University of Maryland Center for Environmental Science
APPALACHIAN LABORATORY

People Education Research Publications

AL HOME > Faculty > Robert Gardner

Robert H. Gardner, Director and Professor

Full Curriculum Vitae

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Research Interests

- Landscape ecology; systems analysis; disturbances
- Analysis and prediction of changes in ecosystem dynamics with changes in scale
- Development of new approaches for predicting ecological dynamics in spatially heterogeneous systems

Simulation Models - Codes and Executables

- **Qrule** - A computer program for landscape hypothesis testing.
- **CAPS** - A spatially explicit neutral model for community development.
- **PDW** - A program for rescaling map resolution.

Education

1975	**Ph.D.**	North Carolina State University, Raleigh, NC - Zoology
1967	**M.A.**	The College of William and Mary, Williamsburg, VA - Biology
1966	**B.A.**	Taylor University, Upland, IN - Biology

Professional Experience

2005-Present	**Director and Professor**, Appalachian Laboratory, University of Maryland Center for Environmental Science, Frostburg, MD
2004-2005	**Interim Director and Professor**, Appalachian Laboratory, University of Maryland Center for Environmental Science, Frostburg, MD
1994-2004	**Professor**, Appalachian Laboratory, University of Maryland Center for Environmental

	Science, Frostburg, MD
1988-1994	**Senior Research Scientist**, Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN
1983-1994	**Adjunct Professor**, Dept. of Ecology, University of Tennessee , Knoxville, TN
1974-1988	**Research Scientist**, Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN

Selected Publications

- **Gardner, R. H.**, and K. A. M. Engelhardt. 2008. Spatial processes that maintain biodiversity in plant communities. Perspectives in Plant Ecology Evolution and Systematics 9: 211-228.
- **Gardner, R. H.**, F. Jopp, G. F. Cary, and P. H. Verburg. 2008. World congress highlights need for action. Landscape Ecology 23:1-2.
- **Gardner, R. H.**, T. R. Lookingbill, P. A. Townsend, and J. Ferrari. 2008. A new approach for rescaling land cover data. Landscape Ecology 15: 513-526.
- Vogt, P., J. R. Ferrari, T. R. Lookingbill, **R. H. Gardner**, K. H. Ritters, K. Ostapovicz. 2009. Mapping functional connectivity. Ecological Indicators, 9: 64-71.
- Lookingbill, T. R., **R. H. Gardner**, L. A. Wainger, C. L. Tague. 2008. Landscape Modelling. Encyclopedia of Ecology, S. E. Jorgensen, B. D. Fath eds. Elsevier, vol 3, pp. 2108-2116.
- Townsend, P. A., Lookingbill, T. R., Kingdon, C. C., and **R. H. Gardner**. in press. Spatial pattern analysis for monitoring protected areas. Journal of Remote Sensing.
- **Gardner, R. H.** and Urban, D. L. 2007. Neutral models for testing landscape hypotheses. Landscape Ecology 22:15-29.
- Hilderbrand, R. H., **R. H. Gardner**, M. J. Ratnaswamy, and C. E. Keller. 2007. Demographic analysis and estimates of extinction risk for the Delmarva Fox Squirrel. Biological Conservation, 137: 70-77.
- **Gardner, R. H.** 2007. Measurement, scale, and prediction: Caveat emptor (book review). BioScience, 57: 451-452.
- **Gardner, R. H.**, Forester, J. D. and Plotnick, R. E., 2007. Determining pattern-process relationships in heterogeneous landscapes. In: Wu, J. and Hobbs, R. J. (Eds.), Key Topics and Perspectives in Landscape Ecology. Cambridge University Press, pp 92-114.
- Turner M.G., Barrett G.W., **Gardner R.H.**, Iverson L.R., Risser P.G., Wiens J.A. & Wu J.G. 2007. In memoriam - Frank B. Golley (1930-2006). Landscape Ecology, 22: 1-3.
- **Gardner, R. H.** and Gustafson, E. J., 2004. Simulating dispersal of reintroduced species within heterogeneous landscapes. Ecological Modelling, 171: 339-358. (nutshell)
- Peters, D. P. C., Urban, D. L., **Gardner, R. H.**, Breshears, D. D. and Herrick, J. E., 2004. Strategies for ecological extrapolation. Oikos 106, 627-636.

Teaching Activities

Landscape Ecology, MEES 614 (4 credits) - fall of even-numbered years

Development and effects of broad-scale patterns of ecological phenomena, the role of disturbance in ecosystems, and the characteristic spatial and temporal scales of ecological events. A variety of concepts important in landscape ecology, including: the structure and function of landscapes; identifying and modeling landscape pattern; the concept of disturbance, succession and landscape equilibrium; the implications of global climate change.

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