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Education:

B.S., with Honors in Botany, University of Kentucky, Lexington, 1972
Ph.D., in Botany, University of Illinois, Urbana, Illinois, 1977

Professional Positions:

Teaching Assistant, University of Illinois, 1973-1977
Research Assistant, University of Illinois, 1977
Visiting Faculty, Organization for Tropical Studies, Costa Rica, 1977
Assistant through Associate Professor, Rutgers University, 1977-1986
Member, Rutgers Graduate Ecology Faculty, 1977-present; Executive Council 1993-1995.
Director, Hutcheson Memorial Forest Center, 1984-1986
Visiting Scientist through Distinguished Senior Scientist, Institute of Ecosystem Studies,
1985-present.
Adjunct Professor, University of Connecticut 1989-present.
Lecturer, Blaustein International Center for Desert Research, Ben-Gurion University of the
Negev, March 1992.
Affiliate Faculty, Department of Geography and Environmental Systems, University of
Maryland, Baltimore County, 2003-2007.

Selected Professional Honors:

Fellow of the American Academy of Arts and Sciences
Fellow of the American Association for the Advancement of Science
CERC Conservation Innovator Award, 2005
Botanical Society of America, Centennial Award, 2006.

Current Research Activities and Interests

All my research relates to the role of spatial heterogeneity in community, ecosystem, and landscape structure and dynamics (Pickett and White 1985, Kolasa and Pickett 1991, Pickett 1998, Cadenasso et al. 2003, Pickett et al. 2005). My projects focus on urban ecosystems, the function of landscape boundaries, and plant community succession. The question motivating all these studies is, "How does spatial heterogeneity control system function and change?" This question has been especially fruitful in motivating synthesis of biological and social components of urban systems, and in pursuing connections with architects, landscape architects, and urban planners. In addition, I have been intrigued by the nature and role of synthesis in ecology (Pickett et al. 1999, Pickett et al. 2007a).

Urban Ecosystem Ecology. As Project Director of the **Baltimore Ecosystem Study Long-Term Ecological Research Program (BES)**, I am leading the effort to bring colleagues from a diversity of backgrounds together to integrate physical sciences, social science, urban design, and ecology (Pickett et al. 2008). The integrated framework I am spearheading serves as the primary tool to study the structure and function of metropolitan Baltimore as an ecological system (Pickett and Cadenasso 2006; Cadenasso et al. 2006). The frameworks developed for BES have proven to be models for emerging urban studies elsewhere, suggesting future comparisons. I have also helped to link the insights of BES with managers and policy makers (Pickett et al. 2007b).

My particular research interest within BES is in the integrated understanding of patch structure and dynamics of an urban system. This has required us to develop and refine a novel land cover classification that goes beyond the standard ones currently used in urban planning and ecological studies (Cadenasso et al. 2007). My colleagues and I are working with social and physical science colleagues to examine the implications of this new classification for understanding social and hydrological processes in metropolitan Baltimore. We are also exploring how this new classification can improve ecological understanding of cities in general.

In addition to addressing the basic structure-function relationships of urban ecosystems, my research interests in the urban realm extend to understanding the role of vegetation structure and change in city and suburbs (Troy et al. 2007, Grove et al. 2006), as well as to the relationship of heavy metal loads with land cover. I am especially keen to forge stronger links between the best of contemporary ecology and the theory and practice of urban design (McGrath et al. 2007). There is a great need for increasing the flow of knowledge between ecologists and urban designers. Working with colleagues from architecture, landscape architecture, design, and planning, I have helped develop a new urban design component of the Baltimore Ecosystem Study. This integration is currently funded by a biocomplexity grant (Pickett and Cadenasso 2008). Developing ecological experiments as part of the design process is an important future direction (Felson and Pickett 2005). Urban ecological studies will continue to be my primary and expanding interest in the future.

Riparian-Savanna Ecology. Complementing the urban research are additional projects that give valuable perspective to the study of heterogeneity. My colleagues and I are investigating the functional integration of riparian zones and the upland savanna in the Kruger National Park, South Africa (Pickett et al. 2003). We have applied a new technology for assessment of heterogeneity and vegetation structure, and collected a suite of novel data for ecosystem function studies in riparian zones there. The next phase of that work will be the exploration of how heterogeneity of surface water affects the distribution and impact of elephants on the riparian vegetation in northern Kruger National Park. We hope to employ experiments in exclosures in the future to increase our understanding of mechanisms behind the novel patterns we have discovered.

Conceptual and Theoretical Foundations. An important contribution to the philosophy of ecology has been updated by Dr. J. Kolasa, Dr. C.G. Jones, and myself. The second edition of the successful book, Ecological Understanding, was produced in 2007. A new book, focusing on the patch dynamics of urban systems from both biological and social perspectives is currently

being written by Drs. Morgan Grove, Mary Cadenasso, William Burch, Gary Machlis, and myself, and is under contract with Yale University Press.

Plant Succession. The **Buell-Small Succession Study**, the longest study of post-agricultural plant community succession in the United States, continues to be sampled in permanent plots in central New Jersey. We are investigating the interactions of exotic and native species and comparing the invasion dynamics of these contrasting groups of plants (Meiners et al. 2004). In addition, the long data run has allowed us to expose unexpected dynamics and interactions in post-agricultural succession, and to suggest implications for restoration (Meiners et al. 2007). These insights have contributed to a reassessment of succession theory (Pickett and Cadenasso 2005).

Selected Publications:

- Pickett, S.T.A. and P.S. White, eds. 1985. *The Ecology of Natural Disturbance and Patch Dynamics*. Academic Press, New York. Paperback edition 1986.
- Pickett, S.T.A., S.L. Collins, and J.J. Armesto. 1987. Models, mechanisms and pathways of succession. *Bot. Rev.* 53:335-371.
- Pickett, S.T.A. and M.J. McDonnell. 1989. Changing perspectives in community dynamics: A theory of successional forces. *Trends Ecol. Evol.* 4:241-245.
- Kolasa, J. and S.T.A. Pickett, eds. 1991. *Ecological Heterogeneity*. Springer-Verlag, New York.
- McDonnell, M.J. and S.T.A. Pickett, eds. 1993. *Humans as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas*. Springer-Verlag, New York. Paperback edition 1997.
- Pickett, S.T.A. and R.S. Ostfeld. 1994. The changing ecological paradigm and natural resource management. In: R.L. Knight and S.F. Bates, Eds. *A New Century for Resources Management*. Island Press, Washington, D.C.
- Pickett, S.T.A., J. Kolasa, and C.G. Jones. 1994. *Ecological Understanding: The Nature of Theory and the Theory of Nature*. Academic Press, Orlando. xiii, 206 pp.
- Pickett, S.T.A. and M.L. Cadenasso. 1995. Landscape ecology: Spatial heterogeneity in ecological systems. *Science* 269:331-334.
- Pickett, S.T.A., and K.H. Rogers. 1997. Patch dynamics: The transformation of landscape structure and function. Pages 101-127 in J.S. Bissonnette (Ed.). *Wildlife and Landscape Ecology*. Springer-Verlag, New York.
- Pickett, S.T.A., R.S. Ostfeld, M. Shachak, and G.E. Likens, eds. 1997. *The Ecological Basis for Conservation — Heterogeneity, Ecosystems, and Biodiversity*. Chapman and Hall, New York. 466 pp.
- Pickett, S.T.A. 1998. Natural processes. Pages 11-19 in Mac, M.J., P.A. Opler, C.E. Puckett Haecker, and P.D. Doran, eds. *National Status and Trends of the Nation's Biological Resources*. U.S. Department of the Interior, U.S. Geological Survey, Reston, VA. 964p. 2 v. plus CD-ROM and USGS web page.
- Jax, K., C.G. Jones, and S.T.A. Pickett. 1998. The self-identity of ecological units. *Oikos* 82:263-264.

- Pickett, S.T.A. 1999. The culture of synthesis: Habits of mind in novel ecological integration. *Oikos* 87:479-487.
- Pickett, S.T.A., W.R. Burch, Jr., and J.M. Grove. 1999. Interdisciplinary research: Maintaining the constructive impulse in a culture of criticism. *Ecosystems* 22:302-307.
- Grimm, N.B., J.M. Grove, S.T.A. Pickett, and C.L. Redman. 2000. Integrated approaches to long-term studies of urban ecological systems. *BioScience* 50(7):571-584.
- Cadenasso, M.L., and S.T.A. Pickett. 2001. Effect of edge structure on the flux of species into forest interiors: An experimental approach. *Conservation Biology* 15(1):91-97.
- Pickett, S.T.A., M.L. Cadenasso, and C.G. Jones. 2001. Generation of heterogeneity by organisms: creation, maintenance, and transformation. Pages 33-52. In: M.L. Hutchings, E.A. John, and A.J.A. Stewart (eds.) *Ecological Consequences of Habitat Heterogeneity*, the Annual Symposium of the British Ecological Society. Blackwell, London.
- Pickett, S.T.A., M.L. Cadenasso, J.M. Grove, C.H. Nilon, R.V. Pouyat, W.C. Zipperer, and R. Costanza. 2001. Urban Ecological Systems: Linking terrestrial ecological, physical, and socioeconomic components of metropolitan areas. *Annu. Rev. Ecol. Syst.* 32:127-157.
- Pickett, S.T.A., and M.L. Cadenasso. 2002. Ecosystem as a multidimensional concept: meaning, model and metaphor. *Ecosystems* 5:1-10.
- Cadenasso, M.L., S.T.A. Pickett, K.C. Weathers, and C.G. Jones. 2003. A framework for a theory of ecological boundaries. *BioScience* 53(8): 750-758.
- Pickett, S.T.A., M.L. Cadenasso, and T.L. Benning. 2003. Biotic and Abiotic Variability as key determinants of savanna heterogeneity at multiple spatiotemporal scales. Pages 22-40 In: J.T. DuToit, K.H. Rogers, and H.C. Biggs, Eds. *The Kruger Experience: Ecology and management of savanna heterogeneity*. Island Press, Washington.
- Meiners, S.J., M.L. Cadenasso, and S.T.A. Pickett. 2004. Beyond biodiversity: individualistic controls of invasion in a self-assembled community. *Ecology Letters* 7:1-6.
- Felson, A.J. and S.T.A. Pickett. 2005. Designed experiments: New approaches to studying urban ecosystems. *Frontiers in Ecology and Environment* 3:549-556.
- Pickett, S.T.A. and M.L. Cadenasso. 2005. Vegetation succession. Pp 178-198, In: E. van der Maarel (ed.) *Vegetation Ecology*. Blackwell, New York.
- Pickett, S.T.A., M.L. Cadenasso, and J.M. Grove. 2005. Biocomplexity in coupled natural-human systems: A multidimensional framework. *Ecosystems* 8:225-232.
- Pickett, S.T.A. and M.L. Cadenasso. 2006. Advancing urban ecological studies: Frameworks, concepts, and results from the Baltimore Ecosystem Study. *Austral Ecology* 3:114-125.
- Cadenasso, M.L. S.T.A. Pickett, and J.M. Grove. 2006. Integrative Approaches to Investigating Human-Natural Systems: The Baltimore Ecosystem Study. *Natures, Sciences, Sociétés.* 14:1-14.
- Grove, J. M., A. R. Troy, J. P. M. O'Neill-Dunne, W. R. Burch, Jr., M. L. Cadenasso, and S. T. A. Pickett. 2006. Characterization of households and its implications for the vegetation of urban ecosystems. *Ecosystems* 9: 578-597.
- Cadenasso, M.L., S.T.A. Pickett, and K. Schwarz. 2007. Spatial heterogeneity in urban ecosystems: Reconceptualizing land cover and a framework for classification. *Frontiers in Ecology and Evolution* 5: 80-88.

- Pickett, S.T.A., J. Kolasa, and C.G. Jones. 2007a. *Ecological Understanding: The Nature of Theory and the Theory of Nature*, 2nd Edition. Academic Press, San Diego.
- Pickett, S.T.A., K.T. Belt, M.F. Galvin, P.M. Groffman, J.M. Grove, D.C. Outen, R.V. Pouyat, W.P. Stack, and M.L. Cadenasso. 2007b. Watersheds in Baltimore, Maryland: Understanding and application of integrated ecological and social processes. *Journal of Contemporary Watershed Research and Application*. 136:44-55.
- Troy, A.R., J.M. Grove, J.P.M. O'Neil-Dunne, S.T.A. Pickett, and M.L. Cadenasso. 2007. Predicting patterns of vegetation and opportunities for greening on private urban lands. *Environmental Management*. 40:394-412. DOI 10.1007/s00267-006-0112-2
- Meiners, S.J., M.L. Cadenasso, and S.T.A. Pickett. 2007. Succession on the Piedmont of New Jersey and its Implications for Ecological Restoration. Pp 145- 161, In V.A. Cramer and R.J. Hobbs, editors. *Old Fields: Dynamics and Restoration of Abandoned Farmland*. Island Press, Washington, DC
- Cadenasso, M.L., S.T.A. Pickett, and K. Schwarz. 2007. Spatial heterogeneity in urban ecosystems: Reconceptualizing land cover and a framework for classification. *Frontiers in Ecology and Evolution* 5: 80-88.
- McGrath, B., V. Marshall, M.L. Cadenasso, J.M. Grove, S.T.A. Pickett, R. Plunz, and J. Towers, editors. 2007. *Designing Urban Patch Dynamics*. Columbia University Graduate School of Architecture, Planning and Preservation, Columbia University, New York.
- Cadenasso, M.L., S.T.A. Pickett, P.M. Groffman, G.S. Brush, M.F. Galvin, J.M. Grove, G. Hagar, V. Marshall, B.P. McGrath, J. O'Neil-Dunne, W.P. Stack, A.R. Troy. 2008. Exchanges across land-water-scape boundaries in urban systems: Strategies for reducing nitrate pollution. *Annals of the New York Academy of Sciences* 1134: 213-232.
- Pickett, S.T.A., M.L. Cadenasso, J.M. Grove, P.M. Groffman, L.E. Band, C.G. Boone, G.S. Brush, W.R. Burch, Jr., J. Hom, J.C. Jenkins, N. Law, C.H. Nilon, R.V. Pouyat, K. Szlavecz, P.S. Warren, and M.A. Wilson. 2008. Beyond urban legends: An emerging framework of urban ecology as illustrated by the Baltimore Ecosystem Study. *BioScience* 58(2): 139-150.
- Pickett, S.T.A. and M.L. Cadenasso. 2008. Linking ecological and built components of urban mosaics: An open cycle of ecological design. *Journal of Ecology* 96: 8-12.