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Education

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

Professional Positions

Assistant through Associate Professor, Rutgers University, 1977-1986
Director, Hutcheson Memorial Forest Center, Rutgers University, 1984-1986
Associate through Distinguished Senior Scientist, Cary Institute of Ecosystem Studies, 1987-present.
Member, Rutgers Graduate Ecology Faculty, 1977-; Adjunct faculty, Ecology and Evolution, University of Connecticut, 1989- present, Visiting Professor, Chinese Academy of Sciences, 2015-2021.

Selected Professional Honors

Fellow, American Academy of Arts and Sciences, elected 1993.
Ecological Society of America, elected Vice President for Science 1995-1998.
Conservation Innovator Award, CERC, Columbia University, May 2005.
Botanical Society of America, Centennial Award, 2006.
Martin Luther King, Jr. Fellowship, Massachusetts Institute of Technology, 2009-2010.
Ecological Society of America, President 2011.
Fulbright Specialists Program, University of the Witwatersrand, South Africa, February 2015.
Fellow of the Ecological Society of America, Elected 2015.
Eminent Ecologist, Ecological Society of America, 2021
Elected to the National Academy of Sciences, 2021

Research Interests and Current Activities

Pickett is interested in six related research topics:

- **The ecology of disturbance, acute events, and disaster.** In a world where climate alters the impact, frequency, and location of events like floods, fires, and hurricanes, the ecological theory of disturbance must be brought up to date and applied to new temporal and spatial interactions between events and the natural and human systems they impact.
- **Improved understanding of social-ecological systems.** Linking ecology to social, political, and economic processes continues to be problematic, because the tendency to see these as separate but linked realms persists. We need improved ways to conceive of social-ecological systems as the integrated structures and results of human actions along with biological, chemical, and physical processes.
- **Urbanization as an ecological process.** Urban change is usually thought of as conversion of lands from places where natural processes predominate. The rapid conversion of lands and movement of people to urban – with more than 50% of the world’s populations now living in cities, suburbs, and exurbs – means that this topic is increasingly pressing. As more and more of the world is influenced by urban change, even at long distances, there is a need to understand the ecological components of urban transformation *to* and *within* cities, suburbs, exurbs, and urbanized nodes in wild places.
- **Spatial patchiness as pattern and process.** According to ecological theory, spatial and temporal heterogeneity or patchiness are among the most important ideas in the discipline. Yet, how spatial patchiness arises, changes, and effects other ecological processes, remains an important ecological horizon. Not only must the heterogeneity created by organisms and their interactions continue to be investigated, but how biological and various social processes *jointly* influence the shape and change of heterogeneity must be better known. This is especially the case as urban influences spread to ever more distant locations, requiring regional and global perspectives.
- **Influence of social values, legacies, and justice on ecology in cities.** Social values are often taken as independent and contextual aspects of urbanized systems. Yet, emerging analyzes are showing how the parameters of social justice, such as racism, economic deprivation, differential power dynamics among groups, and control of decision making, actually have implications for the ecological structures and processes in urban places. This opens an under-investigated horizon for ecology.
- **Ecological urban design.** Many practitioners of planning and design have called for and engaged ecological ideas in their work. However, much of this application is metaphorical, divorced from the best contemporary understanding of ecological systems. There is an urgent need to improve the dialog between the people who shape the form of human settlements and cutting edge ecological ideas and research.

These interests are expressed in several ongoing research projects:

- **The ecology of disturbance, acute events, and disaster.**
 - Improved theory for ecological disturbance (e.g. Grimm et al. 2017).
 - Event-based disturbance theory for social-ecological systems, including technological aspects (e.g. Machlis, Romàn, and Pickett, *submitted*).

- **Improved understanding of social-ecological systems.**
 - Co-production of social-ecological systems, rather than coupling of distinct human and natural systems (e.g. Rademacher et al. 2019).
 - Empirical and conceptual syntheses from two dozen years of research in metropolitan Baltimore (e.g. Pickett et al. 2019).
- **Urbanization as an ecological process.**
 - Urban change as a regional process (e.g., Zhou et al. 2017, 2019).
 - The “continuum of urbanity” to understand interactions between connectivity, social decisions and impacts, and ecosystem structure (e.g. Boone et al. 2014, Zhou et al. 2021).
- **Spatial patchiness as pattern and process.**
 - Dynamic heterogeneity (e.g. Pickett et al. 2017).
- **Influence of social values, legacies, and justice on ecology in cities.**
 - Ecology of segregation (e.g. Grove et al. 2017, Pickett and Grove 2020).
 - Redlining and tree cover in cities and suburbs (e.g. Locke et al. 2021).
 - Equity of distribution, maintenance, and planning of green stormwater infrastructure in American cities (e.g. Grabowski et al. 2021 *in press.*)
- **Ecological urban design.**
 - Lecturing in urban design, landscape architecture, and architecture programs.
 - Interdisciplinary analysis of convergence and divergence in design fields and ecology.
 - Interaction with designers and planners in Shenzhen and Beijing, China.

Selected Publications (of ca. 300):

1. Pickett, S.T.A., and J.N. Thompson. 1978. Patch dynamics and the design of nature reserves. *Biological Conservation* 13:27-37.
2. Pickett, S.T.A. 1980. Non-equilibrium coexistence of plants. *Bulletin of the Torrey Botanical Club* 107: 238-248.
3. 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.
4. Pickett, S.T.A., J. Kolasa, J.J. Armesto, and S.L. Collins. 1989. The ecological concept of disturbance and its expression at different hierarchical levels. *Oikos* 54:129-156.
5. McDonnell, M.J. and S.T.A. Pickett. 1990. Ecosystem structure and function along urban-rural gradients: An unexploited opportunity for ecology. *Ecology* 71:1232-1237.
6. Pickett, S.T.A., V.T. Parker, and P. Fiedler. 1992. The new paradigm in ecology: Implications for conservation biology above the species level, pp. 65-88. In P. Fiedler, and S. Jain, eds. *Conservation Biology: The Theory and Practice of Nature Conservation, Preservation and Management*. Chapman and Hall, New York.
7. 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.
8. McDonnell, M.J., S.T.A. Pickett, P. Groffman, P. Bohlen, R.V. Pouyat, W.C. Zipperer, R.W. Parmelee, M. Carreiro, and K. Medley. 1997. Ecosystem processes along an urban-to-rural gradient. *Urban Ecosystems* 1:21-36.

9. Pickett, S.T.A., W.R. Burch, Jr., and S.E. Dalton. 1997. Guest editorial: Integrated urban ecosystem research: Themes, needs, and applications. *Urban Ecosystems* 1(4):183-184.
10. Jax, K., C.G. Jones, and S.T.A. Pickett. 1998. The self-identity of ecological units. *Oikos* 82:263-264.
11. 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.
12. 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.
13. Pickett, S.T.A., M.L. Cadenasso, and C.G. Jones. 2001. Generation of heterogeneity by organisms: creation, maintenance, and transformation. pp 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.
14. 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. *Annual Review of Ecology and Systematics* 32:127-157.
15. Pickett, S.T.A., and M.L. Cadenasso. 2002. Ecosystem as a multidimensional concept: meaning, model and metaphor. *Ecosystems* 5:1-10.
16. Cadenasso, M.L., S.T.A. Pickett, K.C. Weathers, S.S. Bell, T.L. Benning, M.M. Carreiro, and T.E. Dawson. 2003. An interdisciplinary and synthetic approach to ecological boundaries. *BioScience* 53(8): 717-722.
17. Pickett, S.T.A., M.L. Cadenasso, and J.M. Gove. 2004. Resilient Cities: meaning, metaphor, and models for integrating the ecological, socio-economic, and planning realms. *Landscape and Urban Planning* 69(4):369-384.
18. 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.
19. Cadenasso, M.L. S.T.A. Pickett, and J.M. Grove. 2006. Dimensions of Ecosystem Complexity: Heterogeneity, Connectivity, and History. *Ecological Complexity* 3: 1-12.
20. 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.
21. Pickett, S.T.A., J. Kolasa, and C.G. Jones. 2007. *Ecological Understanding: The Nature of Theory and the Theory of Nature, 2nd Edition*. Academic Press, San Diego. (Chinese translation, 2014, Chinese Science Publishing & Media Ltd. ISBN 9780125545228)
22. 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.
23. Pickett, S.T.A. and J.M. Grove. 2009. Urban Ecosystems: What Would Tansley Do? *Urban Ecosystems* 12: 1-8. DOI: 10.1007/s11252-008-0079-2
24. Pickett, S.T.A., M.L. Cadenasso, J.M. Grove, Christopher G. Boone, Peter M. Groffman, Elena Irwin, Sujay S. Kaushal, Victoria Marshall, Brian P. McGrath, C.H. Nilon, R.V. Pouyat, Katalin Szlavecz, Austin Troy, Paige Warren. 2011. Urban Ecological Systems: Scientific Foundations and a Decade of Progress. *Journal of Environmental Management*. 92:331-362. doi: 10.1016/j.jenvman.2010.08.022

25. McGrath, B. and S.T.A. Pickett. 2011. The Metacity: A conceptual framework for integrating ecology and urban design. Special Issue: Challenges in City Design: Realize the Value of Cities. Website: http://www.mdpi.com/si/challenges/city_design/ Guest Editor: Prof. Dr. Kongjian Yu. Challenges 2011, 2, 55-72 doi:10.3390/challe2040055
26. Chapin, F.S., III, M.E. Power, S.T.A. Pickett, A. Freitag, J.A. Reynolds, R.B. Jackson, D.M. Lodge, C. Duke, S.L. Collins, A.G. Power, and A. Bartuska. 2011. Earth Stewardship: Science for Action to Sustain the Human-Earth System. Ecosphere 2(8): Article 89. doi: 10.1890/ES11-00166.1
27. Pickett, S. T. A., S. J. Meiners, and M. L. Cadenasso. 2011. Domain and propositions of succession theory. Pages 185-216 in S. M. Scheiner and M. R. Willig, editors. Theory of ecology. University of Chicago Press, Chicago.
28. Hager, G. W., K. T. Belt, W. Stack, K. Burgess, J. M. Grove, B. Caplan, M. Hardcastle, D. Shelley, S. T. A. Pickett, and P. M. Groffman. 2013. Socioecological revitalization of an urban watershed. Frontiers in Ecology and the Environment 11(1): 28-36. <http://dx.doi.org/10.1890/120069>
29. McHale, M. D. Bunn, W. Twine, S.T.A. Pickett. 2013. Urban ecology in a developing world: How advanced socio-ecological theory needs Africa. Frontiers in Ecology and Environment. 11(10): 556-567. doi:10.1890/120157.
30. Pickett, S.T.A., B. McGrath, M.L. Cadenasso, A.J. Felson. 2014. Ecological Resilience and Resilient Cities. Building Research and Information. 42(2): 143-157. <https://www.tandfonline.com/doi/abs/10.1080/09613218.2014.850600>
31. Boone, C.G., H. Blanco, D. Haase, J. Koch, S. Lwasa, H. Nagendra, S. Pauleit, S.T.A. Pickett, K. Seto, and M. Yokohari. 2014. Reconceptualizing Land for Sustainable Urbanity. In Seto, Karen, and Anette Reenberg, eds. 2014. pp 313-330 In, Rethinking Global Land Use in an Urban Era. Strüngmann Forum Reports, vol. 14, Julia Lupp, series editor. Cambridge, MA: MIT Press.
32. Rozzi, Ricardo, S.T.A. Pickett, C. Palmer, and J. Baird Callicott, editors. 2014. Linking Ecology and Ethics for a Changing World: Values, Philosophy, and Action. Springer, New York. 337 p.
33. Childers, Daniel, M.L. Cadenasso, J.Morgan Grove, Victoria Marshall, Brian McGrath, S.T.A. Pickett. 2015. An Ecology for Cities: A Transformational Nexus of Design and Ecology to Advance Climate Change Resilience and Urban Sustainability. Sustainability 7: 3774-3791 DOI 10.3390/su7043774.
34. Meiners, S.J., M.L. Cadenasso, and S.T.A. Pickett. 2015. An Integrative Approach to Successional Dynamics: Tempo and Mode of Vegetation Change. Cambridge University Press, Cambridge. 303 pp.
35. Grove, M., M.L. Cadenasso, S.T.A. Pickett, G. Machlis, and W.R. Burch, Jr. 2015. The Baltimore School of Urban Ecology: Space, Scale, and Time for the Study of Cities. Yale University Press, New Haven. 217 pp.
36. McHale, Melissa R., Steward TA Pickett, Olga Barbosa, David N Bunn, Mary L Cadenasso, Dan L Childers, Meredith Gartin, George Hess, David M Iwaniec, Timon McPhearson, M Nils Peterson, Alexandria K Poole, Louie Rivers III, Shade T Shutters, and Weiqi Zhou. 2015. A New Global Urban Realm: Complex, Connected, Diffuse, and Diverse Socio-Ecological Systems. Sustainability, 7:5211-5240; doi:10.3390/su70566

37. Qian, Yuguo; Weiqi Zhou; Wenjuan Yu; Steward T.A. Pickett. 2015. Dynamics of urban greenspace: new insights from multitemporal high spatial resolution data. *Landscape Ecology*. 30:1165-1173. DOI: 10.1007/s10980-015-0195-3.
38. McPhearson, Timon, S.T.A. Pickett, N. Grimm, J. Niemelä, M. Alberti, T. Elmqvist, C. Weber, J. Breuste, D. Haase, and S. Qureshi. 2016. "Advancing Urban Ecology Towards a Science of Cities." *BioScience*, doi: 10.1093/biosci/biw002.
39. Groffman, P.M., M.L. Cadenasso, J. Cavender-Bares, D.L. Childers, N.B. Grimm, J.M. Grove, S.E. Hobbie, L.R. Huttyra, G.D. Jenerette, T. McPhearson, D.E. Pataki, S.T.A. Pickett, R.V. Pouyat, E. Rosi-Marshall, and B.L. Ruddell. 2017. Moving toward a new urban system science. *Ecosystems* 20: 38. Doi: 10.1007/s10021-016-0053-4
40. Grimm, N.B., S.T.A. Pickett, R.L. Hale, and M.L. Cadenasso. 2017. Does the Ecological Concept of Disturbance Have Utility in Urban Social-Ecological-Technological Systems? *Ecosystem Health and Sustainability*, 3(1): e01255 DOI: 10.1002/ehs2.1255
41. Pickett, S.T.A., M.L. Cadenasso, Emma J. Rosi-Marshall, Kenneth T. Belt, Peter M. Groffman, J. Morgan Grove, Elena G. Irwin, Sujay S. Kaushal, Shannon L. LaDeau, Charles H. Nilon, Christopher M. Swan, Paige S. Warren. 2017. Dynamic Heterogeneity: A Framework to Promote Integration and Hypothesis Generation in Urban Systems. *Urban Ecosystems*, Volume 20(1): pp 1–14. DOI: 10.1007/s11252-016-0574-9
42. Pickett, S.T.A. and M.L. Cadenasso. 2017. How many principles of urban ecology are there? *Landscape Ecology* 32(4): 699–705. DOI: 10.1007/s10980-017-0492-0.
43. Grove, J.M., L.A. Ogden, S.T.A. Pickett, C.G. Boone, G. Buckley, D. Locke, C. Lord, and B. Hall. 2017. The Legacy Effect: Understanding How Segregation and Environmental Injustice Unfold Over Time In Baltimore. *Annals of the American Association of Geographers*. DOI: 10.1080/24694452.2017.1365585
44. Zhou, Weiqi, S.T.A. Pickett, and M.L. Cadenasso. 2017. Shifting concepts of urban spatial heterogeneity and their implications for sustainability. *Landscape Ecology*. 32(1): 15-30. DOI 10.1007/s10980-016-0432-4.
45. Wentz, Elizabeth A., Abigail M. York, Marina Alberti, Lindsey Conrow, Heather Fischer, Luis Inostroza, Claire Jantz, Steward T. A. Pickett, Karen C. Seto, & Hannes Taubenböck. 2018. Six Fundamental Aspects for Conceptualizing Urban Form. *Landscape and Urban Planning*, 179:55-62. DOI: 10.1016/j.landurbplan.2018.07.007.
46. Li, Weifeng, Steward T. A. Pickett, Weiqi Zhou, Baiyang, Lijian Han. 2018. The smart growth of Chinese cities: Opportunities offered by vacant land. *Land Degradation and Development*, 29(10):3512-3520. <https://doi.org/10.1002/ldr.3125>.
47. Rademacher, Anne, Mary Cadenasso, and Steward Pickett. 2019. From Feedbacks to Coproduction: Toward an Integrated Conceptual Framework for Urban Ecosystems. *Urban Ecosystems* 22:65-76. DOI: 10.1007/s11252-018-0751-0
48. Pickett, S.T.A., M.L. Cadenasso, J.M. Grove, E.G. Irwin, E.J. Rosi, and Christopher M. Swan, editors. 2019. *Science for the Sustainable City: Empirical Insights from the Baltimore School of Urban Ecology*, Yale University Press, New Haven, 480 pp. ISBN 978-0-300-24628-5
49. Marshall, Victoria J., Mary L. Cadenasso, Brian P. McGrath, Steward T.A. Pickett. 2020. *Patch Atlas: Integrating Design Practices and Ecological Knowledge for Cities as Complex Systems*. Yale University Press, New Haven. 116 pp. ISBN 978-0-300-23993-5
50. Pickett Steward T.A., Mary L. Cadenasso, Matthew E. Baker, Lawrence E. Band, Christopher G. Boone, Geoffrey L. Buckley, Peter M. Groffman, J. Morgan Grove, Elena

- G. Irwin, Sujay S. Kaushal, Shannon L. LaDeau, Andrew Miller, Charles H. Nilon, Michele Romolini, Emma J. Rosi, Christopher M. Swan, Katalin Szlavecz. 2020. Theoretical Perspectives of the Baltimore Ecosystem Study: Conceptual Evolution in a Social-Ecological Research Project. *BioScience* <https://doi.org/10.1093/biosci/biz166>
51. Locke, D.H., B. Hall, B., J.M. Grove, S. T. A. Pickett, L. A. Ogden, C. Aoki, C. G. Boone, and J. P. M. O'Neil-Dunne. 2021. Residential housing segregation and urban tree canopy in 37 US Cities. *npj Urban Sustain* 1, 15. <https://doi.org/10.1038/s42949-021-00022-0>
52. Zhou, Weiqi S.T.A. Pickett, and Timon McPhearson. 2021. Conceptual Frameworks Facilitate Integration for Transdisciplinary Urban Science. *npj Urban Sustainability* (2021)1-1; <https://doi.org/10.1038/s42949-020-00011-9>