

Kent E. Holsinger

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Education

- 1978 B.S., *Summa cum laude*, Departmental Honors in Biology, The College of Idaho
- 1982 Ph.D. in Biological Sciences, Stanford University

Positions held

- 1982–1984 Miller Research Fellow, Miller Institute for Basic Research in Science, University of California Berkeley (sponsored by the Department of Botany)
- 1984–1986 Research Associate, Department of Biological Sciences and Dudley Herbarium, Stanford University
- 1986– Assistant Professor, Associate Professor, Professor, Department of Ecology & Evolutionary Biology, University of Connecticut
- 2002– Adjunct Professor, Department of Statistics, University of Connecticut
- 2005–2006 Acting Head, Department of Ecology & Evolutionary Biology, University of Connecticut
- 2012–2013 Interim Vice Provost for Graduate Education and Dean of The Graduate School, University of Connecticut
- 2013– Vice Provost for Graduate Education and Dean of The Graduate School, University of Connecticut

Notable honors & awards

- 1978–1981 Graduate research fellowship, National Science Foundation
- 2000 Chancellor's Information Technology Award, University of Connecticut
- 2003 Fellow, American Association for the Advancement of Science
- 2006 Centennial Award, Botanical Society of America
- 2007 Service Excellence Award, University of Connecticut Chapter, American Asso-

- ciation of University Professors
 2007 Faculty Award for Research Excellence – Sciences, University of Connecticut Alumni Association
 2008 Distinguished Alumni Award, College of Idaho
 2010 Member, Connecticut Academy of Science & Engineering
 2012 Board of Trustees Distinguished Professor, University of Connecticut

Current external funding

- 2016–2017 Dissertation Research: Are functional traits adaptive? Dissecting the evolutionary dynamics of plant functional traits, 6/1/2016–5/31/2017, National Science Foundation DEB-1601095 \$17,928 (Nora Mitchell, co-principal investigator; Dissertation Improvement Grant for N. Mitchell).

Publications

Edited book

- 1991 Falk, D. A., and **K. E. Holsinger**, eds. 1991. *Genetics and Conservation of Rare Plants*. Oxford University Press, New York, NY.

Peer-reviewed journal articles (since 2005)

- 2005 Sezen, U. U., R. L. Chazdon, and **K. E. Holsinger**. 2005. Genetic consequences of tropical second-growth forest regeneration. *Science* 307:891.
 Fu, R., D. K. Dey, and **K. E. Holsinger**. 2005. Bayesian models for analysis of genetic structure when populations are correlated. *Bioinformatics* 21:1516–1529.
 Lewis, P. O., M. T. Holder, and **K. E. Holsinger**. 2005. Polytomies and Bayesian phylogenetic inference. *Systematic Biology* 54:241–253.
 Hoffmeister, T. S., L. E. M. Vet, A. Biere, **K. Holsinger**, and J. Filser. 2005. Ecological and evolutionary consequences of biological invasion and habitat fragmentation. *Ecosystems* 8:657–667.
- 2006 Song, S., D. K. Dey, and **K. E. Holsinger**. 2006. Hierarchical models with migration, mutation, and drift: implications for genetic inference. *Evolution* 60:1–12.
- 2007 Shannon, R. K., and **K. E. Holsinger**. 2007. The genetics of sex determination in stinging nettle (*Urtica dioica*). *Sexual Plant Reproduction* 20:35–43.
 Bhattacharya, S., A. E. Gelfand, and **K. E. Holsinger**. 2007. Model fitting and inference under latent equilibrium processes. *Statistics and Computing* 17:193–208.

- Sezen, U. U., R. L. Chazdon, and **K. E. Holsinger**. 2007. Multi-generational genetic analysis of tropical second-growth forest regeneration. *Ecology* 88:3065–3075.
- 2008 Evans, M. E. K., **K. E. Holsinger**, and E. S. Menges. 2008. Modeling the effect of fire on the demography of *Dicerandra frutescens* ssp. *frutescens* (Lamiaceae), an endangered plant endemic to Florida scrub. *Population Ecology* 50:53–62.
- Guo, F., D. K. Dey, and **K. E. Holsinger**. 2008. A hierarchical Bayesian approach for estimating origin of a mixed population. *IMS Collections* 3:237–250.
- Lubell, J. D., M. H. Brand, J. M. Lehrer, and **K. E. Holsinger**. 2008. Detecting the influence of ornamental *Berberis thunbergii* var. *atropurpurea* in invasive populations of *Berberis thunbergii* DC. (Berberidaceae) using AFLP. *American Journal of Botany* 95:700–705.
- 2009 Guo, F., D. K. Dey, and **K. E. Holsinger**. 2009. A Bayesian hierarchical model for analysis of SNP diversity in multilocus, multipopulation models. *Journal of the American Statistical Association* 104:142–154.
- Lubell, J. D., M. H. Brand, J. M. Lehrer, and **K. E. Holsinger**. 2009. AFLP and parentage analysis of a feral barberry (*Berberis thunbergii* DC.) population to determine the contribution of an ornamental landscape genotype. *HortScience* 44:392–395.
- Sezen, U. U., R. L. Chazdon, and **K. E. Holsinger**. 2009. Proximity is not a proxy for parentage in an animal-dispersed Neotropical canopy palm. *Proceedings of the Royal Society of London, Series B* 276:2037–2044.
- Holsinger, K. E.**, and B. S. Weir. 2009. Genetics in geographically structured populations: defining, estimating, and interpreting F_{ST} . *Nature Reviews Genetics* 10:639–650.
- 2010 Carlson, J. E., and **K. E. Holsinger**. 2010. Natural selection on inflorescence color polymorphisms in wild *Protea* populations: the role of pollinators, seed predators, and intertrait correlations. *American Journal of Botany* 97:934–944.
- Theiss, K. E., **K. E. Holsinger**, and M. E. K. Evans. 2010. Breeding system variation in ten evening primroses (*Oenothera* sections *Anogra* and *Kleinia*, Onagraceae). *American Journal of Botany* 97:1031–1039.
- Holsinger, K. E.** 2010. Next generation population genetics and phylogeography. *Molecular Ecology* 19:2361–2363.
- Prunier, R., and **K. E. Holsinger**. 2010. Was it an explosion? Using population genetics to explore the dynamics of a recent radiation within *Protea* (Proteaceae L.). *Molecular Ecology* 19:3968–3980.
- Evans, M. E. K., **K. E. Holsinger**, and E. S. Menges. 2010. Fire, vital rates, and population viability: a hierarchical Bayesian analysis of the endangered Florida scrub mint. *Ecological Monographs* 80:627–649.
- Skogen, K. A., L. Senack, and **K. E. Holsinger**. 2010. Dormancy, small seed size, and low germination rates contribute to low recruitment in *Desmodium*

- cuspidatum* (Fabaceae). *Bulletin of the Torrey Botanical Club* 137:355-365.
- 2011 Sundberg, M. D., P. DeAngelis, K. Havens, **K. E. Holsinger**, K. Kennedy, A. T. Kramer, R. Muir, P. Olwell, K. Schierenbeck, L. Stritch, and B. Zorn-Arnold. 2011. Perceptions of strengths and deficiencies: disconnects between graduate students and prospective employers. *BioScience* 61:133-138.
- Skogen, K. A., **K. E. Holsinger**, and Zoe G. Cardon. 2011. Nitrogen deposition, competition, and the decline of a regionally threatened legume, *Desmodium cuspidatum*. *Oecologia* 165:261-269.
- Carlson, J. E., **K. E. Holsinger**, and R. Prunier. 2011. Plant responses to climate in the Cape Floristic Region of South Africa: evidence for adaptive differentiation in the Proteaceae. *Evolution* 65:108-124.
- Evans, M. E. K., D. J. Hearn, K. E. Theiss, K. Cranston, **K. E. Holsinger**, and M. J. Donoghue. 2011. Extreme environments select for reproductive assurance: evidence from evening primroses (*Oenothera*). *New Phytologist* 191:555-563.
- Song, S., D. K. Dey, and **K. E. Holsinger**. 2011. Genetic diversity of microsatellite loci in hierarchically structured populations. *Theoretical Population Biology* 80:29-37.
- Fu, R., D. K. Dey, and **K. E. Holsinger**. 2011. A beta mixture model for assessing genetic population structure. *Biometrics* 67:1073-1082.
- 2012 Stefaniak, L., H. Zhang, A. Gittenberger, K. Smith, **K. Holsinger**, S. Lin, and R. B. Whitlatch. 2012. Determining the native region of the putatively invasive ascidian *Didemnum vexillum* Kott, 2002. *Journal of Experimental Marine Biology and Ecology* 422-423:64-71.
- Kanno, Y., J. C. Vokoun, **K. E. Holsinger**, and B. H. Letcher. 2012. Estimating size-specific brook trout abundance in continuously sampled headwater streams using Bayesian mixed models with zero inflation and overdispersion. *Ecology of Freshwater Fish* 21:404-419.
- Prunier, R., **K. E. Holsinger**, and J. E. Carlson. 2012. The effect of historical legacy on adaptation: do closely related species respond to the environment in the same way? *Journal of Evolutionary Biology* 25:1636-1649.
- Meiman, S., D. Civco, **K. Holsinger**, and C. S. Elphick. 2012. Comparing habitat models using ground-based and remote sensing data: saltmarsh sparrow presence versus nesting. *Wetlands* 32:725-736.
- Evans, M. E. K., and **K. Holsinger**. 2012. Estimating covariation between vital rates: a simulation study of connected vs. separate generalized linear mixed models (GLMMs). *Theoretical Population Biology* 82:299-306.
- Carlson, J. E., and **K. E. Holsinger**. 2012. Developmental plasticity in *Protea* as an evolutionary response to environmental clines in the Cape Floristic Region. *PLoS One* 7(12):e52035.
- 2013 Carlson, J. E., and **K. E. Holsinger**. 2013. Direct and indirect selection on floral pigmentation by pollinators and seed predators in a color polymorphic South African shrub. *Oecologia* 171:905-919.

- Jiang, X., D. K. Dey, R. Prunier, A. M. Wilson, and **K. E. Holsinger**. 2013. A new class of flexible link functions with application to species co-occurrence in Cape Floristic Region. *Annals of Applied Statistics* 7:2180-2204.
- 2014 Matesanz, S., K. E. Theiss, **K. E. Holsinger**, and Sonia E. Sultan. 2014. Genetic diversity and population structure in *Polygonum cespitosum*: insights to an ongoing plant invasion. *PLoS One* 9(4):e93217.
- Heschel, M. S., A. Evankow, K. B. Wolfson, J. E. Carlson, and **K. E. Holsinger**. 2014. Drought response diversification in African *Protea* species. *International Journal of Plant Sciences* 175:442-449.
- Prunier, R., **K. E. Holsinger**, and J. E. Carlson. 2014. Reconsidering a disjunct distribution: molecular and morphological evidence for two evolutionarily distinct lineages in *Protea mundii* Klotsch. *South African Journal of Botany* 95:64-69.
- 2015 Mitchell, N., T. Moore, H. Kilroy Mollman, J. E. Carlson, K. Mocko, J. A. Silander, Jr., C. S. Jones, C. D. Schlichting, and **K. E. Holsinger**. 2015. Functional traits in evolutionary radiations and the origin of trait-environment associations. *American Naturalist* 185:525-537.
- Carlson, J. E., and **K. E. Holsinger**. 2015. Extrapolating from local ecological processes to genus-wide patterns in colour polymorphism in South African *Protea*. *Proceedings of the Royal Society, Series B* 282:20150583.
- 2016 Carlson, J. E., C. A. Adams, and **K. E. Holsinger**. 2016. Intraspecific variation in stomatal traits, leaf traits, and physiology reflects adaptation along aridity gradients in a South African shrub. *Annals of Botany* 117:195-207.
- Akman, M., J. E. Carlson, **K. E. Holsinger**, and A. M. Latimer. 2016. Transcriptome sequencing reveals population differentiation in gene expression linked to functional traits and environmental gradients in the South African shrub *Protea repens*. *New Phytologist* 210:295-309.
- 2017 Mitchell, N., P. O. Lewis, E. M. Lemmon, A. R. Lemmon, and **K. E. Holsinger**. 2017. Anchored phylogenomics improves the resolution of evolutionary relationships in the rapid radiation of *Protea* L. *American Journal of Botany* 104:102-115
- Prunier, R., M. Akman, C. T. Kremer, N. Aitken, A. Chuah, J. Borevitz, and **K. E. Holsinger**. 2017. Isolation by distance and isolation by environment contribute to population differentiation in *Protea repens* (Proteaceae L.), a widespread South African species. *American Journal of Botany* 104:674-684.
- 2018 Mitchell, N., J. E. Carlson, and **K. E. Holsinger**. 2018. Correlated evolution between climate and suites of traits along a fast-slow continuum in the radiation of *Protea*. *Ecology and Evolution* 8:1853-1866.
- Mitchell, N., and **K. E. Holsinger**. 2018. Cryptic natural hybridization between two species of *Protea*. *South African Journal of Botany* 118:306-314.

Chapters in edited volumes (since 2005)

- 2006 **Holsinger, K. E.** 2006. Bayesian hierarchical models in geographical genetics, In *Applications of computational statistics in the environmental sciences*, ed. J. S. Clark and A. E. Gelfand, pp. 25–37. Oxford University Press, New York, NY.
- 2014 **Holsinger, K. E.** 2014. Theory of selection in populations, In *The Princeton Guide to Evolution*, ed. J. Losos, Chapter III.3, pp. 206–214. Princeton University Press, Princeton, NJ.

Short papers in peer-reviewed publications (since 2005)

- 2006 **Holsinger, K. E.** 2006. Similar strokes for different folks. *Heredity* 96:203.
- Holsinger, K. E.** 2006. Responding to challenges for biological research and education. *BioScience* 56:3.
- Holsinger, K. E.** 2006. A new era for the public understanding of science. *BioScience* 56:955.
- 2010 **Holsinger, K. E.** 2010. Next generation population genetics and phylogeography. *Molecular Ecology* 19:2361–2363.

Book reviews (since 2005)

- 2010 **Holsinger, K. E.** 2010. Review of *Darwin's Island: The Galapagos in the Garden of England*, Steve Jones. *Reports of the National Center for Science Education* 30(6):30.

Technical reports (since 2005)

- 2005 Evolutionary Biology Workshop. 2005. Frontiers in Evolutionary Biology. Prepared for the National Science Foundation. 10pp.
- Song, S., D. K. Dey, and **K. E. Holsinger**. 2005. Genetic diversity of microsatellite loci in hierarchically structured populations. Technical report 05-12, Department of Statistics, University of Connecticut.
- 2006 Guo, F., D. K. Dey, and **K. E. Holsinger**. 2006. A hierarchical Bayesian approach for estimating origin of a mixed population. Technical report 06-16, Department of Statistics, University of Connecticut.
- 2011 **Holsinger, K.**, E. Kellogg, and M. Smith. 2011. Dimensions of Biodiversity Workshop Report. <http://dx.doi.org/10.6084/m9.figshare.695027.v1>
- 2012 **Holsinger, K. E.** 2012. Lecture notes in population genetics. <http://dx.doi.org/10.6084/m9.figshare.100687>
- 2016 Evans, M.E.K., D.A. Falk, A. Arizpe, T.L. Swetnam, F. Babst, **K. E. Holsinger**.

2016. Fusing tree-ring and forest inventory data to infer influences on tree growth. bioRxiv 097535 <https://doi.org/10.1101/097535>

Published datasets and code

- 2015 Carlson, J.E., and **K.E. Holsinger**. 2014. *Protea* anthocyanin polymorphism (Version v1.1.0). <https://doi.org/10.5218/zenodo.10858>
- 2016 **Holsinger, K.E.**, and J.E. Carlson. 2015. *Protea repens* physiology - traits, environment, and functional response (Version v1.1). <https://doi.org/10.5281/zenodo.22393>
- 2017 **Holsinger, K.E.** 2016. Genotyping by sequencing in *Protea repens* (Version v0.91). <https://doi.org/10.5281/zenodo.54919>

Publications by students

- 1992 Kelly, J. K. 1992. Kin selection in density regulated populations. *Journal of Theoretical Biology* 157:447–461.
- 1994 Kelly, J. K. 1994. The effect of scale-dependent processes on kin selection: mating and density regulation. *Theoretical Population Biology* 46:32–57.
- 2001 Vitt, P. 2001. Gender-related differences in gas exchange rates in *Arisaema triphyllum* (Araceae). *Rhodora* 103:387–404.
- 2010 Prunier, R., and A. Latimer. 2010. Microsatellite primers in the white proteas (*Protea* section *Exsertae*, Proteaceae), a rapidly radiating lineage. *American Journal of Botany* 97:e1-e3.

Visiting scientists and students

Visiting scientists

- 1991–1992 Dr. Sylvia Fineschi, Institute for Agroforestry, Italian National Research Council, Porano (currently Riceratore, CNR Istituto per la Protezione delle Piante, Florence).
- 1994–1995 Roberta D’Orazio, *borsa di studio*, Università degli Studi di Padova.

Post-doctoral research associates

- 2002–2003 Dr. M. Shane Heschel (currently Associate Professor of Biology, Colorado College).
- 2007–2012 Dr. Jane E. Carlson (currently Ecologist, Gulf Coast Network Inventory and Monitoring Program, National Park Service).
- 2008–2009 Dr. Juan Carlos Vivar (co-supervised with Dipak Dey; currently Mathematical Statistician at Center for Tobacco Products, Food and Drug Administration)
- 2013–2015 Dr. Matthew Aiello-Lemmons (co-supervised with J. A. Silander, Jr.; currently

Assistant Professor of Environmental Studies and Science, Pace University)

Graduate students

- 1990 David B. Goldstein, M. S., "The maintenance and geographic distribution of genetic variation," (currently Director, Center for Human Genome Variation, Duke University).
- 1993 Roberta J. Mason-Gamer, Ph.D., "A molecular study of intraspecific diversity and speciation in *Coreopsis* section *Coreopsis* (Asteraceae)," (currently Associate Professor of Biology, University of Illinois Chicago).
- 1994 Jeannette Whitton, Ph.D., "Systematic and evolutionary investigation of the North American *Crepis* agamic complex," (co-advisor with Robert K. Jansen; currently Associate Professor of Botany and Director of the Herbarium, University of British Columbia).
- 1996 Claudia Paoletti, Ph.D., "Effects of habitat heterogeneity on *Impatiens capensis* reproduction, genetic, and phenotypic variation," (currently Scientific Officer, Unit on genetically modified organisms, European Food Safety Authority, Parma, Italy).
- 1997 Pati Vitt, Ph.D., "Functional ecology of gender switching in *Arisaema triphylum*: an interdisciplinary approach," (currently conservation scientist, Chicago Botanic Garden).
- 1999 Jennifer E. Steinbachs, Ph.D., "The evolution of gametophytic self-incompatibility: a theoretical perspective," (currently Naturopath at The Whole Person LLC).
- 2005 Gregory K. Shenk, Ph.D., "Developmentally plastic responses to pollinators by *Lupinus perennis* flowers and what they tell us about the pollination mechanism in the general lupine flower," (currently instructor, Greater Hartford Academy of Math & Science).
- 2008 Krissa A. Skogen, Ph.D., "Declining *Desmodium cuspidatum* (Muhl. ex. Willd.) DC ex D. Loudon, multiple approaches to solving a unique conservation problem," (currently conservation scientist, Chicago Botanic Garden).
- 2010 Rachel E. Prunier, Ph.D., "Evolution and community assembly in the genus *Protea*: insights from genetics and morphology," (currently Assistant Professor of Biology, Western Connecticut State University)
- 2012 Kathryn E. Theiss, Ph.D., "Conservation of the endemic orchid *Erasanthe henrici* (Schltr.) P. J. Cribb, Hermans, & D. L. Roberts, in Madagascar," (currently Assistant Professor of Biology, California State University Dominguez Hills)
- 2015 Ellen Woods, M.S. (non-thesis, current Ph.D. student, Wesleyan University).
- 2017 Nora Mitchell, Ph.D., "Functional traits in an evolutionary radiation: the role of the environment in the diversification of *Protea* L.," (currently postdoctoral research associate, University of New Mexico)
- 2018 Tanisha Williams, Ph.D. (co-advisor with Carl D. Schlichting; expected).
- 2019 Kristen Nolting, Ph.D. (expected)

Service to the profession

Non-profit board memberships

- 1991–2003 Secretary (1991–1996), Chair (1996–2003), Board of Trustees, *Connecticut State Museum of Natural History*
- 1992– Member, Vice-Chair (1997–2002), Trustee Emeritus (2002–) Connecticut Chapter, *The Nature Conservancy*
- 2000– Chair, Board of Directors, *BioOne*

Major society offices

- 1996–1998 Executive Vice President, *Society for the Study of Evolution*
- 2002–2004 President-elect, President, Past President, *American Genetics Association*
- 2004–2007 Treasurer, *Botanical Society of America*
- 2005–2007 President-elect, President, Past-President, *American Institute of Biological Sciences*
- 2008–2011 President-elect, President, Past-President, *Botanical Society of America*

Editorial positions

- 1988–1991 Book Review Editor, *Plant Genetics Newsletter*
- 1993–1998 Associate Editor, *The American Naturalist*
- 1994–1998 Associate Editor, *Systematic Botany*
- 1997–2000 Associate Editor, *Evolution*
- 1997–2004 Member, Board of Editors, *Conservation Biology*
- 2002–2004 Editor, *Heredity*
- 2002–2006 Member, Editorial Committee, *Systematic Botany Monographs*
- 2002–2004 Associate Editor, *Conservation Genetics*
- 2007–2012 Member, Editorial Board, *BioScience*
- 2009– Associate Editor, *Quarterly Review of Biology*
- 2009– Associate Editor, *Applications in Plant Sciences*¹

Major university service positions

- 1996–1998 Member, Chair (1997–1998), Life Sciences Review Panel, University of Connecticut Research Foundation
- 1999–2004 Member, University Senate
- 2000–2009 Faculty Representative, Financial Affairs Committee, University of Connecticut

¹*BSA Primer Notes & Protocols* through 2012

cut Board of Trustees
2002 Member, Department of Geology Review Team
2003–2004 Chair, University Budget Committee, University Senate
2004 Member, University Chief Information Officer Search Committee
2005–2012 Member, University Senate
2007–2008 Member, College of Liberal Arts & Sciences Dean Search Committee
2007–2010 Member, Chair (2009–2010), Academic Center/Institute Review Committee
2007–2010 Member, Chair (2009–2010), Faculty Review Board
2009–2010 Chair, University Budget Committee, University Senate
2010–2012 Member, Chair (2011–2012), Senate Executive Committee
2011–2012 Chair, College of Liberal Arts & Sciences Academic Advisory Board