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EDUCATION:

1963 BA Biology, Taylor University, Upland, Indiana
1967 MA Biology, The College of William and Mary, Williamsburg, Virginia
1975 Ph.D. Zoology, North Carolina State University Raleigh, North Carolina

EMPLOYMENT EXPERIENCE:

1965-1968 Biology Instructor The American International School, The Hague, The Netherlands
1968-1970 Biology Instructor Swampscott Public High School, Swampscott, MA, USA.
1974-1980 Research Associate Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
1980-1988 Research Staff Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
1983-1994 Adjunct Professor Department of Ecology, University of Tennessee, Knoxville, TN, USA.
1988-1994 Senior Research Scientist Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
1988-1992 Group Leader Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
1994- Professor, The University of Maryland Center for Environmental Science, Appalachian Laboratory, Frostburg, MD, USA.
2004-2005 Interim Director, Appalachian Laboratory, The University of Maryland Center for Environmental Science, Frostburg, MD, USA.
2005- Director, Appalachian Laboratory, The University of Maryland Center for Environmental Science, Frostburg, MD, USA.

AWARDS:

1987 Environmental Sciences Division, Scientific Achievement Award
1988 Martin Marietta Energy Systems, Technical Achievement Award
1989 Elected a Fellow of the American Association for the Advancement of Science
1994 Award for Distinguished Landscape Ecologist, International Association of Landscape Ecology, U.S. Regional Chapter
1998 Distinguished Statistical Ecologist Award, INTERCOL Statistical Ecology Group, VII International Congress of Ecology, Florence, Italy July 1998

PROFESSIONAL INTERESTS:

Evaluation of the adequacy and reliability of environmental data and models. Development of new approaches for predicting ecological dynamics in spatially heterogeneous systems. Implementation of risk-based approaches for assessing effects of natural disturbances, land-use and global change on sustainability of ecological systems. Analysis and prediction of changes in ecosystem dynamics with changes in scale.

SOCIETY MEMBERSHIPS:

The American Association for the Advancement of Science.
 The Ecological Society of America.
 The International Association for Landscape Ecology
 The American Society of Naturalists

SELECTED ACTIVITIES (2003-2009):

President, Council, International Association of Landscape Ecology (IALE), 2007-2011
 Invited Participant, Perspectives on Landscape Ecology, University of Vienna, Vienna, Austria, March 12, 2009
 Board member, Potomac Conservancy, 2008-present.
 Invited presentation, Potomac Monitoring Forum "Better Monitoring for Potomac River Water Resources Management", March 10 & 11, 2008, Cacapon, WV
 Invited participant, USGS Aquatic and Terrestrial Landscape Ecology Workshop, November 13-14, 2007, Leetown, VA.
 Invited seminar, Pennsylvania State University, Department of Geography, November 2006
 President (and elect), US Chapter of International Association of Landscape Ecologists. 2005-2008.
 Director, Chesapeake Watershed Cooperative Ecosystem Study Unit, 2004-present.
 Symposium Co-organizer, *Alternative principles for landscape management*, IALE World Congress, Wageningen, Netherlands, July 2007
 Chair, H. John Heinz Center for Science, Economics and Environment Peer Review Panel, April 2006
 Co-Chair, Mid-Atlantic Research Organization (MAREO, a NEON activity), 2003-2006.
 Editorial Board, Landscape Ecology. 1999-2004

GRADUATE STUDENT COMMITTEES (* indicates major advisor)

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|------------------|------|-------|---|
| D. E. Weller * | 1983 | Ph.D. | University of Tennessee, Knoxville, TN, USA |
| H. I. Jager* | 1987 | M.A. | University of Tennessee, Knoxville, TN, USA |
| J.-P. Hettelingh | 1989 | Ph.D. | Free University, Amsterdam, The Netherlands |
| S. Lavorel | 1991 | Ph.D. | Center for Environmental Research, Montpellier, France |
| K. Minser | 1993 | M.A. | University of Tennessee, Knoxville, TN, USA |
| S. Walters* | 2002 | Ph.D. | University System of Maryland, MD, USA |
| D. Scheurer* | 2006 | Ph.D. | University System of Maryland, MD, USA |
| L. Wainger | 1998 | Ph.D. | University System of Maryland, MD, USA |
| C.-C. Chen | 1998 | Ph.D. | University System of Maryland, MD, USA |
| J. Benetiz | 2001 | Ph.D. | University System of Maryland, MD, USA |
| B. Sturtevant | 2001 | Ph.D. | University System of Maryland, MD, USA |
| R. Chastain | 2004 | Ph.D. | University System of Maryland, MD, USA |
| C. Jantz | 2005 | Ph.D. | University of Maryland, College Park, MD, USA |
| J. Ferrari | 2005 | M.S. | University of Maryland, College Park, MD, USA |
| K. Kalasz | 2005 | M.S. | Frostburg State University, |

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|----------------------------------|------|-------|---|
| Frostburg, MD, USA M. Kendall | 2008 | Ph.D. | University System of Maryland, MD, USA |
| C. Moore MD, USA | 2010 | Ph.D. | University System of Maryland, MD, USA |
| M. Suarez-Rubio MD, USA | 2010 | Ph.D. | University System of Maryland, MD, USA |

PUBLICATIONS:

- Gardner, R. H. and C. R. Terman. 1970. The relationship between age of grouping and weight of selected organs of prairie deer mice. *Research on Population Ecology*, 12: 1-18.
- Smith, M. H., R. H. Gardner, J. B. Gentry, D. W. Kaufman, and M. J. O'Farrell. 1975. Density estimation of small mammal populations. pp. 25-54. IN: Golley, F. G., K. Petroszewicz, and L. Ryszkowski (eds), *Small Mammals: Their Productivity and Populations Dynamics*. Cambridge University Press, New York.
- Gardner, R. H., J. B. Mankin, and H. H. Shugart. 1976. The COMEX computer code: Documentation and description. EDFB/IBP-76/4. Oak Ridge National Laboratory.
- Mankin, J. B., R. H. Gardner, and H. H. Shugart. 1976. The COMEX computer code: Monte Carlo analysis of ecosystem attributes. *Proceedings of 1976 Summer Computer Simulation Conference*. p. 433-436. Simulation Councils, Inc., LaJolla, California.
- Comiskey, C. E., G. S. Henderson, R. H. Gardner, and F. W. Woods. 1977. Patterns of organic matter transport on Walker Branch Watershed. pp. 439-467. IN: Correll, D. L. (ed.), *Watershed Research in the Eastern United States*. Chesapeake Bay Center for Environmental Studies, Smithsonian Institution, Edgewater, Maryland.
- Garten, C. T., Jr. R. H. Gardner, and R. C. Dahlman. 1978. A linear compartment model of plutonium dynamics in a deciduous forest ecosystem. *Health Physics*, 34: 611-619.
- DeAngelis, D. L., R. H. Gardner, J. B. Mankin, W. M. Post, and J. H. Carney. 1978. Energy flow and the number of trophic levels in ecological communities. *Nature* 273: 406-407.
- Carney, J. H., R. H. Gardner, J. B. Mankin, and D. L. DeAngelis. 1979. Cycling indices for ecosystem models. *Proceedings of 1979 Summer Computer Simulation Conference*. p. 389-393. Simulation Councils, Inc., LaJolla, California.
- O'Neill, R. V., and R. H. Gardner. 1979. Sources of uncertainty in ecological models. IN: B. P. Zeigler, M. S. Elzas, G. J. Kliv, T. I. Oren (eds.), *Methodology in Systems Modelling and Simulation*. p. 447-463. North-Holland Publishing Co.
- Gardner, R. H., J. B. Mankin and W. R. Emanuel. 1980. A comparison of three carbon models. *Ecological Modelling*, 8: 313-332.
- O'Neill, R. V., R. H. Gardner, and J.B. Mankin. 1980. Analysis of parameter error in a nonlinear model. *Ecological Modelling*, 8: 297-311.
- Gardner, R. H., J. E. Pinder, III and R. S. Wood. 1980. Monte Carlo estimation of percentiles for the multi-sample Smirnov test. *Journal of Statistical Computation and Simulation*, 10: 243-249.
- *Gardner, R. H., R. V. O'Neill, J. B. Mankin and D. Kumar. 1980. Comparative error analysis of six predator-prey models. *Ecology*, 61: 323-332.
- Gardner, R. H., D. D. Huff, R. V. O'Neill, J. B. Mankin, J. Carney, J. Jones. 1980. Application of error analysis to a marsh hydrology model. *Water Resources Research*, 16(4): 659-664.
- Gardner, R. H., and J. B. Mankin. 1980. Analysis of biomass allocation in forest ecosystems of the IBP. IN: D. E. Reichle (ed.), *Dynamic Properties of Forest Ecosystems*. Cambridge University Press, Malta. pp 451-497.

- DeAngelis, D. L., R. H. Gardner and H. H. Shugart. 1981. Productivity of forest ecosystems studied during the IBP: The woodlands data set. IN: D. E. Reichle (ed.), *Dynamic Properties of Forest Ecosystems*. Cambridge University Press, Malta. pp 567-672.
- O'Neill, R. V., R. H. Gardner, F. O. Hoffman and G. Schwarz. 1981. Effects of parameter uncertainty on estimating radiological dose in man: A Monte Carlo approach. *Health Physics*, 40: 760-764.
- O'Neill, R. V., R. H. Gardner, S. W. Christensen, W. Van Winkle, J. H. Carney and J. B. Mankin. 1981. Some effects of parameter uncertainty in density-independent and density-dependent Leslie models for fish populations. *Canadian Journal of Aquatic Sciences*, 38: 91-100.
- Gardner, R. H., R. V. O'Neill, J. B. Mankin and J. H. Carney. 1981. A comparison of sensitivity analysis and error analysis based on a stream ecosystem model. *Ecological Modelling*, 12: 177-194.
- Carney, J. H., D. L. DeAngelis, R. H. Gardner, J. B. Mankin and W. M. Post. 1981. Calculation of probabilities of transfer, recurrence intervals, and positional indices for linear compartment models. ORNL/TM-7379. Oak Ridge National Laboratory. 70 pp.
- Carney, J. H., R. H. Gardner, J. B. Mankin and R. V. O'Neill. 1981. SEAP: A computer program for the error analysis of a stream model. ORNL/TM-7694. Oak Ridge National Laboratory.
- Gardner, R. H., R. V. O'Neill, and J. H. Carney. 1981. Spatial patterning and error propagation in a stream ecosystem model. *Proceedings of 1981 Summer Computer Simulation Conference*. p. 391-395. Simulation Councils, Inc., LaJolla, California.
- Gardner, R. H., R. V. O'Neill and F. O. Hoffman. 1981. Assessing model uncertainties. IN: D. C. Kocher (ed.), *Proceedings of the Symposium on Uncertainties Associated with the Regulation of Geologic Disposal of High Level Radioactive Waste*. March 9-13, 1981, Gatlinburg, TN. PP 199-208 CONF-810372.
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- Gardner, R. H., W. G. Cale and R. V. O'Neill. 1982. Robust analysis of aggregation error. *Ecology*, 63: 1771-1779.
- O'Neill, R. V., R. H. Gardner, L. W. Barnthouse, G. W. Suter, S. G. Hildebrand and C. W. Gehrs. 1982. Ecosystem risk analysis: A new methodology. *Environmental Toxicology and Chemistry*, 1: 167-177.
- O'Neill, R. V., R. H. Gardner and D. E. Weller. 1982. Chaotic models as representations of ecological systems. *American Naturalist*, 120: 259-263.
- Barnthouse, L. W., D. L. DeAngelis, R. H. Gardner, R. V. O'Neill, C. D. Powers, G. W. Suter and D. S. Vaughan. 1982. Methodology for Environmental Risk Assessment of Synfuels Technologies. ORNL/TM-8167. Oak Ridge National Laboratory.
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- Hoffman, F. O., R. H. Gardner, and K. F. Eckerman. 1982. Variability in dose estimates associated with the food chain transport and ingestion of selected radionuclides. NUREG/CR-2612, U. S. Nuclear Regulatory Commission.
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- Gardner, R. H., and R. V. O'Neill. 1983. Parameter uncertainty and model predictions. IN: M. B. Beck and G. van Straten (eds.), *Uncertainty and Forecasting of Water Quality*. Springer Verlag, New York. p. 245-257.
- Cale, W. G., R. V. O'Neill, and R. H. Gardner. 1983. Aggregation error in nonlinear ecological models. *Journal Theoretical Biology* 100: 539-550.
- Bartell, S. M., R. H. Gardner, R. V. O'Neill and J. M. Giddings. 1983. Error analysis of predicted fate of anthracene in a simulated pond. *Environmental Toxicology and Chemistry* 2: 19-28.
- Hoffman, F. O., and R. H. Gardner. 1983. Evaluation of uncertainties in environmental radiological assessment models. pp 11-1 - 11-55. IN: *Radiological Assessment: A Textbook on Environmental Dose Assessment*, J. E. Till and H. R. Meyer (eds.), United States Nuclear Regulatory Commission, Washington, D.C. NUREG/CR-3332, ORNL-5968.
- Jager, H. I., R. H. Gardner, D. L. DeAngelis and W. M. Post. 1983. A simulation approach to understanding the processes that structure food webs. ORNL/TM-8904. Oak Ridge National Laboratory, Oak Ridge, TN.
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- Downing, D. J., R. H. Gardner and F. O. Hoffman. 1986. Response to Robert G. Easterling: Letter to the Editor. *Technometrics*, 28: 92-93.
- Bartell, S. M., J. E. Breck, and R. H. Gardner, A. L. Brenkert. 1986. Individual parameter perturbation and error analysis of fish bioenergetics models. *Canadian Journal of Fisheries and Aquatic Science*, 43: 160-168.
- Trabalka, J. R., J. A. Edmonds, J. M. Reilly, R. H. Gardner and D. E. Reichle. 1986. Atmospheric CO₂ projections with globally averaged carbon cycle models. Chapter 26. In: *The Changing Carbon Cycle: A Global Analysis* (J. R. Trabalka and D. E. Reichle, eds), pp 534-560. Springer-Verlag, New York.
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- Bartell, S. M., R. H. Gardner and R. V. O'Neill. 1986. The influence of bias and variance in predicting the effects of phenolic compounds in ponds. *Proceedings for the 1986 Eastern Simulation Conference*, B. T. Fairchild, (ed.), Vol 17, no. 2: Supplementary Proceedings, pp 173-176.
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- Kamari, J., M. Posh, R. H. Gardner and J.-P. Hettelingh. 1986. A model for analyzing lake water acidification on a large regional scale. Part 2: Regional application. WP-86-66. International Institute for Applied Systems Analysis, A-2361 Laxenburg, Austria.
- Dale, V. H. and R. H. Gardner. 1987. Assessing regional impacts of growth declines using a forest succession model. *Journal of Environmental Management* 24: 83-93.
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- Krummel, J. R., R. H. Gardner, G. Sugihara, R. V. O'Neill and P. R. Coleman. 1987. Landscape patterns in a disturbed environment. *Oikos*, 48: 321-324.
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- 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.
- Gardner, R. H. 1988. TAM3: A program demonstrating Monte Carlo sensitivity and uncertainty analysis. BIOMOVs report, NIRP, Swedish National Institute of Radiation Protection, Stockholm, Sweden.
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