

## Curriculum Vitae

### **BRUCE T. MILNE**

Professor, Department of Biology  
University of New Mexico  
Albuquerque, New Mexico 87131

#### *EDUCATION:*

Ph.D., Rutgers University, Botany & Plant Physiology, 1985  
M.S., State University of New York, Albany, Biology, 1981  
B.S., State University of New York, Albany, Biology, 1979

#### *THESIS AND DISSERTATION:*

M.S. 1981. Vegetational Gradients and Succession in the Tree and Shrub Strata of the Albany Pine Bush, Albany, New York. 81 pp.  
Ph.D. 1985. Peninsulas: Species Diversity, Distance, and Environmental Gradients. 201 pp.

#### *POSITIONS & TITLES:*

W.K. Kellogg Endowed Chair in Sustainable Environmental and Food Systems. 2010-.  
Director, Sustainability Studies Program, University of New Mexico. 2004-.  
Professor. Department of Biology, University of New Mexico. 1998- .  
Associate Professor. Department of Biology, University of New Mexico. 1992-1998.  
Assistant Professor of Plant Community Ecology. Department of Biology, University of New Mexico. 1986 - 1992.  
Lecturer in Ecology. Graduate School of Design, Harvard University. 1985-1986.

#### *AWARDS:*

Distinguished Landscape Ecologist. International Association for Landscape Ecology. 2006.  
Recognition of Service. US Green Building Council, New Mexico Chapter. 2006.  
Certificate of Appreciation. New Mexico Climate Change Advisory Group. Gov. Bill Richardson. 2006.  
Outstanding Paper Published in the Field of Landscape Ecology (Milne. 1992. *American Naturalist* 139:32-57). International Association for Landscape Ecology.  
Regents' Lecturer in Arts and Sciences. UNM 1995-1998.  
Dean's Semester Research Award. Spring 1997.  
Presidential Young Investigator. National Science Foundation. 1990-1995.  
Paul C. Lemon Award for Research in Ecology and Environmental Science. State University of New York at Albany for the Master's thesis. 1983.  
Top Student Paper Presentation at the Annual Meeting of the New Jersey Academy of Science. 1985.  
Runner-up, The Murray F. Buell Award. Ecological Society of America. 1985.

#### *GRANTS:*

Sigma Xi, Grant in Aid of Research. 1980.

Rutgers University, Graduate Student Research Grant. 1981.

"Hierarchical Structure and Fractal Geometry of Landscapes in the Southwestern United States". 1986-89. NSF BSR-8614981. \$149,863.

"Spatial Scaling: Animal Movements in Semiarid Landscape Mosaics". 1988-91. DOE FG04-88ER60714. \$150,000.

"Collaborative Research: Spatial Scaling and the Effects of Patch Mosaic Structure in Semiarid Ecosystems". 1988-91. NSF BSR-8806435. \$204,076.

"LTER: Long Term Ecological Research on Ecological/climatic Gradients on the Sevilleta". 1988-94. NSF. \$3,021,752 (Principal investigator).

"Presidential Young Investigator Award". 1990-95. NSF. BSR-9058136. \$285,620.

"Phase Transitions and Critical Phenomena in Woodland Ecotones". 1991-1994. NSF BSR-9107339. \$300,000. (Principal Investigator with A.R. Johnson).

"Fractal Indicators of Ecological Responses to Climate Change". Electric Power Research Institute. 1992-1995. \$112,500 matching for the PYI award.

"Sevilleta LTER II: Biome-level constraints on population, community, and ecosystem responses to climate fluctuation". NSF 1994-2000. \$3,780,000. (Principal Investigator).

"A BIO Research Training Group in Ecological Complexity". NSF 1995-2000. \$510,000. (co-PI with J. H. Brown, PI).

"Estimation of Ecosystem Attributes at the Landscape Scale in a Semi-arid Grassland". Oregon State University -- subcontract. 1996. \$39,962.

"Multi-scaled ecological assessment methods: Prototype development within the interior Columbia Basin". Environmental Protection Agency -- sub-award. 1997-1999. \$120,000

"Linking vegetation succession with slope failure: from single landslides to landscapes". NSF. 1997-1998. Minority Postdoctoral Research Fellowship to Dr. Carla Restrepo. \$37,320.

"Self-organization of Semi-arid Landscapes: Tests of Optimality Principles". B. T. Milne. NSF. \$674,911. Jan 2000 – Feb 2004. Annual rate \$175,000.

"Scaling of Biodiversity: Physical and Biological Foundations of Ecological Principles". J.H. Brown & B.T. Milne. \$2,500,000. 5 years 2000-2005.

EPA Star Fellowship for Melanie Moses. B. T. Milne, PI. Environmental Protection Agency. \$8,999. Begin 2000, End 2003. \$8,999/year.

"Collaborative Research: Scaling and Allometry in River Networks: Coupling Rainfall, Topography and Vegetation with Hydrological Extremes". B. T. Milne. NASA (as subcontract through Univ. Colorado, Boulder). \$28,937.

"Collaborative Research: Testing Dynamical Predictions of a Hortonian Scaling Theory for Flood Events on Whitewater Basin, Kansas". V.K. Gupta (PI), B.T. Milne (PI). NSF. \$63,359. Expires 2007.

“Sustainability Studies Program”. NM Legislature. \$240,000. FY 0607 and Biodiesel Processor & Vehicle. NM Legislature. \$35,000. FY 0607.

“Sustainability Studies Program”. NM Legislature. \$270,000. FY 0708.

“Cultivate New Mexico”. B.T. Milne. McCune Charitable Foundation. \$20,000. Feb 21, 2009 – Feb 28, 2010. \$20,000/year.

“Cultivate New Mexico II”. B.T. Milne. McCune Charitable Foundation. \$20,000. Feb 21, 2010 – Feb 28, 2011.

“Collaborative for Foodshed Development”. USDA Hispanic Serving Institutions. \$290,000 2010-2012.

“Endowed Chair in Sustainable Environmental and Food Systems”. W. K. Kellogg Foundation. \$1,650,000. 2010.

“Cultivate New Mexico III”. B.T. Milne. McCune Charitable Foundation. \$30,000. Feb 21, 2011 – Feb 28, 2012.

*PUBLICATIONS:*

*Peer reviewed*

Milne, B. T. 1979. A preliminary list of lichens of the Albany Pine Bush. *Skenectada* 1:36-38.

Milne, B. T. 1985. Upland vegetational gradients and post-fire succession in the Albany Pine Bush, New York. *Bull. Torrey Bot. Club.* 112:21-34.

Milne, B. T., and R. T. T. Forman. 1986. Peninsulas in Maine: woody plant diversity, distance, and environmental patterns. *Ecology* 67:967-974.

Milne, B. T. 1987. Hierarchical landscape structure and the Forest Planning Model: Discussant's Comments. Pp. 128-132 In FORPLAN: An Evaluation of a Forest Planning Tool. U.S.D.A. Forest Service Gen. Tech. Report RM-140.

Gardner, R.H., B.T. Milne, M.G. Turner, and R. V. O'Neill 1987. Neutral models for the analysis of broad-scale landscape pattern. *Landscape Ecology* 1:19-28.

Milne, B. T. 1988. Measuring the fractal geometry of landscapes. *Applied Mathematics and Computation* 27:67-79.

O'Neill, R.V., J.R. Krummel, R.H. Gardner, G. Sugihara, B. Jackson, D.L. DeAngelis, B.T. Milne, M.G. Turner, B Zygumnt, S.W. Christensen, V.H. Dale, and R.L. Grahm. 1988. Indices of landscape pattern. 1988. *Landscape Ecology* 1:153-162.

O'Neill, R.V., B.T. Milne, M.G. Turner, and R.H. Gardner. 1988. Resource utilization scales and landscape pattern. *Landscape Ecology* 2:63-69.

- Milne, B.T., K. Johnston, and R.T.T. Forman. 1989. Scale-dependent proximity of wildlife habitat in a spatially-neutral Bayesian model. *Landscape Ecology* 2:101-110.
- Turner, M.G., R.V. O'Neill, R.H. Gardner, and B.T. Milne. 1989. Effects of changing spatial scale on the analysis of landscape pattern. *Landscape Ecology* 3:153-162.
- Wiens, J.A. and B. T. Milne. 1989. Scaling of 'landscapes' in landscape ecology, or, landscape ecology from a beetle's perspective. *Landscape Ecology* 3:87-96.
- Gosz, J. R., Brown, J. H., Crawford, C. S.; Grover, H. D., Marshall, D.L., Milne, B., Molles, M., Musick, B., O'Neill, R. Snell, H., Turner, S., Wisdom, C., Yates, T. L. 1990. Ecological functions in a Biome transition zone: Interactions between climate, geomorphology, and biota. *In Landscape Boundaries: Consequences for Biotic Diversity and Ecological Flows.* di Castri, F. and A. Hausen (eds.)
- Milne, B.T. 1991. Lessons from applying fractal models to landscape patterns. pp.199-235 *In Quantitative Methods in Landscape Ecology.* M.G. Turner and R.H. Gardner, (eds.). Springer-Verlag, New York.
- Milne, B.T. 1991. Heterogeneity as a multi-scale phenomenon in landscapes. pp. 69-84 *In Ecological Heterogeneity.* J. Kolasa and S.T.A. Pickett (eds.). Springer-Verlag, New York.
- Milne, B.T. 1991. The utility of fractal geometry in landscape design. *Landscape and Urban Planning* 21:81-90.
- O'Neill, R.V., R.H. Gardner, B.T. Milne, M.G. Turner, and B. Jackson. 1991. Heterogeneity and Spatial Hierarchies. pp. 85-96 *In Ecological Heterogeneity.* J. Kolasa and S.T.A. Pickett (eds.). Springer-Verlag, New York.
- Crist, T.O., D.S. Guertin, J.A. Wiens, and B.T. Milne. 1992. Animal movement in heterogeneous landscapes: an experiment with *Eleodes* beetles in shortgrass prairie. *Functional Ecology* 6:536-544.
- Johnson, A.R., J.A. Wiens, B.T. Milne, and T.O. Crist. 1992. Animal movements and population dynamics in heterogeneous landscapes. *Landscape Ecology* 7:63-75.
- Johnson, A.R., B.T. Milne, and J.A. Wiens. 1992. Diffusion in fractal landscapes: Simulations and experimental studies of Tenebrionid beetle movements. *Ecology* 73:1968-1983.
- Milne, B.T. 1992. Spatial aggregation and neutral models in fractal landscapes. *American Naturalist* 139:32-57.
- Milne, B.T. 1992. Indications of landscape condition at many scales. pp. 883-895 *In Ecological Indicators.* Vol. 2. D.H. McKenzie, D. E. Hyatt and V.J. McDonald (eds.). Elsevier Applied Science, London and New York..
- Milne, B.T., M.G. Turner, J.A. Wiens, A.R. Johnson. 1992. Interactions between the fractal geometry of landscapes and allometric herbivory. *Theoretical Population Biology* 41:337-353.
- Allen, T.F.H., A.W. King, B.T. Milne, A. Johnson, and S. Turner. 1993. The problem of scaling in ecology. *Evolutionary Trends in Plants* 7:3-8

- Milne, B.T., and A.R. Johnson. 1993. Renormalization relations for scale transformation in ecology. pp. 109-128 In *Some Mathematical Questions in Biology: Predicting Spatial Effects in Ecological Systems*, R. H. Gardner (ed.). American Mathematical Society, Providence, RI.
- Milne, B.T. 1993. Pattern Analysis for Landscape Evaluation and Characterization. In *Eastside Forest Ecosystem Health Assessment. Vol. 2. Ecosystem Management: Principles and Application*. M.E. Jensen and P.S. Bourgeron (eds.). Report to U.S. Congress.
- Milne, B.T. 1993. Pattern analysis for landscape evaluation and characterization. pp. In Jensen, M.E. and Bourgeron, P.S (Comps.). *Ecosystem Management: Principles and Applications. Gen. Tech. Report PNW-GTR-318*. Portland Oregon: US Dept. Agr. For. Ser. Pacific Northwest Res. Stat. 397 p. (Everett, Richard L., Team Leader; Eastside Forest Ecosystem Health Assessment Vol. II).
- Wiens, J.A., T.O. Crist, and B.T. Milne. 1993. On quantifying insect movements. *J. Environ. Entom.* 22:709-715.
- Blanco-Montero, C.A., T. B. Bennett, P. Neville, C.S. Crawford, B.T. Milne, and C.R. Ward. 1995. Potential environmental and economic impacts of turfgrass in Albuquerque, New Mexico. *Landscape Ecology* 10:121-128.
- Wiens, J.A., T.O. Crist, K.A. With, and B.T. Milne. 1995. Fractal patterns of insect movement in microlandscape mosaics. *Ecology* 76:663-666.
- Johnson, A.R., C.A. Hatfield, and B.T. Milne. 1995. Simulated diffusion dynamics in river networks. *Ecological Modelling* 83:311-325.
- Milne, B.T., A.R. Johnson, T.H. Keitt, C. A. Hatfield, J. David, and P. Hraber. 1996. Detection of critical densities associated with piñon-juniper woodland ecotones. *Ecology* 77:805-821.
- Milne, B.T. 1997. Applications of fractal geometry in wildlife biology. pp. 32-69 In *Wildlife and Landscape Ecology*, J. A. Bissonette (ed.). Springer Verlag.
- Keitt, T. H., D. L. Urban, and B. T. Milne. 1997. Detecting critical scales in fragmented landscapes. *Conservation Ecology* 1:(1):4 [online: <http://www.consecol.org/vol1/iss1/art4>].
- Hraber, P. T. and B. T. Milne. 1997. Community assembly in a model ecosystem. *Ecological Modelling* 103:267-285.
- Milne, B.T. 1998. Motivation and benefits of complex systems approaches in ecology. *Ecosystems* 1:449-456.
- Kerckhoff, D. H., B. T. Milne, and D. Maerer. 1999. Toward a panther centered view of the landscape of south Florida. *Conservation Ecology* (In press).
- Milne, B.T., A.R. Johnson, and S. Matyk. 1999. ClaraT: Instructional software for fractal pattern generation and analysis. pp. 304-332 In J. M. Klopatek and R. H. Gardner (eds.). *Landscape Ecological Analysis: Issues and Applications*. Springer-Verlag, New York.

- Milne, B.T. and W. B. Cohen. 1999. Multiscale assessment of binary and continuous landcover variables for MODIS validation, mapping and modeling applications. *Rem. Sens. Env.* 70:82-98.
- Kerkhoff, A. J., B. T. Milne, and D. S. Maehr. 2000. Toward a panther-centered view of the forests of South Florida. *Conservation Ecology* 4(1): 1. [online] URL: <http://www.consecol.org/vol4/iss1/art1>
- Brown, JH ; Gupta, VK ; Li, BL ; Milne, BT ; Restrepo, C ; West, GB. 2002. The fractal nature of nature: power laws, ecological complexity and biodiversity. *Philosophical Transactions of the Royal Society of London Series B-Biological Sciences.* 357(1421):619-626
- Milne, B.T., V.K. Gupta, and C. Restrepo. 2002. A scale invariant coupling of plants, water, energy and terrain. *EcoScience* 9(2):191-199.
- Milne, B. T., D. I. Moore, J. L. Betancourt, J. A. Parks, T. W. Swetnam, R. R. Parmenter, and W. T. Pockman. 2003. Multidecadal Drought Cycles in South-Central New Mexico: Patterns and Consequences. pp. 286-307. *In* Climate Variability and Ecosystem Response at Long-Term Ecological Research Sites. D. Greenland, D. G. Goodin, and R. C. Smith (eds). Oxford University Press, Oxford. 459 pp.
- Zack, C.S., B.T. Milne, and W.C. Dunn. 2003. Southern oscillation index as an indicator of encounters between humans and black bears in New Mexico. *Wildlife Soc. Bull.* 31(2):517-520.
- Kerkhoff, A.J., S. N. Martens, G.A. Shore and B.T. Milne. 2004. Contingent effects of water balance variation on tree cover density in semiarid woodlands. *Global Ecology and Biogeography* 3:237-246.
- Kerkhoff, A.J., S. N. Martens, and B.T. Milne. 2004. An ecological analysis of Eagleson's optimality hypotheses. *Functional Ecology* 18(3):404-413.
- Parody, M. J. and B. T. Milne. 2004. Implications of rescaling rules for multi-scaled habitat models. *Landscape Ecology* 19:691-701.
- Hamilton, M.J. B.T. Milne, R. S. Walker, and J.H. Brown. 2007. Nonlinear scaling of space use in human hunter-gatherers. *Proc. Nat. Acad. Sci.* 104(11):4765-4769.
- Hamilton, M.J., B. T. Milne, R. S. Walker, O. Burger, and J.H. Brown. 2007. The complex structure of hunter-gatherer social networks. *Proc. Roy. Soc. B.* 274:2195-2202.
- Allen, A.P., W.T. Pockman, C. Restrepo, and B.T. Milne. 2008. [Allometry, growth and population regulation of the desert shrub \*Larrea tridentata\*](#). *Functional Ecology* 22:197-204
- Dunn, W.C., B.T. Milne, R. Mantilla, and V.K. Gupta. 2011. Scaling relations between riparian vegetation and stream order in the Whitewater River network, Kansas, USA. *Landscape Ecology*. DOI 10.1007/s10980-011-9622-2

Samaniego, H., G. B. Serandour, and B. T. Milne. 2011. Analyzing Taylor's Scaling Law: Qualitative Differences of Social and Territorial Behavior on Colonization/Extinction Dynamics. *Population Ecology* DOI 10.1007/s10144-011-0287-0.

*Non-refereed:*

Milne, B. T. 1988. Changing landscape patterns. (symposium review). *Bull. Ecol. Soc. Amer.* 69:56-58.

Milne, B. T. 1989. Spatial and temporal analysis using GIS. *Bull. Ecol. Soc. Amer.* 70:65-66.

Milne, B. T. 1989. The role of landscape boundaries in the management and restoration of changing environments. (symposium review). *Bull. Ecol. Soc. Amer.* 70:262-263

Milne, B. T. 1998. Computation in ecological landscapes: multiscale nonequilibrium structures and dynamics. Proceedings of the Escuela de Ciencia y Tecnología, Comisión Atómico Constituyentes, Buenos Aires, Argentina, August, 1998.

Johnson, A.R., B.T. Milne and P. Hrabec. 1999. Analysis of change in pinon-juniper woodlands based on aerial photography, 1930's - 1980's. Pages 106-111 in Finch, D.M., J.C. Whitney, J.F. Kelly and S.R. Loftin (eds.) *Rio Grande Ecosystems: Linking Land, Water, and People. Toward a Sustainable Future for the Middle Rio Grande Basin.* Proc. RMRS-P-7, U.S. Dept. Agriculture, Forest Service, Rocky Mountain Research Station, Ogden, UT.

Milne, B.T. 2002. Scaling Relations in Experimental Ecology. *Quarterly Rev. Biol.* 77(4): 475.

Gupta, V., C. Duffy, R. Grossman, W. Krajewski, U Lall, M. McCaffery, B. T. Milne, R. Pielke Sr., K. Reckhow, F. Swanson. Recommendations of the Water Earth Biota (WEB) group to the AD-GEO and AD ENGR, April 26, 2005: Funding the Natural Laboratory Initiative.

*SOFTWARE RELEASES*

Khoros Spatial Cluster Analysis Toolbox (UNIX). 1996.

<http://algodones.unm.edu:80/~bmilne/khoros/ktool.html>

ClaraT fractal educational software (Windows). 1996.

<http://algodones.unm.edu:80/~bmilne/frac/clarat/clarat.html>

*ABSTRACTS OF PAPERS PRESENTED:*

Milne, B. T. 1982. Vegetational gradients and succession in the tree and shrub strata of the Albany Pine Bush, Albany, New York. *Bull. New Jersey Acad. Sci.* 27(1):41.

Milne, B.T. 1982. Vegetational gradients and post-fire succession in the tree and shrub strata of the Albany Pine Bush, New York. *Bull. Ecol. Soc. Amer.* 63(2):191.

Forman, R. T. T., L. Goodrich, and B. T. Milne. 1982. The peninsula effect in projections from woods in an agricultural landscape. *Bull. Ecol. Soc. Amer.* 63(2):191.

Milne, B.T., and R. T. T. Forman. 1983. Variation in plant community composition along coastal peninsulas in Maine. *Bull. New Jersey Acad. Sci.* 28(1):24.

Milne, B.T., and R. T. T. Forman. 1983. Peninsula plant diversity patterns and spatial variation in community composition. *Bull. Ecol. Soc. Amer.* 64(2):97.

Bell, T. J., B. T. Milne, and H. Motto. 1983. The relationship between sex expression and resource availability in the dioecious shrub, *Lindera benzoin* (L.) Blume. *Bull. New Jersey Acad. Sci.* 28(1):23.

Milne, B.T., and R. T. T. Forman. 1985. Modification of the peninsular effect by resource gradients in insect-plant polycultures. *Bull. Ecol. Soc. Amer.* 66:233.

Milne, B. T., N. B. Kotliar, and R. E. Loveland. 1985. Community structure in an intertidal, soft-sediment benthic community at Belmar, New Jersey. *Bull. New Jersey Acad. Sci.* 30:47.

Milne, B.T. 1986. Landscape structure related to temporal scales of landscape processes. Symposium, The

- Role of Landscape Heterogeneity in the Spread of Disturbance. Univ. Georgia, Athens.
- Milne, B.T., K. M. Johnston, and R.T.T. Forman. 1987. Construction of a Bayesian model of animal habitat for use on geographic information systems. 2nd Annual Symposium of the International Assoc. for Landscape Ecology. Charlottesville, Virginia.
- Milne, B.T., R.H. Gardner, M.G. Turner, and R.V. O'Neill. 1987. Neutral models of connectedness in rural landscapes. Meeting of the International Association for Landscape Ecology. Muenster, W. Germany.
- Gardner, R.H., B.T. Milne, M.G. Turner, and R.V. O'Neill. 1987. Neutral models for the analysis of broad-scale landscape pattern. 2nd Annual Symposium of the International Assoc. for Landscape Ecology. Charlottesville, Virginia.
- Gardner, R.H., B.T. Milne, M.G. Turner, and R.V. O'Neill. 1987. Comparative analysis of broad-scale landscape patterns. *Bull. Ecol. Soc. Amer.* 68:308.
- Musick, B., H. Grover, B.T. Milne, and R.V. O'Neill. 1988. Comparisons of landscapes across scales. *Bull. Ecol. Soc. Amer.* 69:154.
- Gardner, R.H., B.T. Milne, V.H. Dale, R.V. O'Neill, and M.G. Turner. 1988. Percolation theoretic methods for estimating landscape viscosity. 3rd Annual Symposium of the International Assoc. of for Landscape Ecology. Albuquerque, New Mexico.
- Turner, M.G., R.V. O'Neill, R.H. Gardner, and B.T. Milne. 1988. Effect of spatial scale on the analysis of landscape pattern. 3rd Annual Symposium of the International Assoc. for Landscape Ecology. Albuquerque, New Mexico.
- Wiens, J. and B.T. Milne. 1988. Spatial scaling and the utility of a microlandscape approach in studies of landscape mosaics. 3rd Annual Symposium of the International Assoc. for Landscape Ecology. Albuquerque, New Mexico.
- Milne, B.T. 1990. Visualization of the contributions of individual points to the moments of fractal mass distributions. Gordon Conference on Fractals.
- Milne, B.T., M.G. Turner, J.A. Wiens, and A.R. Johnson. 1990. Interactions between the fractal geometry of landscapes and allometric herbivory. *Bull. Ecol. Soc.*
- Milne, B.T. and S. Watson. 1990. A fractal filter for the manipulation of resource patterns. International Symposium on Landscape Ecology, IALE, Ottawa.
- Milne, B.T. Renormalization relations for spatial models. *Bull. Ecol. Soc. Amer.* 72:196.
- Milne, B.T., C.A. Hatfield, A.R. Johnson. 1993. Simulation of juniper woodland phase transitions. International Association for Landscape Ecology. Oak Ridge, TN.
- Milne, Bruce T., Alan R. Johnson, Timothy H. Keitt, Colleen A. Hatfield, John David and Peter Hraber. 1994. Indicators of spatial phase transitions and critical densities in woodland landscapes Annual Meeting of the International Association for Landscape Ecology, Tucson, Arizona.
- Milne, Bruce T. and Alan R. Johnson. 1995. Spatial phase transitions in piñon-juniper woodlands. *Bull. Ecol. Soc. Amer.* 76(2):185-186.
- Milne, B.T., A.R. Johnson, and S. Matyk. 1996. Software for fractal research and education. International Association for Landscape Ecology. Galveston, Texas.
- Milne, B.T. 1997. The canonical structure and dynamics of landscapes. International Association for Landscape Ecology. Duke University.
- Milne, B.T. 1997. The canonical structure and dynamics of landscapes. Ecological Society of America, Albuquerque, NM.
- Decker, E.H., P. T. Hraber, Al. J. Kerkhoff, and B. T. Milne. 1997. Direct cover type probability mapping of the continental United States by stochastically induced percolation. Ecological Society of America, Albuquerque, NM.
- Hraber, P.T. and B. T. Milne. 1997. Community assembly in a model ecosystem. Ecological Society of America, Albuquerque, NM.
- Kerkhoff, A.J. and B.T. Milne. Developing a panther-centered view of the south Florida landscape. Ecological

- Society of America, Albuquerque, NM.
- Milne, B.T., V. K. Gupta, H. Olf and G. Poveda. The ratio of precipitation to potential evapotranspiration defines a dimensionless number that is a pivotal landscape ecological parameter. 17<sup>th</sup> Annual Conference of the International Association for Landscape Ecology, Lincoln, Nebraska. April 2002.
- V.K. Gupta, G. Poveda, and B. T. Milne. Balance equations: A foundation for developing eco-hydrologic and hydro-ecologic theories. University of Colorado, Boulder. May 2002.
- Milne, Bruce T., Baum, Nina, and Luck, Mathew  
Individuals compose patches: Resource partitioning in landscapes. 18<sup>th</sup> Annual Symposium, International Association for Landscape Ecology
- Milne, B.T., Department of Biology, University of New Mexico, Albuquerque, NM 87131, USA.  
Terrain as a selective agent in the evolution of plant species diversity. International Assoc. Landscape Ecology, Las Vegas, NV March 30-April 4, 2004.
- Milne, B. T. 2005. Sustainable Landscape Networks: Initial Consideration of Design Criteria for Kilometers-wide Areas. Annual Meeting US-International Association for Landscape Ecology. Syracuse, New York.
- Nonaka, E. and B. T. Milne. 2005. Ecotones as phase transitions using the principles of statistical physics. Annual Meeting US-International Association for Landscape Ecology. Syracuse, New York.
- Samaniego, H. and B. T. Milne. 2005. Revealing the internal structure of species distribution: a metapopulation approach to Piñon jays (*Gymnorhinus cyanocephalus*) in the USA. Annual Meeting US-International Association for Landscape Ecology. Syracuse, New York.
- Milne, B.T.. 2006. Coupled dynamics of vegetation and terrain: pervasive 4/7 scaling in landscapes. Ecological Society of America. Memphis.
- Bruce T. Milne and David A. Dean. 2006. Maximization of Shannon Diversity under Energetic Constraint Explains the Partitioning of Species Richness among Vertebrate Taxa in North America. Gordon Conference, New Hampshire.
- Milne, B.T. 2006. Ecohydrological Foundations for Sustainable Landscapes. International Association for Landscape Ecology. San Diego.
- Luck, M.A., B.T. Milne, V. Gupta. R. Mantilla. 2006. Scaling and Variation in Properties of Hydrological Basins. International Association for Landscape Ecology. San Diego.
- Milne, B. T. and D.A. Dean. Maximization of Shannon Diversity under Constraints Explains the Partitioning of Species Richness among Vertebrate Taxa in North America. International Assoc. Landscape Ecology. April 9-13. 2007.
- Koontz, T.L., Diane L. Marshall, and Bruce T. Milne. The effects of herbivores on seed banks in a grassland and shrubland. Ecological Society of America.
- Luck, M. and B. T. Milne. Spatial gradients reveal universality classes in the relation between precipitation and landscape structure. International Assoc. Landscape Ecology. April 9-13. 2007.
- Milne, B. T. Tree Ringlets: Time- and Space-dependent Tree Growth in Strahler Stream Networks. International Assoc. Landscape Ecology. April 9-13. 2007.
- Milne, Bruce and Miguel Santistevan. Concepts for a Carbon-neutral food-shed in New Mexico. 83<sup>rd</sup> Annual AAAS SWARM Division. April 9-12, 2008.

*INVITED LECTURES:*

Harvard Forest. "Studies of Species Diversity on Natural and Experimental Peninsulas". 1984.

- Cambridge University, England. "Peninsular Diversity Patterns on Natural and Experimental Peninsulas". 1985
- University of Pennsylvania. "Landscape Structure and Vegetation Dynamics". 1985
- The Mary Flagler Cary Arboretum. "Time Scale Dependent Variation in Landscape Structure and Fractal Geometry". 1986
- The University of New Mexico. "Variation in Community Structure as a Consequence of the Euclidean and Fractal Geometry of Nature". 1986
- Ohio State University. "Landscape Composition, Fractal Geometry, and Hierarchical Structure".  
Colorado State University. "Measuring the Fractal Geometry of Landscapes". 1986
- United States Forest Service FORPLAN Symposium. "Ecological Consequences of the FORPLAN Model: Comments on a Paper by H. H. Shugart and B. Gilbert". 1986
- Muenster, West Germany. "Neutral Models of Connectedness in Rural Landscapes". 1987
- Fort Lewis College, Durango, Colorado. "Landscape Fractal Geometry and Comparison with Percolation Networks". 1987
- Department of Geography, University of New Mexico. "Measuring the Fractal Geometry of Landscapes". 1987
- University of Oklahoma, Norman, Oklahoma. The Elroy Rice Lecture Series. "Consequences of Scale-dependent Landscape Structure". 1988
- International Society for Ecological Modeling, Davis, California. Symposium. "Multivariate Algorithms as Neutral Transformations in Ecology". 1988
- Miami University, Oxford, Ohio. Roger E. Wilson Lecture, "Fractal Geometry of Landscapes". 1989
- Kansas State University, Manhattan, Kansas. "Spatial aggregation and neutral models in fractal landscapes". 1989
- U.S.D.A. National Forest Service Ancient Forest Conference, Taos, New Mexico. National Open Space Conference, City of Albuquerque, National Park Service, Albuquerque Conservation Trust, Inc. and Cibola National Forest, Albuquerque, New Mexico. 1989
- Arizona State University. "The Utility of Fractal Geometry in Landscape Design". 1990.
- Environmental Protection Agency. International Symposium on Ecological Indicators. "Indications of Landscape Condition at Many Scales". 1990.
- Ohio State University. Center for Mapping. "Resource Aggregation in Fractal Landscapes". 1990.
- University of Virginia. Keynote Lecturer. "Seeing Nature with New Eyes: Lessons from studies of

fractals". Texas A&M University. "Lessons from Fractal Studies of Landscapes". 1991.

American Mathematical Society. Symposium at Ecological Society of America Meeting. "Renormalization Relations for Spatial Models". 1991.

International Association for Landscape Ecology, Rennes, France. "The regulation of animal movement by landscape structure." 1993.

Ecological Society of America, "Appropriate models for ecology from the new physics". Symposium, University of Wisconsin, Madison. 1993.

Ecological Society of America. Symposium, Knoxville, Tennessee. INTECOL Symposium, Manchester, England. 1994.

The Santa Fe Institute. "Percolation Theory and Woodland Ecotones". 1994.

The Wildlife Society. "Applications of fractal geometry in wildlife biology". 2<sup>nd</sup> Annual Meeting, Portland, Oregon. 1995.

The National Center for Ecological Analysis and Synthesis. "The canonical structure and dynamics of landscapes". 1996.

Department of Mathematics and Statistics, University of New Mexico. "The canonical structure and dynamics of landscapes". 1997.

Escuela de Ciencia y Tecnología, Comisión Atómico Constituyentes, Buenos Aires, Argentina. "Computation in ecological landscapes: Multiscale nonequilibrium structures and dynamics". Institute for Ecosystem Studies, New York. "Computation in ecological landscapes". 1998.

State University of New York, Albany. "Landscape Computation". 1998.

Center for Advanced Studies, University of New Mexico. "Computation in Ecological Landscapes". 1998.

Computer Science Department, University of New Mexico. "Computation in Ecological Landscapes" 1998.

Milne, B.T., How does the Darwinian optimization of plant fitness antagonize terrain formation? Scaling and Non-linearities in Hydrology. June 2-5, 2002. Peter Wall Institute, U. British Columbia

Milne, B.T. Free energy minimization in semi-arid landscapes. Consortium of the Americas for Interdisciplinary Science. UNM. November 21-22, 2002

Milne, B.T. Proactive Landscape Research and the Descent from Fossil Fuels. International Assoc. Landscape Ecology. April 9-13. 2007.

Extremum Theory in Ecology. University of Connecticut. Ecological Theory Workshop. Attendee. Sept. 17-18.

Milne, B. T. and D.A. Dean. Maximization of Shannon Diversity under Constraints Explains the Partitioning of Species Richness among Vertebrate Taxa in North America. International Assoc. Landscape Ecology. April 9-13. 2007.

Milne, B. T. Tree Ringlets: Time- and Space-dependent Tree Growth in Strahler Stream Networks International Assoc. Landscape Ecology. April 9-13. 2007.

Plenary speaker. Environment and Sustainability in a Global Context. UNM International Studies Institute. September 11, 2007.

Agribusiness Collaborative, Mid-Region Council of Governments. Development of the Carbon-neutral Food-shed in New Mexico. Oct. 10. 2007.

La Montanita Coop. Development of the Carbon-neutral Food-shed in New Mexico. Oct. 16. 2007.

Concepts for a Carbon-neutral Food-shed in New Mexico. Boulder Relocalization Event. February 24. Boulder, CO.

Policies to embrace with the carbon-neutral foodshed in New Mexico. Southwest Marketing Conference, Santa Fe. May 5. 2008.

Alliance for the carbon-neutral foodshed in New Mexico. NM Food and Agriculture Policy Council. May 28. 2008.

Sustainability Coaching Session. Earth, Wind and Solar Event. Sandia National Laboratory. July 23. 2008.

Keynote: Sustainability and development of the carbon-neutral foodshed in New Mexico. NM Environmental Health Conference. Oct. 20. 2008. Albuquerque

Invited Panelist. NM Higher Education Sustainability Forum. March 31. UNM.

Sustainability at UNM. Presentation to New Mexico Graduates of Color. Sept. 10. 2008. Student Union Building.

UNM Parents' Weekend. Green Collar Economy. Oct. 2. 2008.

Keynote. Earth Day. UNM. 2010.

*PROFESSIONAL SOCIETIES, SERVICES, AND OFFICES HELD:*

Ecological Society of America  
Buell Award Committee, 1987-88.

Session Chair, 1988, 1990.  
 Subject editor (*Conservation Ecology*) 1995-  
 Advisory committee member to the Vice President for Science (1996-1998)

International Association for Landscape Ecology  
 Treasurer 1989 - 1991.  
 Host of the 3rd Annual Meeting, University of New Mexico, 1988.  
 Session Chair, 1987,1991.  
 Co-organizer, Annual Meeting, Banff. 2003

Rutgers Botany Club  
 President 1983-1984.  
 Vice President 1982-1983.

*EDITORIAL:*

Subject editor, *Conservation Ecology*. 1996-1998  
 Editorial Board, *Landscape Ecology*. 1998-2000

*REVIEWER FOR:*

*American Midland Naturalist, American Naturalist, BioScience, Ecology, Evolutionary Ecology, International Journal of Supercomputer Applications and High Performance Computing, Journal of the North American Benthological Society, Journal of Theoretical Biology, Journal of Vegetation Science, Journal Wildlife Management, Hudson River Foundation, Landscape Ecology, National Science Foundation, Natural Areas Journal, Nature, South African Journal of Ecology, Theoretical Population Biology, University of Georgia, University of Minnesota, University of Washington, US Department of Agriculture, US Department of Energy, US Environmental Protection Agency, Vegetatio.*

*ADVISORY PANELS:*

Long Term Ecological Research Network  
 1. Coordinating Committee (1992-97)  
 2. Synthesis Committee (1995-97)  
 3. NASA/Modland Steering Committee (1995-97)

National Science Foundation  
 1. Advisory committee on geographic information systems and remote sensing for Long Term Ecological Research, 1988.  
 2. Long Term Ecological Research Network on Geographic Information Systems, 1988.  
 3. Ecosystems Panel 2000-2003

U.S. Fish and Wildlife Service  
 1. Status and Trends of Spatial Modelling, National Wetlands Research Center, Louisiana State University, Baton Route, Louisiana, 1989

U.S. Environmental Protection Agency  
 1. Terrestrial Advisory Panel for EMAP. "Report of the Terrestrial Advisory Panel". Milne, B.T., D. Rapport, J. Walker, May 1991.

2. Landscape characterization and landscape ecology working group. 1992-4

US Green Building Council, NM Chapter. Board Member 2004-2006.  
Chair, Events Committee  
Organizer, GreenBuilt Tour 2005.

Regional Judge, Northwestern New Mexico Regional Science and Engineering Fair,  
March 19, 2004

Sustainable Global Leadership Alliance. Board Member. 2004- 2005.

Co-organizer. Energy Panel Discussion. New Mexico Bioneers Conference: Visionary and  
Practical Solutions for Restoring the Earth and People. October 15 & 16, 2005. UNM  
Student Union.

NM Climate Change Advisory Group. 2005 – 2006. Member.

Clean Energy Advisory Steering Committee. McCune Foundation. 2006.

Participant. "Sustainability: A Town Hall on Albuquerque's Energy Future. Feb. 23-24.  
Martin Chavez, Mayor. 2006.

Aldo Leopold Centennial Celebration 2009. Member, Organizing Committee. 2007 - 2009.

New Mexico Food and Agriculture Policy Council. Board member. 2008.

FoodPrintNM

Founding ad-hoc president 2007 – 2010.

*WORKSHOP PARTICIPATION: (Sponsored by NSF, DOE, or USDAFS)*

Colorado State University. Workshop on array and parallel processing in landscape ecology. 1986.

Oak Ridge National Laboratory. Predicting Across Scales: Theory Development and Testing. 1988.

University of New Mexico. Ecology for a Changing Earth. 1988.

University of Wisconsin. Complex systems in ecology. 1989.

National Center for Ecological Analysis and Synthesis. March 1996.

National Center for Ecological Analysis and Synthesis, Symposium on Synthesis. November 1996.

*LANGUAGE TRAINING*

Spanish: *Centro Linguistico Latinoamericano de Costa Rica* (1993, 1994)

*SERVICE:*

Rutgers University:

Student representative: Graduate Program Curriculum Committee, 1983-1985.

Co-organizer. 18<sup>th</sup> Annual Symposium of the International Association for Landscape Ecology, U.S. Regional Chapter. Meeting held 2-6 April 2003, Banff, Alberta, Canada (Volunteered)

University of New Mexico

Campus Computer Use Committee, 1987-1989.  
 High Performance Computation Certificate Committee (1997- )  
 Dean's research semester award committee (1998)  
 Dean's Junior Tenure and Promotion Committee (1998-1999)  
 Member, Center for Advanced Studies Steering Committee, 1998 - 30 June 2001  
 A&S College Senior Promotion Committee  
 Member, Steering Committee, Center for Advanced Studies, UNM (S. Prasad, chair). 2004  
 Founding Director of the *UNM Sustainability Program* which moved in 2005  
     to the College of Arts and Sciences.  
     Outcomes assessment document for sustainability studies program. 2008.  
     Strategic plan for sustainability studies program. 2008.  
 Team Consultant: UNM West Campus at Rio Rancho Policy Principles and Design Guidelines.  
 Campus Master Planning Design Charrette. Nov. 12-15, 2006.  
 Co-leader. Provost's Areas of Public Engagement: Sustainability in the Southwest. 2006.  
 Consultant to UNM Health Sciences SEED project. 2006.  
 Committee to organize town hall for green jobs (City of Albuquerque and UNM president's office) 2008.  
 Committee to organize Lincoln and Darwin's Birthday Celebration (President's office) 2008.  
 UNM Sustainability Council. 2007-.  
 UNM Carbon-neutral Task Force. 2008.

Department of Biology:

Computer Use Committee (Chairperson 1992-1996)  
 Graduate Student Selection (1992, 1994)  
 Graduate Review Committee (1994-1995)  
 Seminar Committee (Chairperson 1988-1989)  
 Ecological Modeller Search Committee (1993)  
 Invertebrate Ecologist Search Committee (1995)  
 Biology/Art Space Planning Committee (1995-6)  
 High Performance Computing Program Liason (1995- )  
 Computational Biologist Search Committee (1996)  
 Faculty Mentor (for Larry Li and Andreas Wagner 1997- )  
 Chair, Computer pod renovation project (1998- )  
 Member, Plant physiological ecologist search committee (1998- )  
 Lead professor in assembly of a new lab manual for Biology 203 in collaboration with Sandy Ligon and Cara Lea Council-Garcia. 2004.  
 Library Liaison (ended 2005)  
 Co-chair, Honors (through May 2004)  
 Member, BIOL 203 Reorganization Committee  
 Graduate Selection Committee (various years)  
 Publicity (2011-12)

*GRADUATE STUDENTS:*

Geneva Chong, M.S. 1994. "Recommendations to Improve Revegetation Success in a Piñon-juniper Woodland in New Mexico: A Hierarchical Approach"

Sharon Tarbox, M.S. 1995. "Stem Response of *Pinus edulis* to Precipitation Pulses and Soil Moisture Dynamics: A Multi-temporal Approach".

Yorgos Marinakis, Ph.D. 1995. "A Phase Transition in a Prehistoric Human Population".

Timothy Keitt, Ph.D. 1995. "Spatial Complexity and Critical Phenomena in Ecological Systems".

Colleen Hatfield, Ph.D. 1996. "The Influence of Network Geometry in Time and Space on the Distribution of Riparian Vegetation".

Peter Hraber, M.S. 1996. "Community assembly in a model ecosystem."

Currently at National Center for Genomic Research.

Drew Kerkhoff, M.S. 1997, Ph.D. program, 1997- .

Ethan Decker, Ph.D. 2001. "Urban Metabolism and the Macroecology of Global Human Settlement Patterns".

Andrew P. Allen, Ph. D.

Sterling Grogan, M.S. (non-thesis) 1999.

Melanie Moses, Ph.D. 2005. "Metabolic Scaling in Individuals and Societies".

David Dean. M.S. "Maximization of Shannon Diversity: How Energy and Water Partition Species Richness". Summer 2007

Matt Luck. Ph.D. "Manifestations of landscape pattern due to the interactions among topography, latitude, climate, and drainage networks" May 2007

Horacio Samaniego. "Dynamical Partitioning of Spatiotemporal Variation within Species Ranges". May 2007.

William Dunn. Began 2006.

Miguel Santistevan. Began 2007.

Michael Chang. Began 2011.

#### *GRADUATE COMMITTEES OUTSIDE OF BIOLOGY*

Electrical Engineering & Computer Engineering (C. Gage M.S.)

Earth and Planetary Sciences (M. Grubensky Ph.D., 1996)

Communication and Journalism (W. Hart, oral examination, 1997)

Architecture & Planning. (M. Wright. 2009; Erin Ortigoza 2011;

Chadette Pfaff 2011; Sophia Thompson 2011)

#### *POST-DOCTORAL ASSOCIATES*

Dr. Alan R. Johnson (1988 - 1995)

Dr. Yeulong Yang (1995 - 1996)

Dr. Debra Coffin (1996-1997)

Dr. Scott Martens (1997- )

Dr. Carla Restrepo (1997- )

#### *ADVISORS*

Prof. Margaret M. Stewart (M.S.) Deceased.

Prof. Richard T. T. Forman (Ph.D.)