University of California, Santa Cruz Tel: (831) 459-5002

Environmental Studies Department FAX: (831) 459-4015

439 Interdisciplinary Sciences Building email: ggilbert@ucsc.edu

Santa Cruz, CA 95064, USA http://people.ucsc.edu/~ggilbert

**Professional positions**

Professor, Environmental Studies Department, UC Santa Cruz (Jul 2006 - present)

Senior Research Associate, Smithsonian Tropical Research Institute, Panamá (2013- present)

Pepper-Giberson Chair of Environmental Studies (rotating endowed chair) (2008-2013)

Research Associate, Smithsonian Tropical Research Institute, Panamá (1997-2013)

Associate Professor, Environmental Studies Department, UC Santa Cruz (Jul 2001 - Jun 2006)

Assistant Professor, Environmental Studies Department, UC Santa Cruz (Jan 2000 - Jun 2000)

Assistant Professor and Forest Pathologist, Department ESPM, UC Berkeley (Jul 1996 -Dec 1999).

Research Affiliate-Biologist, Smithsonian Tropical Research Institute, Panama (Dec 1995 - Jul 1996).

Research Assistant Professor of Biology, University of Utah (Jul 1993 - Jun 1996).

**Education**

Postdoctoral fellow, Smithsonian Tropical Research Institute, Panamá (Oct 1991 - Dec 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 (Envir. & 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; Tropical ecology and conservation; Fungal & plant community ecology; Invasion biology; Phytosanitary risk analysis

**Current and recent teaching**

Tropical Ecology and Conservation

Plant Disease Ecology

Keywords and Concepts in Environmental Studies: Ecology and Geography (Core Graduate Course)

Tropical Ecology, Agriculture, and Development Graduate Seminar

Transitioning to R Graduate Seminar

**Current Ph.D Students**

Sharifa Crandall (2009-) Fungal spore traits and fungal responses to climate

Heather Briggs (2009-) Effects of species loss on pollination networks

Jennifer Harrower (2013-) Plant-fungus-insect mutualisms in the face of climate change

Gwen Casebeer (2014-) Mycorrhizae and mycorediation

Shannon Lynch (2015-) Predicting spread of invasive tree diseases

Jessica Gee (2015-) Citizen science for environmental monitoring

**Previous Graduate Students and Postdocs**

Jennie Ohayon (Ph.D., 2015) Community participation in reversion of contaminated military bases

Megan Saunders (Postdoc 2010-2013) Phylogenetic ecology of plant-fungal interactions (with Ingrid Parker)

Justin Cummings (Ph.D. 2013) Ecology of tropical invasive grasses (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) (UCSC)

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

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

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

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)

**Professional Service**

Director, Graduate Program (UC Santa Cruz, Dept. of Environmental Studies) (2003-05, 2006-2014)

Director, Santa Cruz-Watsonville Inquiry Based Learning in Environmental Sciences, (SCWIBLES)  
NSF GK-12 Graduate Training Program (2010-)

Editorial Board, Ecology and Ecological Monographs (2004-)

Co-director, Center for Tropical Research in Ecology, Agriculture, and Development (CenTREAD) (2002-)

Editorial Board, Fungal Ecology (2010-2011)

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

Graduate Council (UC Santa Cruz, Academic Senate) (2007-08)

Conservation Committee, Association for Tropical Biology and Conservation (2004-09)

**Memberships in Honorary Societies**

Elected Fellow, California Academy of Sciences (2010)

Gamma Sigma Delta (Agriculture); Sigma Xi (Science); Xi Sigma Pi (Forestry)

**Membership or Activities in Professional Associations**

Ecological Society of America; Society for Conservation Biology; Association for Tropical Biology and Conservation; Mycological Society of America; American Phytopathological Society; American Society of Naturalists

**Recent Grants and Awards**

National Science Foundation, Dimensions in Biodiversity: Testing the potential of pathogenic fungi to control the diversity, distribution, and abundance of tree species in a neotropical forest community. S.P. Hubbell, T. Glenn, G.S. Gilbert, B. Faircloth, M. Saunders, DEB 1136626 (2012-2017)

National Science Foundation. GK-12: SCWIBLES - Santa Cruz-Watsonville Inquiry Based Learning in Environmental Sciences. G.S. Gilbert, I.M. Parker, and D. Ash, DGE-094723 (2010-2015)

National Science Foundation. Rare-species advantage: consequences of phylogenetic and numerical rarity of hosts for disease pressure and pathogen communities. G.S. Gilbert and I.M. Parker, DEB-0842059. (2009-2012)

USDA-APHIS. Cooperative agreement, Phylogenetic Analysis for the Data Archival and Reporting Project (GPDD) (2010-14)

National Science Foundation, Research Experiences for Undergraduates (REU) Supplemental Request DEB-0814224 for 2 students from underrepresented groups (2008-09)

National Science Foundation. Collaborative Research: distance-and phylogeny-dependent pathogen transmission in forest communities. G. S. Gilbert and C. O. Webb DEB-0515520); collaborative with K.A. Garrett (Kansas State; DEB-0516046). (2005-2009)

Pacific Rim Research Program. A Biological Basis for Quarantine: Host Ranges of Emergent Plant Pathogens and the Conservation of Pacific Rim Rain Forests. (2005-2006)

**Publications**

2016Bryce, 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): *In press*

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](http://www.escholarship.org/uc/item/75d1v3md)

2015 Gilbert, G.S., H. Briggs, and R. Magarey. The impact of plant enemies shows a phylogenetic signal. *PLoS ONE* [doi:10.1371/journal.pone.0123758](http://www.escholarship.org/uc/item/6tx207t6)

2014 Anderson-Teixera, K. + 106. CTFS-ForestGEO: a worldwide network monitoring forests in an era of global change. *Global Change Biology* doi:10.1111/gcb.12712

2013 Lyon, B.E. and G.S. Gilbert. Rarely parasitized and unparasitized species mob and alarm call to Cuckoos: implications for sparrowhawk mimicry by brood parasitic cuckoos. *The Wilson Journal of Ornithology* 125: 627-630

2013 Toju, H., S. Yamamoto, H. Sato, A.S. Tanabe, G.S. Gilbert, & K. Kadowaki. Community composition of root-associated fungi in a *Quercus*-dominated temperate forest: "codominance" of mycorrhizal and root-endophytic fungi. *Ecology and Evolution* doi: 10.1002/ece3.546.

2013 Schweizer,D., G.S. Gilbert, & K.D. Holl. 2013. Phylogenetic ecology applied to enrichment planting of tropical native tree species. *Forest Ecology & Management* 297:57-66

2012 Cummings, J.A., I.M. Parker, & G. S. Gilbert. Allelopathy: a tool for weed management in forest restoration. *Plant Ecology* 213: 1975-1989.

2012 Gilbert, G.S., R. Magarey, K. Suiter, and C.O. Webb. Evolutionary tools for phytosanitary risk analysis: Phylogenetic signal as a predictor of host range of plant pests and pathogens. *Evolutionary Applications* 5:869-878.

2010 Gilbert, G.S. and I.M. Parker. Rapid evolution in a plant-pathogen interaction and the consequences for introduced host species. *Evolutionary Applications* 3: 144-156

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

2009 Méndez, V. E., E. N. Shapiro, and G.S. Gilbert. Cooperative management and its effects on shade tree diversity, soil properties and ecosystem services of coffee plantations in western El Salvador. *Agroforestry Systems* 76: 111-126.

2009 Bergemann, S.E., M.A. Smith, J.L. Parrent, G.S. Gilbert, and M. Garbelotto. Genetic population structure and distribution of a fungal polypore (*Datronia caperata*: Polyporaceae) in mangrove forests of Central America. *Journal of Biogeography* 36:266-279.

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

2008 Gilbert, G.S. and I.M. Parker. Porroca: An emerging disease of coconut in Central America. *Plant Disease* 92: 826-830.

2008 Bidartondo, M.I. *et al.* Preserving accuracy in GenBank. *Science* 319:1616. (Letter)

2007 Gilbert, G.S., J. Gorospe, and L. Ryvarden. Host and habitat preferences of polypore fungi in Micronesian tropical flooded forests. *Mycological Research* 112: 674-680

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 Morris, W.F., R.A. Hufbauer, A.A. Agrawal, J.D. Bever, V.A. Borowicz, G.S. Gilbert, J.L. Maron, C.E. Mitchell, I.M. Parker, A.G. Power, M.E. Torchin, D.P. Vázquez. Direct and interactive effects of enemies and mutualists on plant performance: a meta-analysis. *Ecology* 88:1021-1029

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

2007 Gilbert, G.S., D.R. Reynolds and A. Bethancourt. The patchiness of epifoliar fungi in tropical forests: host range, host abundance, and environment. *Ecology* 88:575-581

2007 Gilbert, G.S. and D.R. Strong. Fungal symbionts of tropical trees. *Ecology* 88:539-540.

2007 Mendez, V., E., Gliessman, S., R., Gilbert, G.S. Tree biodiversity of a shade coffee landscape in western El Salvador. *Agriculture, Ecosystems and Environment* 119:145-159

2006 Webb, C.O., G.S. Gilbert, and M. J. Donoghue. Phylodiversity dependent seedling mortality, size structure, and disease in a Bornean rain forest. *Ecology* 87(7): S123-S131

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.

2006 Reynolds, D.R. and G.S. Gilbert. Epifoliar fungi from Panama. *Cryptogamie Mycologie* 27:249-270.

2006 Springer, Y., B.A. Hardcastle, and G.S. Gilbert. Soil calcium and plant disease in serpentine ecosystems: A test of the pathogen refuge hypothesis. *Oecologia* 151: 10-21

2006 Gilbert, G. S. and I. M. Parker. Invasions and the regulation of plant populations by pathogens. Pages 289-305 in: M.W. Cadotte, S. M. McMahon, and T. Fukami (Eds.) *Conceptual ecology and invasion biology: reciprocal approaches to nature*. Springer.

2005 Gilbert, G. S. The dimensions of plant disease in tropical forests. Pp. 141-164. in D.R.F.P. Burslem, M.A. Pinard and S. Hartley (eds.) *Biotic Interactions in the Tropics*. Cambridge University Press.

2005 Gilbert, G.S. and D.R. Reynolds. Nocturnal fungi: Airborne spores in the canopy and understory of a tropical rain forest. *Biotropica* 37: 461-463.

2005 Reynolds, D. R. and G. S. Gilbert. Epifoliar fungi from Queensland, Australia. *Australian Systematic Botany*. 18: 265-289.

2005 CenTREAD Working Group. Farmers and the forest: Can agroforestry actually conserve biodiversity? Review of Agroforestry and Biodiversity Conservation in Tropical Landscapes. Schroth, G., G. A. B. da Fonseca, C. A. Harvey, C. Gascon, H. L. Vasconcelos, and A-M. N. Izac, (eds.). 2004 Island Press. *Conservation Biology* 19: 2043-2044 (book review)

2005 CenTREAD Working Group. Making Parks Work: a thought provoking argument but not a guide. Review of Making Parks Work: Strategies for Preserving Tropical Nature (2002) by Terborgh, J., C. Van Schaik, L. Davenport, and M. Rao, (Eds.) *Conservation Biology* 19: 279-281 (book review)

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.

2004 Parrent, J.L., M. Garbelotto, and G. S. Gilbert. Population genetic structure of the polypore fungus *Datronia caperata* in fragmented mangrove forests. *Mycological Research* 108:403-410.

2003 Ferrer, A. and G. S. Gilbert. Effect of tree host species on fungal community composition in a tropical rain forest in Panama. *Diversity and Distributions* 9:455-468.

2003 Bradley, D. J., G. S. Gilbert, and I. M. Parker. Susceptibility of clover species to fungal infection: the interaction of leaf surface traits and environment. *American Journal of Botany* 90:857-864.

2003 Reynolds, D.R., G.S. Gilbert, & A. Bethancourt. Canopy fungi. Pages 144-145 in Y. Basset, V. Horlyck, & S.J. Wright (eds.) *Studying Forest Canopies from Above: The International Canopy Crane Network*. Smithsonian Tropical Research Institute and UNEP.

2003 Carman, J. & G. Gilbert. 2003. Mosquitoes and West Nile Virus. Organically allowable control methods and the need for an organically allowable adulticide. *California Certified Organic Farmers Magazine,* Fall 2003: 10-11.

2002 Gilbert, G.S. Interacciones entre microorganismos y plantas (Interactions between microorganisms and plants) Pages 435-463 in M. Guariguata and G. Kattan (eds.), *Ecología y Conservación de Bosques Tropicales* (Ecology and Conservation of Tropical Forests, in Spanish). Libro Universitario Regional, Cartago, Costa Rica.

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

2002 Gilbert, G.S. and W.P. Sousa. Host specialization among wood-decay fungi in Caribbean mangrove forests *Biotropica* 34:396-404.

2002 Gilbert, G.S., M. Mejía-Chang, and E. Rojas. Fungal diversity and plant disease in mangrove forests: salt excretion as a possible defense mechanism. *Oecologia* 132:278-285.

2002 Gilbert, G.S., A. Ferrer, and J. Carranza. Polypore fungal diversity and host density in a moist tropical forest. *Biodiversity and Conservation* 11: 947-957.

2002 Proyecto Porroca. Mapa de la Comarca de Kuna Yala (Map of the Indigenous Reserve of Kuna Yala). First complete, published map of the islands and towns of the Kuna people, in Kuna Yala, Panama. Produced by Proyecto Porroca (G.S. Gilbert, I.M. Parker, and E. Soo).

2001 Arnold, A.E., Z. Maynard, and G. Gilbert. Fungal endophytes in dicotyledonous neotropical trees: patterns of abundance and diversity. *Mycological Research* 105:1502-1507.

2001 Gilbert, G.S., K. E. Harms, D. N. Hamill, S. P. Hubbell, and R. B. Foster. Effects of seedling size, weather, seedling density, and distance to nearest conspecific adult on 6-year survival of *Ocotea whitei* seedlings in Panamá. *Oecologia* 127: 509-516.

2000 Arnold, A.E., Z. Maynard, G.S. Gilbert, P.D. Coley, and T.A. Kursar. Are tropical fungal endophytes hyperdiverse? *Ecological Letters* 3:267-274.

2000 Goodell, K., I.M. Parker, and G.S. Gilbert. Biological impacts of species invasions: Implications for policy makers. Pages 87-117 in Caswell, J. (ed.), *Incorporating Biological, Natural, and Social Sciences in Sanitary and Phytosanitary Standards in International Trade*. Washington DC: Nation Academy Press.

1999 Gilbert, G.G., E. Soo, and I.M. Parker. La Porroca. Una nueva enfermedad del cocotero en Kuna Yala y Panama (Technical bulletin in Spanish and Kuna on an emerging disease of coconut in Panama) (technical brochure).

1999 Patiño, S., G.S. Gilbert, G. Zotz, and M.T. Tyree. Growth and survival of aerial roots of hemiepiphytes in a lower montane tropical moist forest in Panama. *Journal of Tropical Ecology* 15: 651-665.

1998 Travers, S.E., G.S. Gilbert, and E.F. Perry. The effect of rust infection on reproduction in a tropical tree (*Faramea occidentalis*). *Biotropica* 30:438-443.

1997 Gilbert, G.S., N. Talaro, C. A. Howell, and A. Symstad. Multiple-scale spatial distribution of the fungal epiphyll *Scolecopeltidium* on *Trichilia* spp. in two lowland moist tropical forests. *Canadian Journal of Botany* 75: 2158-2164.

1996 Gilbert, G.S. and D. De Steven. A canker disease of seedlings and saplings of *Tetragastris panamensis* (Burseraceae) caused by *Botryosphaeria dothidea* in a lowland tropical forest. *Plant Disease* 80: 684-687.

1996 Gilbert, G.S., J.L. Parke, J. Handelsman, and M.K. Clayton. Use of cluster and discriminant analyses to compare rhizosphere bacterial communities following biological perturbation. *Microbial Ecology* 32:123-147.

1996 Gilbert, G.S. and M. Mejía Ch. (editors). *Manual para las Investigaciones de Biología de Campo* (Manual of Biological Field Research) (2nd edition), Smithsonian Tropical Research Institute, Panamá. 107 pp.

1996 Gilbert, G.S. and S.P. Hubbell. Plant diseases and the conservation of tropical forests. *Bioscience* 46: 98-106.

1995 Gilbert, G.S. Rain forest plant diseases: the canopy - understory connection. *Selbyana* 16:75-77.

1995 Guariguata, M. and G.S. Gilbert. Interspecific variation in rates of trunk wound closure in a Panamanian lowland forest. *Biotropica* 28: 23-29.

1994 Gilbert, G.S., S.P. Hubbell, and R.B. Foster. Density and distance-to-adult effects of a canker disease of trees in a moist tropical forest. *Oecologia* 98: 100-108.

1994 Gilbert, G.S., J. Handelsman, and J.L. Parke. Root camouflage and disease control. *Phytopathology* 84: 222-225.

1993 Gilbert, G.S., J.L. Parke, M.K. Clayton, and J. Handelsman. Effects of an introduced bacterium on bacterial communities on roots. *Ecology* 74: 840-854.

1992 Griffin, D.H., K.E. Quinn, G.S. Gilbert, C.J.K. Wang, and S. Rosemarin. The role of ascospores and conidia as propagules in the disease cycle of *Hypoxylon mammatum*. *Phytopathology* 82: 114-119.

1992 Wetterer, J., S. Shafir, L. Morrison, K. Lips, G. Gilbert, M. Cipollini, and C. Blaney. On- and off-trail orientation in the leaf-cutting ant, *Atta cephalotes* (L.) (Hymenoptera: Formicidae). *Journal of the* *Kansas Entomological Society* 65: 96-98.

1990 Gilbert, G.S., J. Handelsman, and J.L. Parke. Role of ammonia and calcium in lysis of zoospores of Phytophthora cactorum by *Bacillus cereus* strain UW85. *Experimental Mycol*ogy 14: 1-8.

1986 Gilbert, G.S. and F.E. Kurczewski. Soil nutrient effects on goldenrod galls formed by *Eurosta solidaginis* (Diptera: Tephritidae). *Entomology News* 97: 28-32.