superfund sites
Megan Saunders (Postdoc 2010-2013) Phylogenetic ecology of plant-fungal interactions (with Ingrid Parker)

Justin Cummings (Ph.D. 2013) The potential for tropical legume and non-legume trees to suppress the invasive C_4 grass *Saccharum spontaneum* in Panama (with Ingrid Parker, EE Biology)

Daniella Schweizer (Ph.D. 2012) Community interactions in tropical forest restoration and environmental governance in the Panama Canal Watershed (Co-advised with Karen Holl)

Jorge Torres-Ortega (M.A. 2012) Institutional influences on tropical restoration (Co-advised with Jeff Bury)

Suzanne Langridge (Ph.D. 2008) - Addressing stakeholder concerns to resolve restoration conflicts: Agricultural pests and pest control on the Sacramento River Watershed (Co-advised w/ Dan Doak)

Barbara Ayala-Orozco (Ph.D. 2008) - Maintaining the drivers of tropical plant diversity: plant disease in conservation practice

Yuri Springer (Ph.D. 2006) - Coevolutionary dynamics in rust disease on serpentine endemic plants (Co-advised with Mark Carr)

Doug Plante (MA 2005) - Pest impacts on invasive eucalypts in California

Enith Rojas (M.Eng. 2000) - Diversity, abundance, and specificity of microfungi associated with leaves of three species of mangrove (Technological University of Panama)

Ariadna Bethancourt (M.S. 2000) - A method for study of the diversity of endophytic fungi associated with tree species in a tropical forest (Technological University of Panamá)

Matteo Garbelotto (Postdoc 1997-99) - Fungal population structure (UC Berkeley)

Lisa Infante (M.S. 1999) - Complex Interactions: Exploring the Role of Soilborne Plant Pathogens in Tropical Seedling Communities. (UC Berkeley)

Recent Grants and Awards (last 5 years)

CITRIS. Leveraging Robotic Sensors for Ecological Assessment (coPIs S. McGuire and G.S. Gilbert) (2023-25) $26,000.

USDA - AFRI. A biomimetic leaf wetness sensor for precision measurement of leaf wetness duration toward pathogen management. (PI M. Rolandi, coPIs C. Josephson and G. Gilbert). $300,000. (2023-2025).

CITRIS. Ecological monitoring and sample return through an integrated aerial robot-ground robot-human team. (coPIs S. McGuire and G.S. Gilbert) (2022-2024) $40,000.

Wova Labs. Microbial safety in home produced sprouts. (2021) $60,000 (gift)

USDA - NIFA. Increased degree attainment in FANH Sciences: Creating a regional pipeline (PI J.E. Banks, co-PIs J.P. Dundore-Arias, E.G. Mosqueda (CSUMB); coPIs S.M. Philpott, I.M. Parker, G.S. Gilbert (UCSC). (2021-2025) $975,314 total; $400,000 to UCSC.

National Science Foundation. *Phylogenetic disease ecology of plants*. I.M. Parker and G.S. Gilbert DEB 1655896 (2017-2023) $783,039

CITRIS. Online plant disease detection via hyperspectral UAV imaging. (coPIs S. McGuire and G.S. Gilbert) (2021-2022) $40,000.

UCSC Center-Scale Seed Funding Initiative. Building resistance to climate change in crops with artificial intelligence and AgTech devices. Rolandi, M. (PI) with coPIs S. Philpott, M. Gomez, G.S. Gilbert, and M. Teodorescu. (2020-2021) $75,000.

San Diego Association of Governments. *Shothole borer surveys and management techniques*. A. Eskalen and G.S. Gilbert. (2019-2020) $68,688.

Orange County Central & Coastal Subregion, Natural Community Conservation Planning Local Assistance Grant Program. *Management and monitoring of Fusarium dieback-Shot Hole Borer Complex*. Sulentich, J., A. Eskalen and G. Gilbert.(2017-2019) $368,725 total; $95,704 to UCSC.

The Nature Conservancy. *Risk, spread, and control of Fusarium dieback – shot hole borers throughout native plant communities in Orange County.* A. Eskalen and G.S. Gilbert. (2016-2019). $47,313; $26,732 to UCSC.

UC-MEXUS . *Linking biodiversity dimensions for pest and pathogen risk assessment: The roles of phylogenetic signal, geographic distributions and ecological niches*. André Lira Noriega and G. Gilbert. (2017-2019) $7,000 total; $3,250 to UCSC

Cooperative agreement City of Panama and Smithsonian Tropical Research Institute. *Technical assistance and forest research in Panama City urban forest.* Oris Sanjúr and G. Gilbert. 2016-2018) $60,000.

California Department of Food and Agriculture 2016 Specialty Crop Block Grant Program. *Controlling Fusarium Dieback – Shot Hole Borers throughout avocado groves in California* A. Eskalen and G.S. Gilbert. SCB16051. (2016-2019) $449.301 total; $118,538 to UCSC

Co-Principal Investigator, Dimensions: Testing the potential of pathogenic fungi to control the diversity, distribution, and abundance of tree species in a Neotropical forest community. (S.P. Hubbell, B. Faircloth, G.S. Gilbert, and T. Glenn, Full Award $1,941,923). Subaward to UCSC $366,418

Publications (last 5 years) Full list of publications here

2025 Gilbert, G.S., B.C. Faircloth, T.C. Glenn, J.O. Ballesteros, C.A. Barrios-Rodríguez, E. Bonadies, M.L. Cedeño-Sánchez, N.J. Fossatti-Caballero, J.M. Pérez-Suñiga, M.M. Trejos-Rodriguez, S.P. Hubbell. 2025. Hidden decay of live trees in a tropical rain forest. Ecology 106:e70208. doi.org/10.1002/ecy.70208.

2025 Lai, E., E. Mejia, I. Parker, G. Gilbert. 2025. Fungal fighters – a fungal competition lab module for budding microbiologists. Plant Health Instructor 25: doi.org/10.1094/PHI-L-2024-06-0004.

2025 International Tree Mortality Network. 2025. Towards a global understanding of tree mortality. New Phytologist doi.org/10.1111/nph.20407.

2025 Lynch, S.C., E. Reyes-Gonzalez, E.L. Bossard, K.S. Alarcon, N.L.R. Love, A.D. Hollander, B.E. Nobua-Behrmann, and G.S. Gilbert. 2025. A phylogenetic epidemiology approach to predicting the establishment of multi-host plant pests. Communications Biology 8:117. doi.org/10.1038/s42003-S.

2025 Detka, J., M. Jafari, M. Gomez, & G.S. Gilbert. 2025. Machine learning vs. empirical models: Estimating leaf wetness patterns in a wildland landscape for plant disease management. Agricultural and Forest Meteorology, 362, 110392. doi.org/10.1016/j.agrformet.2025.110392

2025 Korycki, A., C. Yeaton, G.S. Gilbert, C. Josephson, and S. McGuire. 2025. NeRF-accelerated ecological monitoring in mixed-evergreen redwood forest. Forests 16(1): 173. doi.org/10.3390/f16010173

2024 Lynch, C.S., F. Na, E. Reyes-Gonzalez, E. Bossard, K.S. Alarcon, A. Eskalen, and G.S. Gilbert. 2024. Wood microbiome variation and interactions with fungal symbionts of invasive ambrosia beetles. Phytobiomes doi.org/10.1094/PBIOMES-01-24-0002-R.

2024 Journé, V. plus 99 coauthors. 2024. The relationship between maturation size and maximum tree size from tropical to boreal climates. *Ecology Letters* 27:e14500 doi.org/10.1111/ele.14500.

2024 Abrego, N. plus 113 coauthors. 2024. Airborne DNA reveals predictable spatial and seasonal dynamics of fungi. *Nature* 631:835–842 doi.org/10.1038/s41586-024-07658-9.

2024 Ovaskainen, O. plus 111 coauthors. 2024. Global Spore Sampling Project: A global, standardized dataset of airborne fungal DNA. *Scientific Data*, 11(1), 561. www.nature.com/articles/s41597-024-03410-0.pdf

2024 de Souza Leite, M., and many. 2024. Major axes of variation in tree demography across global forests. *Ecography* e07187 doi.org/10.1111/ecog.07187

2024 Hülsmann, L., … Gilbert, G.S., … & Hartig, F. 2024. Latitudinal patterns in stabilizing density dependence of forest communities. *Nature* doi.org/10.1038/s41586-024-07118-4.

2024 Rojas, D. and G.S. Gilbert. 2024. The response of *Botrytis cinerea* to fire in a coast redwood forest. *International Journal of Plant Biology* 15: 94–101. doi.org/10.3390/ijpb15010008

2024 Gilbert, G.S., S.G. Carvill, A.R. Krohn, and A.S. Jones. 2024. Three censuses of a mapped plot in coastal California mixed-evergreen and redwood forest. *Forests* 15: 164; doi.org/10.3390/f15010164

2023 Gilbert, G.S. and I.M. Parker. 2023. *The Evolutionary Ecology of Plant Disease.* Oxford University Press. 311 pp. ISBN:9780198797883

2023 Delavaux, C.S. … G.S. Gilbert … C. Averill. 2023. Mycorrhizal feedbacks influence global forest structure and diversity. *Communications Biology* doi.org/10.1038.s42003-023-05410-z

2023 Qiu, T., … G.S. Gilbert, … and J.S. Clark. 2023. Masting is uncommon in trees that depend on mutualist dispersers in the context of global climate and fertility gradients. *Nature Plants* doi.org/10.1038/s41477-023-01446-5

2023 Detka, J., H. Coyle, M. Gomez, and G.S. Gilbert. 2023. A drone-powered deep learning methodology for high precision remote sensing in California's coastal shrubs. *Drones* 7:421 doi.org/10.3390/drones7070421

2023 Cummings, J.A., I.M. Parker, and G.S. Gilbert. 2023. The influence of nitrogen and phosphorus addition on growth of the invasive C_4 grass *Saccharum spontaneum*. *International Journal of Plant Biology* 14, 474–482. doi.org/10.3390/ijpb14020036

2023 Bogdziewicz, M., … G.S. Gilbert, … and J.S. Clark. 2023. Linking seed size and number to trait syndromes in trees. *Global Ecology and Biogeography* DOI: 10.1111/geb.13652

2023 Nguyen, B.H., G.S. Gilbert, and M. Rolandi. 2023. A Bio-mimetic leaf wetness sensor from replica modeling of leaves. *Advanced Sensor Research* doi.org/10.1002/adsr.202200033

2023 Gilbert, G.S., A. Diaz, and H.A. Bregoff. 2023. Seed disinfestation practices to control seed-borne fungi and bacteria in home production of sprouts. *Foods* 12:747 doi.org/10.3390/foods12040747

2022 Liu, X., I.M. Parker, G.S. Gilbert, Y. Lu, Y. Xiao, L. Zhang, M. Huang, Y. Cheng, Z. Zhang, and S. Zhou. 2022. Coexistence is stabilized by conspecific negative density dependence via fungal pathogens more than oomycete pathogens. *Ecology*, e3841.

2022 Gilbert, G. S. and I. M. Parker. 2022. Phylogenetic distance metrics for studies of focal species in communities: quantiles and cumulative curves. *Diversity* 14:521 https://doi.org/10.3390/d14070521

2022 Qiu, T., … G.S. Gilbert, … & J. S. Clark. 2022. Limits to reproduction and seed size-number trade-offs that shape forest dominance and future recovery. *Nature Communications*, *13*(1), 1-12. https://doi.org/10.1038/s41467-022-30037-9

2022 Journé, V., R. Andrus, M.C. Aravena, D. Ascoli, R. Berretti, D. Berveiller, G.S. Gilbert, … & Clark, J. S. 2022. Globally, tree fecundity exceeds productivity gradients. *Ecology Letters* https://doi.org/10.1111/ele.14012.

2022 Parratt-Fernández, S., M-Á. Chaparro-Domínguez, & G. S. Gilbert. 2022. Discursive strategies for climate change reporting: A Case Study of *The Mercury News.* Environmental Communication DOI: 10.1080/17524032.2022.2048043.

2022 Sharma, S. and 45 others. 2022. North American tree migration paced by climate in the West, lagging in the East. Proceedings of the National Academy of Sciences 119:e2116691118.

2021 Gonzalez-Akre, E., C. Piponiot, M. Lepore, V. Herrmann, J. A. Lutz, J. L. Baltzer, C. Dick, G. S. Gilbert, F. He, M. Heym, A. I. Huerta, P. Jansen, D. J. Johnson, N. Knapp, K. Kral, D. Lin, Y. Malhi, S. McMahon, J. A. Myers, D. Orwig, D. I. Rodríguez-Hernández, S. Russo, J. Shue, X. Wang, A. Wolf, T. Yang, S. J. Davies, and K. J. Anderson-Teixeira. 2021. *allodb*: An R package for biomass estimation at globally distributed extratropical forest plots. *Methods in Ecology and Evolution*. https://doi.org/10.1111/2041-210X.13756

2021 Qiu, T. and many. 2021. Is there tree senescence? The fecundity evidence. *Proceedings of the National Academy of Sciences* 118:e2106130118.

2021 Harrower, J.T. and G.S. Gilbert. 2021. Parasitism to mutualism continuum for Joshua trees inoculated with different communities of arbuscular mycorrhizal fungi from a desert elevation gradient. *PLoS ONE* https://doi.org/10.1371/journal.pone.0256068

2021 Sousa, D., J.B. Fisher, F. Romero Galvan, R.P. Pavlick, S. Cordell, T.W. Giambelluca, C.P. Giardina, G.S. Gilbert, F. Iman-Narahari, C.M. Litgton, J.A. Lutz, M.P. North D.A. Orwig, R. Ostertag, L. Sack, R.P. Phillips. 2021. Tree Canopies Reflect Mycorrhizal Composition. *Geophysical Research Letters* 48(10), e2021GL092764.

2021 Zhong, Y., C. Chu, J. Myers, G. Gilbert, J. Lutz, J. Stillhard, K. Zhu,... & J. Zimmerman. 2021. Arbuscular mycorrhizal trees influence the latitudinal beta-diversity gradient of tree communities in forests worldwide. *Nature Communications* 12: 1-12

2021 Clark, J.S. + 62 others. 2021. Continent-wide tree fecundity driven by indirect climate effects. *Nature Communications*. 12(1):1242 doi.org/10.1038/s41467-020-20836-3.

2021 Davies, S.J. + many. 2021. ForestGEO: Understanding forest diversity and dynamics through a global observatory network. *Biological Conservation* 253:108907 https://doi.org/10.1016/j.biocon.2020.108907

2020 Lynch, S. C., A. Eskalen, and G. S. Gilbert. 2020. Host evolutionary relationships explain tree mortality caused by a generalist pest-pathogen complex. *Evolutionary Applications* https://doi.org/10.1111/eva.13182.

2020 Jiang, F., J.A. Lutz, Q. Guo, Z. Hao, X. Wang, G.S. Gilbert, Z. Mao, D.A. Orwig, G.G. Parker, W. Sang, Y. Liu, S. Tian, M.W. Cadotte, and G. Jin. 2020. Mycorrhizal type influences plant density dependence and species richness across 15 temperate forests. *Ecology* https://doi.org/10.1002/ecy.3259

2020 Crandall, S., N. Saarman, and G.S. Gilbert. 2020. Fungal spore diversity, community structure, and traits across vegetation mosaic. *Fungal Ecology* 45: doi.org/10.1016/j.funeco.2020.100920

2020 Liu, X., Chen, L., Liu, M., García–Guzmán, G., Gilbert, G. S., & Zhou, S. 2020. Dilution effect of plant diversity on infectious diseases: latitudinal trend and biological context dependence. *Oikos* DOI: 10.1111/oik.07027.

Older significant publications.

2018 Parker, I.M. and G.S. Gilbert. 2018. Density-dependent disease, life history tradeoffs, and the effect of leaf pathogens on a suite of co-occurring close relatives. *Journal of Ecology*. DOI: 10.1111/1365-2745.13024

2018 Crandall, S. G., J .L. Ohayon, L.A. de Wit, J.E. Hammond, K.L. Melanson, M.M. Moritsch, R. Davenport, D. Ruiz, B. Keitt, N.D. Holmes, H.G. Packard, J. Bury, G.S. Gilbert & I.M. Parker. 2018. Best practices: social research methods to inform biological conservation, *Australasian Journal of Environmental Management* 25:6-23 DOI: 10.1080/14486563.2017.1420499.

2016 Gilbert, G.S. and I.M. Parker. 2016. The evolutionary ecology of plant disease: a phylogenetic perspective. *Annual Review of Phytopathology* 54: DOI: 10.1146/annurev-phyto-102313-045959

2016 Gilbert, GS., JO Ballesteros, CA Barrios-Rodriguez, EF Bonadies, ML Cedeño-Sánchez, NJ Fossatti-Caballero, MM Trejos-Rodríguez, JM Pérez-Suñiga, KS Holub-Young, LAW Henn, JB Thompson, CG García-López, AC Romo, DC Johnston, PP Barrick, FA Jordan, S Hershcovich, N Russo, JD Sánchez, JP Fábrega, R Lumpkin, HA McWilliams, KN Chester, AC Burgos; EB Wong, JH Diab, SA Renteria, JT Harrower, DA Hooton, TC Glenn, BC Faircloth, SP Hubbell. 2016. Use of sonic tomography to detect and quantify wood decay in living trees. Applications in Plant Sciences dx.doi.org/10.3732/apps.1600060

2016 Bryce, C., V. Baliga, K. De Nesnera, D. Fiack, K. Goetz, L. Tarjan, C. Wade, V. Yovovich, S. Baumgart, D. Bard, D. Ash, I. Parker, and G. Gilbert. Models in the NGSS biology classroom. *American Biology Teacher* 78 (1): doi: 10.1525/abt.2016.78.1.35

2015 Parker, I.M., M. Saunders, M. Bontrager, A.P. Weitz, R. Hendricks, R. Magarey, K. Suiter, and G.S. Gilbert. Phylogenetic structure and host abundance drive disease pressure in communities. *Nature* 520:542-544. doi:10.1038/nature14372

2010 Gilbert, G.S., E. Howard, B. Ayala-Orozco, M. Bonilla-Moheno, J. Cummings, S. Langridge, I.M. Parker, J. Pasari, D. Schweizer, S. Swope. Beyond the tropics: forest structure in a temperate forest mapped plot. *Journal of Vegetation Science* 21: 388-405

2008 Bradley, D.J., G.S. Gilbert, and J.B.H. Martiny. Pathogens promote plant diversity through a compensatory response. *Ecology Letters* 11: 461-469

2007 Parker, I.M. and G.S. Gilbert. When there is no escape: the effects of natural enemies on native, invasive, and noninvasive plants. *Ecology* 88: 1210-1224

2007 Gilbert, G.S. and C.O. Webb. Phylogenetic signal in plant pathogen-host range. *Proceedings of the National Academy of Sciences (PNAS)* 104:4979-4983

2006 Mitchell, C., Agrawal, A., Bever, J., Gilbert, G., Hufbauer, R., Klironomos, J., Maron, J., Morris, W., Parker, I., Power, A., Seabloom, E., Torchin, M., Vázquez, D. Biotic interactions and plant invasions. *Ecology Letters* 9:726-740.

2004 Parker, I.M. and G.S. Gilbert. The evolutionary ecology of novel plant-pathogen interactions. *Annual Review of Ecology, Evolution, and Systematics*. 35: 675-700.

2002 Gilbert, G.S. Evolutionary ecology of plant diseases in natural ecosystems. *Annual Review of Phytopathology* 40:13-43