

Patrick H. Martin

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Colorado State University
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EDUCATION

Ph.D., *Cornell University*, Ecology, 2005.

M.S., *Yale University* – School of Forestry & Environmental Studies, Forest Science, 1998.

M.A. & B.A., *St. Andrews University* (Scotland), Joint Honours, International Relations and Modern History, *summa cum laude*, 1994.

RESEARCH SKILLS & INTERESTS

Landscape ecology and the drivers of vegetation community dynamics, including climate change, environmental gradients, disturbance regimes, and exotic invasive species.

PROFESSIONAL EXPERIENCE

- *Assistant Professor*, Horticulture & Landscape Architecture, Colorado State University. **Sept. 2006-present.**
- *Adjunct Professor*, Natural Resource Sciences, University of Rhode Island. **Jan. 2006-May 2006.**
- *Post-Doctoral Fellow*, Institute of Ecosystem Studies. **Sept. 2003-Dec. 2005.**
- *Lecturer*, Summer Field Modules, Yale School of Forestry & Environmental Studies. **1998-2005.**
- *Teaching Assistant*, Cornell University. **1998-2002.**
- *Teaching Assistant*, Yale School of Forestry & Environmental Studies. **1996-1998.**
- *Researcher*, Hubbard Brook Experimental Forest. **Summer 1997.**

PROFESSIONAL HONORS & GRANTS AWARDED

- *PI – NSF PASI*. Interdisciplinary studies on global climate change and the ecology and management of tropical montane ecosystems. 2 years, **\$84,794**. 2009.
- *PI – NSF DDRI*. The Effects of Multiple Disturbance Interactions on Tropical Montane Forests in the Dominican Republic. 2 years, **\$11,195**. 2009.
- *Co-PI – NSF LTER*. Shortgrass Steppe Long Term Ecological Research. 2 years, **\$1,880,000**. 2008.
- *Co-PI – NSF SGER*. Response of tropical montane cloud forests to severe fires, Cordillera Central, Dominican Republic. 1 year, **\$57,477**. 2005.
- *Collaborator – USDA NRI*. Invasion of Northeastern Forests by Exotic Tree Species. 3 years, **\$250,000**. 2003.
- *PI – Andrew W. Mellon Research Grant*. Modeling the pattern and impacts of Norway maple invasions in northeastern forests. **\$1,500**. 2003.
- *Garden Club of America*, Award in Tropical Botany. The role of environment and natural disturbances in plant community pattern and dynamics in a neotropical cloud forest. **\$5,500**. 2003.
- *PI – NSF*, Research & Training Grant, Biogeochemistry Grant Award. **\$2,500**. 2002.
- *NSF*, Research & Training Grant, Graduate Fellowship. 2 years, **\$60,000**. 1998.

- *Yale Forestry & Environmental Studies*, Klemme Scholarship. **\$3,500**. 1997.
- *Yale Sperry-Mellon Research Grant*, Project in Forest Ecology. **\$500**. 1997.
- *Yale Tropical Resources Institute*, Research Fellowship. **\$2,500**. 1996.
- *St. Andrews University*, May Wong Prize in International Relations. **\$350**. 1994.

PROFESSIONAL AFFILIATIONS

Ecological Society of America; Association for Tropical Biology and Conservation.

DEPARTMENT SERVICE ACTIVITIES

Member – MLA Landscape Architecture Faculty Search Committee 2010.
 Member – Graduate Admissions and Studies, 2009 – present.
 Member – Student Affairs & Social Committee 2006 – 2008.
 Member – HLA Eco-Physiology Faculty Search Committee 2006 – 2007.

UNIVERSITY SERVICE ACTIVITIES

Member, Short Grass Steppe LTER Faculty Search Committee 2010.
 Member, Curriculum Committee, Global Environmental Sustainability School, 2009 – present.
 Member, Managed Ecosystem Steering Committee, 2006 – present.
 Member, Graduate Degree Program in Ecology, 2006 – present.

PROFESSIONAL ACTIVITIES

Ad-hoc reviewer: *American Midland Naturalist*, *Biological Invasions* (5), *Biotropica*, *Ecography* (3), *Ecological Monographs* (5), *Frontiers in Ecology and the Environment* (5), *Journal of Biogeography* (3), *Journal of Ecology* (6), *Journal of Forest Ecology and Management* (4), *Landscape Ecology* (2), *Journal of the Torrey Botanical Society* (2), *Journal of Tropical Ecology* (4), *Natural Areas Journal*, *Plant Ecology* (5), *Urban Ecosystems*, and *Springer Life Science Books*. Proposal reviewer for NSF.

PUBLICATIONS

- Martin, P.H.**, T.J. Fahey, and R. E. Sherman. *In press*. Vegetation zonation in a Neotropical montane forest: environment, disturbance and ecotones. *Biotropica*.
- Martin, P.H.**, C.D. Canham, and R.K. Kobe. 2010. Divergence from the growth-survival trade-off and extreme high growth rates drive patterns of exotic tree invasions in closed-canopy forests. *Journal of Ecology* doi: 10.1111/j.1365-2745.2010.01666.x
- Martin, P.H.** and C.D. Canham. 2010. Dispersal and recruitment limitation in native versus exotic tree species: life-history strategies and Janzen-Connell effects. *Oikos* 119: 807–824.
- Martin, P.H.**, C.D. Canham, and P.L. Marks. 2009. Why forests appear resistant to exotic plant invasions: intentional introductions, stand dynamics, and the role of shade tolerance. *Frontiers in Ecology and the Environment* 7(3): 142–149.
- Sherman, R.E., **P.H. Martin**, T.J. Fahey, and S.D. DeGloria. 2008. Fire and vegetation dynamics in high-elevation neotropical montane forests of the Dominican Republic. *Ambio* 37(7-8): 535–541.
- Gómez-Aparicio, L., C.D. Canham, and **P.H. Martin**. 2008. Neighborhood models of the effects of the invasive *Acer platanoides* on tree seedling dynamics: linking impacts on communities and ecosystems. *Journal of Ecology* 96(1): 78–90.
- Perkins, S., S. Altizer, O. Bjornstad, J. Burdon, K. Clay, L. Gomez, J. Jeschke, P. Johnson, K. Lafferty, C. Malstrom, **P.H. Martin**, A. Power, P. Thrall, D. Strayer, and M. Uriarte. 2008. Infectious Disease in Invasion Biology. In: *Ecology of Infectious Diseases: Effects of Ecosystems on Disease and of Disease on Ecosystems* (eds. R.S. Ostfeld, F. Keesing &

- V.T. Eviner), pp 179–204. Princeton University Press, Princeton, NJ.
- Martin, P.H.**, R.E. Sherman, and T.J. Fahey. 2007. Tropical montane forest ecotones: climate gradients, natural disturbance, and vegetation zonation in the Cordillera Central, Dominican Republic. *Journal of Biogeography* 34(10): 1792–1806.
- Martin, P.H.** and P.L. Marks. 2006. Intact forests provide only weak resistance to a shade tolerant invasive Norway maple (*Acer platanoides* L.). *Journal of Ecology* 94(6): 1070–1079.
- Martin, P.H.** and T.J. Fahey. 2006. Fires above the clouds: fire history along environmental gradients in the subtropical pine forests of the Cordillera Central, Dominican Republic. *Journal of Tropical Ecology* 22(4): 1–14.
- Sherman, R.E., **P.H. Martin**, and T.J. Fahey. 2005. Vegetation-environment relationships in forest ecosystems of the Cordillera Central, Dominican Republic. *Journal of the Torrey Botanical Society* 132(2): 293–310.
- Martin, P.H.**, R.E. Sherman, and T.J. Fahey. 2004. Forty years of tropical forest recovery from agriculture: structure and floristics of secondary and old growth riparian forests in the Dominican Republic. *Biotropica* 36(3): 297–317.
- Martin, P.H.** 1999. Norway maple (*Acer platanoides*) invasion of a natural forest stand: the pattern of colonization and understory consequences. *Biological Invasions* 1(2/3): 215–222.

Submitted:

- Laurance, W.F., D. Carolina Useche, **P.H. Martin**, and others. *Submitted*. Global warming and the vulnerability of tropical biota: Where do the thermal specialists live? *Global Change Biology*.

In preparation:

- Martin, P.H.**, and C.D. Canham. Long-term exotic tree invasions of intact forests: ecosystem transformation, impacts on native flora and key invasive life-history traits.
- Martin, P.H.**, R.E. Sherman, and T.J. Fahey. The role of plasticity in extraordinary ecological amplitude: elevational trends in needle longevity, nutrient dynamics, morphology and isotopic C fractionation in *Pinus occidentalis* in the Dominican Republic.
- Martin, P.H.**, R.E. Sherman, and T.J. Fahey. Tropical montane forest dynamics: ecosystem productivity, nutrient cycling, and forest demographics on an elevational gradient in the Cordillera Central, Dominican Republic.

TEACHING EXPERIENCE

Primary Instructor – LAND/LIFE 220 Fundamentals of Ecology, *Colorado State University*, Fall Semesters 2007-2008. Enrollment 110-120. 3-credit-hour undergraduate course. Course objectives are to introduce the discipline of ecology to beginners, including methods, limitations and current debates. to global change issues. Students are acquainted with complexity of ecological factors and processes

Primary Instructor – LAND 444 Ecology of Landscapes, *Colorado State University*, Fall Semesters 2007-2008. Enrollment 30-40. 3-credit-hour undergraduate course. Course objectives are to explore the principles of landscape ecology as a framework for landscape research, analysis and management. This course covers the dominant themes of landscape ecology, familiarizes students with current trends and methods including GIS; and addresses landscape management issues. Includes 3 field trips

Primary Instructor – NRS 520 Ecological Statistics, *University of Rhode Island*, Spring Semester 2006. Enrollment 22. 4-credit-hour graduate course. Course objectives are to introduce data analysis techniques, interpretation and presentation of statistical results commonly used in natural resource research. The course provides hands-on experience of analytical techniques, current statistical software, and data analysis specific to the students' graduate research.

Primary Instructor – F&ES Field Modules – Principals Navigation and Mapping, *Yale School of Forestry & Environmental Studies*, Augusts 1998-2005. Enrollment 130-140. 1-credit-hour graduate course. The course introduces the principles of navigation, cartography, aerial photograph interpretation, GIS and spatial analysis. Students learn how to make and interpret maps, use a compass and GPS, conduct a survey of forested stands, and a complete orienteering geocache exercise.

Teaching Assistant – NTRES 201 Environmental Conservation, *Cornell University*, 2003.

Teaching Assistant – NTRES 210 Field Biology, *Cornell University*, 2002.

Teaching Assistant – NTRES 420 Forest Ecology, *Cornell University*, 1999-2001.

Teaching Assistant – F&ES 220 Local Flora, *Yale School of Forestry & Environmental Studies*, 1997.

Teaching Assistant – F&ES 320 Forest Hydrology, *Yale School of Forestry & Environmental Studies*, 1996-1997.

GRADUATE STUDENTS

John Murgel M.S. *in progress* (Advisor), Ben Gannon M.S. *in progress* (Advisor)

GRADUATE STUDENT COMMITTEES

Joel Silverman (M.S. 2008 FRWS), Jingyi Nie (M.S. 2008 Horticulture), Amanda Broz (Ph.D. 2009 Horticulture), Ian Leinwand (M.S. 2009 GPDE), Jennifer Rains Jones (M.S. 2009 GPDE), Kellen Nelson (M.S. 2009 GPDE), Traci Burd (M.S. 2009 Horticulture), Bryon Collins (M.S. 2010 FRWS), Joseph Bowden (Ph.D. *in progress* Horticulture), Michael McCabe (Ph.D. *in progress* Horticulture), Jennifer Rains Jones (Ph.D. *in progress* GPDE).

PUBLISHED ABSTRACTS & PROCEEDINGS

Martin, P.H., C.D. Canham, and J. Murgel. 2010. *Climate Change and Forest Dynamics in the Rocky Mountains*. Ecological Society of America Annual Meeting, Pittsburgh, NM, August 1–6.

Martin, P.H. and C.D. Canham. 2009. *Life-history trade-offs in growth & survivorship drive patterns of exotic tree invasions of closed-canopy forests*. Ecological Society of America Annual Meeting, Albuquerque, NM, August 2–7.

Martin, P.H., B.H. Kao, and C. Gibson. 2009. *Using NEON to Measure Adaptation of Vegetation to Changes in Environmental Forcing*. American Geophysical Union Annual Meeting, San Francisco, CA, December 14-18th.

Gibson, C., B.H. Kao, and **P.H. Martin**. 2009. *The Fundamental Sentinel Unit: Organismal measurements and DNA barcoding in a national network*. Third International Barcode of Life, Mexico City, November 9-13th.

Kao, B.H., H. Powell, and **Martin, P.H.** 2009. *Fundamental Sentinel Unit: Organismal measurements in a national network*. The LTER Long Term Ecological Research Network All Scientists Meeting, Estes Park, CO, September 14-16th.

Martin, P.H. and C.D. Canham. 2006. *Invasion of northeastern forests by exotic tree species*. Ecological Society of America Annual Meeting, Memphis, TN, August 6–11.

INVITED & CONTRIBUTED PRESENTATIONS

- Pan-American Advanced Studies Institute*, Global Climate Change and the Ecology and Management of Tropical Montane Ecosystems, Jarabacoa, Dominican Republic. Climate change and the future of forests in the Cordillera Central, Dominican Republic. *Invited Seminar*, 2010.
- Colorado State University*, Graduate Degree Program in Ecology, Fort Collins, CO. The role of succession in plant community dynamics. *Invited Seminar*, 2009.
- Colorado State University*, Forest, Rangeland & Watershed Stewardship, Fort Collins, CO. Why forests appear resistant to exotic plant invasions: intentional introductions, stand dynamics, and the role of shade tolerance. *Invited Seminar*, 2009.
- Colorado State University*, Graduate Degree Program in Ecology, Fort Collins, CO. The Dynamics of Tropical and Temperate Landscapes: disturbance, invasions and global change. *Invited Seminar*, 2009.
- US Forest Service*, Forest Management Service Center, Fort Collins, CO. Alternative approaches to modeling climate change impacts on forest dynamics in the Rocky Mountains. *Invited Seminar*, 2008.
- University of Colorado*, Department of Geography Colloquium, Boulder, CO. Causes and long-term patterns of invasions dynamics by exotic invasive trees into closed canopy forests. *Invited Seminar*, 2008.
- Colorado State University*, Department of Soils and Crop Sciences, Fort Collins, CO. Realized vs. Fundamental Niches: the problem with climate envelope modeling for predicting forest dynamics in a changing climate. *Invited Seminar*, 2008.
- Pan-American Advanced Studies Institute*, Chemical Biology of the Tropics, Tambopata, Peru. Patterns and causes of species richness, structural complexity, and functional diversity in tropical forests. *Invited Seminar*, 2008.
- Colorado State University*, Fire Ecology Lab, Fort Collins, CO. Fire history and fire ecology in the forests of the Cordillera Central, Dominican Republic. *Invited Seminar*, 2008.
- Colorado State University*, Short Grass Steppe LTER, Fort Collins, CO. Modeling forest dynamics in changing climates. *Invited Seminar*, 2007.
- Colorado State University*, NREL, Fort Collins, CO. Spatially-explicit ecosystem modification by exotic trees as a mechanism of invasion of eastern forests. *Invited Seminar*, 2007.
- University of Wyoming*, Botany Department, Laramie, WY. Ecology and conservation of tropical montane forests. *Invited Seminar*, 2007.
- University of Colorado*, Department of Geography, Boulder, CO. Tropical montane forest ecotones: climate gradients, natural disturbance, and vegetation zonation in the Cordillera Central, Dominican Republic. *Invited Seminar*, 2006.
- Vermont Depart. Forests, Parks & Recreation*, Forest Health Information Meeting, White River Junction, VT. The Potential of Norway Maple as a Forest Invader. *Invited Seminar*, 2006.
- Yale University*, Dept. Forestry & Environmental Studies, New Haven, CT. Methods for predicting the spread and impact of exotic plants. *Invited Seminar*, 2005.
- University of Rhode Island*, Dept. Natural Resources Science, Kingston, RI. Modeling invasions of northeastern forests. *Invited Seminar*, 2005.
- Columbia University*, Dept. Ecology, Evolution and Environmental Biology, New York, NY. Modeling invasions of northeastern forests. *Invited Seminar*, 2005.
- Nature Conservancy Workshop*, Constanza, Dominican Republic. Fire ecology in the montane pine forests of the Dominican Republic. *Paper*, 2004.

- Harvard Forest*, Petersham, MA. Invasion of northeastern forests by exotic tree species: interactions between population dynamics. *Invited Seminar*, 2004.
- University of Montreal*, Montreal, Canada. Invasion ecology of Norway maple. *Invited Seminar*, 2004.
- Ecological Society of America and Weed Science Society of American*, Ft. Lauderdale, FL. P.H. Martin. Norway maple invasion of forest stands: 4-years of seedling establishment and demography in small gaps and deep shade. *Paper*, 2003.
- Regional Water Authority Association Conference*, New Haven, CT. Plant invasion dynamics and the regeneration of native trees. *Paper*, 2003.
- Cornell University*, Dept. Natural Resources, Ithaca, NY. Does species richness recover in tropical secondary forests in the Dominican Republic? *Invited Seminar*, 2002.
- University of Arizona*, Lab of Tree Ring Research, Tucson, AZ. The ecology and dendrochronology of a subtropical pine, *Pinus occidentalis*. *Invited Seminar*, 2000
- Greater New England Research Symposium on the Ecology of Invasive Species*, New Haven, CT. P.H. Martin. Norway maple (*Acer platanoides*) invasion of a natural forest stand: understory consequence and regeneration pattern. *Paper*, 1999.
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