

## RESUME

**WILLIAM E. WINNER**

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**CITIZENSHIP:** United States of America

### **EDUCATION:**

Ph.D., Biology, University of Calgary, Calgary, Alberta, Canada 1978, Biology  
M.A., Biology, University of South Dakota, Vermillion, SD, 1974, Biology  
M.A.T., Biology, Lewis and Clark College, Portland, OR, 1973, Biology  
B.A., Biology, Lewis and Clark College, Portland, OR, 1970, Biology

### **ACADEMIC POSITIONS:**

2006 - Present, Professor, North Carolina State University  
1987 - 2006, Associate/Full Professor, Oregon State University, Corvallis, OR  
1982 - 1987, Assistant Professor, Virginia Polytechnic Institute & State University, Blacksburg, VA  
1978 - 1982, Postdoctoral Scholar, Stanford University, Stanford, CA

### **ADMINISTRATIVE, HONORARY, VISITING, AND SABBATICAL POSITIONS:**

2006 - Present, Coordinator, Environmental Sciences and Natural Resources Academic Programs, NCSU  
2004 - 2004, Acting Deputy Division Director, National Science Foundation, Arlington, VA  
2003 - 2006, Program Director, National Science Foundation, Arlington, VA  
1999 - 2003, Director, Environmental Sciences Graduate Program, OSU  
1996 - 1997, OSU Honors College Visiting Professor  
1993 - 1994, Sabbatical Visiting Professor, Duke University, Durham, NC  
1992 - 1993, Director, Environmental Sciences Undergraduate Program, OSU  
1992 - 1992, Interim Director, Center for Analysis of Environmental Change, OSU  
1982 - 1987, Director, Laboratory for Air Pollution Impact to Agriculture & Forestry, VPI&SU

### **NCSU DUTIES:**

Coordinate academic programs in Environmental Sciences and in Natural Resources (50%)  
Teaching and research responsibilities (50%)

**NSF DUTIES:** Program Director, Environmental and Structural Systems Cluster, Division of Integrative Organismal Biology at the NSF. Past service includes Acting Deputy Division Director. Work includes managing a large grant program, a portfolio of active awards, and participation in linking a wide range of NSF grant programs across the NSF and networked with other federal agencies.

#### **ASSIGNMENTS AT THE NATIONAL SCIENCE FOUNDATION (2003 - 2006):**

Acting Deputy Division Director, May – September, 2004  
Program Director, Ecological and Evolutionary Physiology Panel  
Participating Program Director, Integrative Plant Biology Panel  
Doctoral Dissertation Improvement Grant Program  
Research Coordinated Network Program; Division Representative to a cross-directorate program  
Joint Interagency Phytoremediation Working Group; Directorate Representative to the Program  
Interagency Metabolic Engineering Working Group; Division and Directorate Representative  
National Environmental Observatory Network (NEON); Program Advisory Team Member  
Outreach Travel to Universities, Society Meetings, Federal Agencies  
International Proposal Reviews and Recommendations

#### **ASSIGNMENTS AT OSU (1987 - 2006):**

Academic responsibility for teaching, research, and outreach; environmental plant biology  
Organizational activity and initiation of interagency Center for Analysis of Environmental Change  
Organizational activity and Director, Environmental Sciences Undergraduate Program  
Organizational activity and Director, Environmental Sciences Graduate Program  
Organizational activity and Board Member, Klamath Basin Range Land Trust

#### **ASSIGNMENTS AT VPI & SU (1982 - 1987):**

Academic responsibility for teaching, research, and outreach; environmental plant biology  
Director, Laboratory for Air Pollution Impact to Agriculture and Forestry

#### **PROFESSIONAL SERVICE:**

Representative, NCSU, Council of Environmental Deans and Directors, 2006 - Present  
Representative, NCSU, National Council for Science and the Environment, 2006 - Present  
Representative, OSU, Council of Environmental Deans and Directors, 1998 - 2006  
Representative, OSU, National Council for Science and the Environment, 1998-2006  
Consultant, US EPA Science Advisory Board, 1988 - 2000  
Reviewer for numerous journals  
Reviewer for Grant and Fellowship Proposals  
EPA Exploratory Grants Panel Member, 1984 - 1994  
EPA STAR Environmental Fellowship Program Panel Member, 1996 - 1998  
NASA Biological Research Panel Member, 1997 - 1998  
Ad Hoc Panel Reviews for: US EPA, US Forest Service, US DOE, NASA, NSF

#### **BOOKS:**

Winner, W. E., H. A. Mooney, and R. A. Goldstein (Eds.). 1985. *Sulfur Dioxide and Vegetation: Physiology, Ecology, and Policy Issues*. Stanford University Press. 593p.

Winner, W.E. and L.B. Phelps (Eds). 1987. *Responses of Trees to Air Pollution: The Role of Branch Studies*. Pub. U. S. Environmental Protection Agency. 248 p.

Winner, W. E. et al. (Eds.), National Research Council. 1989. *Biological Markers of Air-Pollution Stress and Damage in Forests*. National Academy Press, Washington, D.C. 363p.

Mooney, H. A., W. E. Winner, and E. J. Pell (Eds.). 1991. *Responses of Plants to Multiple Stresses*. Academic Press, NY. 422p.

## SELECTED, REVIEWED JOURNAL ARTICLES:

Winner, W.E. and J.D. Bewley, H.R. Krouse, and H.M. Brown. 1978. Stable sulfur isotope analysis of SO<sub>2</sub> pollution impact on vegetation. *Oecologia* 36:221-230.

Winner, W.E. and J.D. Bewley. 1978. Terrestrial mosses as bioindicators of SO<sub>2</sub> pollution stress: Synecological analysis and the index of atmospheric purity. *Oecologia* 35:221-230.

Winner, W.E. and J.D. Bewley. 1978. Contrasts between bryophyte and vascular plant synecological responses in an SO<sub>2</sub>-stressed white spruce association in central Alberta. *Oecologia* 33:311-325.

Krochko, J.E., W.E. Winner, and J.D. Bewley. 1979. Respiration in relation to ATP content during desiccation and rehydration of a desiccation-tolerant and a desiccation-intolerant moss. *Plant Physiology* 64:13-17.

Winner, W.E. and H.A. Mooney. 1980. Responses of Hawaiian plants to volcanic SO<sub>2</sub>: Stomatal behavior and foliar injury. *Science* 210:789-791.

Winner, W.E., and H.A. Mooney. 1980. Ecology of SO<sub>2</sub> resistance. II. Photosynthetic changes of shrubs in relation to SO<sub>2</sub> absorption and stomatal behavior. *Oecologia* 44:296-302.

Winner, W.E. and H.A. Mooney. 1980. Ecology of SO<sub>2</sub> resistance. I. Effects of fumigations on gas exchange of deciduous and evergreen shrubs. *Oecologia* 44:290-295.

Winner, W.E., C.L. Smith, G. Koch, H.A. Mooney, J.D. Bewley, and H.R. Krouse. 1981. H<sub>2</sub>S emission rates from plants and patterns of stable sulfur isotope fractionation. *Nature* 289:672-673.

Winner, W.E., G. Koch, and H.A. Mooney. 1982. Ecology of SO<sub>2</sub> resistance. IV. Predicting metabolic responses of fumigated shrubs. *Oecologia* 52:16-22.

Winner, W.E., and T. Casadevall. 1983. The effects of the Mount St. Helens eruption cloud on Fir (*Abies*) cuticles: Analysis with scanning electron microscopy. *American Journal of Botany* 20:80-86.

Osmond, C.B., M.P. Austin, J.A. Berry, W.D. Billings, J.S. Boyer, J.W.H. Dacey, P.S. Nobel, S.D. Smith, and W.E. Winner. 1985. Stress physiology in the context of plant physiological ecology. *BioScience* 37:38-48.

Winner, W.E. and H.A. Mooney. 1985. Ecology of SO<sub>2</sub> on Native Hawaiian Plants. *Oecologia* 86:387-393.

Atkinson, C.J., W.E. Winner, and H.A. Mooney. 1986. A field portable gas exchange system for measuring carbon dioxide and water vapor exchange rates of leaves during fumigation with SO<sub>2</sub>. *Plant, Cell, and Environment* 9:711-719.

Winner, W.E. and C.J. Atkinson. 1986. Absorption of air pollutants by plants and consequences for growth. *Trends in Ecology and Evolution* 1:15-18.

Atkinson, C.J., and W.E. Winner. 1987. Gas exchange characteristics of *Heteromeles arbutifolia* during fumigation with sulphur dioxide. *New Phytologist* 106:423-436.

Koch, G.W., W.E. Winner, A. Nardone, and H.A. Mooney. 1987. Controlled environment air pollution exposure chambers for plant growth analysis. *Environmental and Experimental Botany* 27:365-377.

Mooney, H.A., M. Koppers, G. Koch, J. Gorham, C. Chu, and W.E. Winner. 1988. Compensating effects to growth of carbon partitioning changes in response to SO<sub>2</sub>-induced photosynthetic reduction in radish. *Oecologia* 75:502-506.

- Leininger, T.D., and W.E. Winner. 1988. Throughfall chemistry beneath *Quercus rubra*--atmospheric, foliar, and soil chemistry considerations. *Can. J. For. Res.* 18:478-482.
- Greitner, C.S. and W.E. Winner. 1988. Increases in  $\delta^{13}$  values of radish and soybean plants caused by ozone. *New Phytologist* 108:489-494.
- Atkinson, C.J., W.E. Winner, and H.A. Mooney. 1988. Gas exchange and SO<sub>2</sub> fumigation studies with irrigated and unirrigated field grown *Diplacus aurantiacus* and *Heteromeles arbutifolia*. *Oecologia* 75:386-393.
- Atkinson, C.J., S.V. Robe, and W.E. Winner. 1989. The relationship between changes in photosynthesis and growth for radish plants fumigated with SO<sub>2</sub> and O<sub>3</sub>. *New Phytologist* 110:173-184.
- Winner, W.E., A.S. Lefohn, I.S. Cotter, C.S. Greitner, J. Nellessen, L.R. McEvoy, Jr., R.L. Olson, C.J. Atkinson, and L.D. Moore. 1989. Plant responses to elevational gradients of O<sub>3</sub> exposures in Virginia. *Proc. Nat. Acad. Sci., USA* 86:8828-8832.
- Atkinson, C.J. and W.E. Winner. 1989. Modification of stomatal conductance by sulphur dioxide. *J. Exper. Bot.* 40(213):461-467.
- Gillespie, C.T. and W.E. Winner. 1989. Development of lines of radish differing in resistance to O<sub>3</sub> and SO<sub>2</sub>. *New Phytologist* 112:353-361.
- Greitner, C.S. and W.E. Winner. 1989. Effects of O<sub>3</sub> on alder photosynthesis and symbiosis with Frankia. *New Phytologist* 111:647-656.
- Leininger, T.D., W.E. Winner, and S.A. Alexander. 1990. Root disease incidence in eastern white pine plantations with and without symptoms of ozone injury in the Coweeta Basin of North Carolina. *Plant Disease* 74:552-554.
- Coleman, J.S., H.A. Mooney and W.E. Winner. 1990. Anthropogenic stress and natural selection: Variability in radish biomass increases with increasing SO<sub>2</sub> doses. *Canadian J. Botany* 68:102-106.
- Atkinson, C.J. and W.E. Winner. 1990. Interactions of SO<sub>2</sub> with other environmental stresses in influencing leaf gas exchange. *Oecologia*, 84:500-505.
- Pell, E.J., W.E. Winner, C. Vinten-Johansen, and H.A. Mooney. 1990. Responses of radish to multiple stresses. I. Physiological and growth responses to changes in ozone and nitrogen. *New Phytologist* 115:439-446.
- Pell, E.J., J.P. Sinn, N. Eckardt, C. Vinten-Johansen, W.E. Winner, and H.A. Mooney. 1993. Response of radish to multiple stresses. II. Influence of season and genotype on plant response to ozone and soil moisture deficit. *New Phytologist* 123:153-163.
- Greitner, C.S., E.J. Pell, and W.E. Winner. 1994. Analysis of whole canopies of aspen exposed to multiple stresses, ozone, nitrogen deficiency and drought. *New Phytologist* 127:579-589.
- Pell, E.J., P.J. Temple, A.L. Friend, H.A. Mooney, and W.E. Winner. 1994. Compensation as a plant response to ozone and associated stresses: An analysis of ROPIS experiments. *Journal of Environmental Quality* 23:429-436.
- Griffin, K.L., W.E. Winner and B.R. Strain. 1995. Growth and biomass partitioning in loblolly and ponderosa pine seedlings in response to carbon and nitrogen availability. *New Phytologist* 129:547-556.

Kleier, C., B. Farnsworth, and W. E. Winner. 1998. Whole plant carbon partitioning and physiological adaptations of radish (*Raphanus sativa* L.) in response to root temperature and ozone. *New Phytologist*, 139: 657-664.

Bond, B.J., B.T. Farnsworth, R.A. Coulombe, and W.E. Winner. 1999. Foliage physiology and biochemistry in response to light gradients in conifers with varying shade tolerance. *Oecologia*, 20: 183-192.

Thomas, S.C. and W.E. Winner. 2000. Leaf area index of an old-growth Douglas-fir forest estimated from direct structural measurements in the canopy, *Canadian Journal of Forest Research*, 30, 1922-1930.

Kleier, C., B. Farnsworth, and W. Winner. 2001. Photosynthesis and biomass allocation of radish cv. "Cherry Belle" in response to root temperature and ozone. *Environmental Pollution*, 111: 127-133.

Thomas, S.C. and W.E. Winner. 2002. Photosynthetic differences between saplings and adult trees: An integration of field results via meta-analysis, *Tree Physiology*, 22, 117-127.

M. Lucash, B. Farnsworth, and W. E. Winner. 2003. Response of sagebrush steppe species to elevated CO<sub>2</sub> and soil temperature, *Western North American Naturalist*,

Parker, G.G., J. Chen, M.E. Harmon, M.A. Lefsky, D.C. Shaw, S.C. Thomas, S.B. Weiss, R. van Pelt and W.E. Winner. 2004. Structure of the old-growth forest at Wind River. *Ecosystems*, 7, 440-453.

Winner, W.E., J. Berry, B.J. Bond, C. Cooper, T. Hinckley, J. Ehleringer, J. Fessenden, B. Lamb, S. McCarthy, N. McDowell, N. Phillips, S.C. Thomas and M. Williams. 2004. Canopy carbon gain and water use: analysis of old growth conifers in the Pacific Northwest, *Ecosystems*, 7, 482-498.

Paw U, K.T., M. Falk, T.H. Suchanek, S.L. Ustin, J. Chen, Y.-S. Park, W.E. Winner, S.C. Thomas, T.C. Hsiao, R.H. Shaw, T.S. King, R.D. Pyles, M. Schroeder and A.A. Matista. 2004. Carbon dioxide exchange between an old growth forest and the atmosphere, *Ecosystems*, 7, 513-524.

#### **SELECTED, REVIEWED BOOK CHAPTERS:**

Winner, W.E. and J.C. Atkinson. 1987. Annual absorption of gaseous air pollutants by mosses and vascular plants in diverse habitats. Pages 427-438 in *Effects of Acidic Deposition on Forests, Wetlands and Agricultural Ecosystems*. T.C. Hutchinson and K.M. Meema (eds), New York: Springer-Verlag.

Winner, W.E., C. Gillespie, W.-S. Shen, and H.A. Mooney. 1988. Stomatal responses to SO<sub>2</sub> and O<sub>3</sub>. Pages 255-271 in *Air Pollution and Plant Metabolism*. N.M. Schulte-Hostede, Darrall, et al. (eds), Elsevier Applied Sciences, London.

Mooney, H.A., and W.E. Winner. 1988. Carbon gain, allocation and growth as affected by air pollutants. Pages 272-287 in *Air Pollution and Plant Metabolism*. N.M. Schulte-Hostede and Darrall, et al. (eds), Elsevier Applied Sciences, London.

Winner, W.E. 1989. Photosynthesis and transpiration measurements as biomarkers of air pollution effects on forests. Pages 303-316 in *Biologic Markers of Air-Pollution Stress and Damage in Forests*. National Academy Press, Washington, DC.

Winner, W.E. and C.S. Greitner. 1989. Field methods used for air pollution research with plants. Pages 399-425 in *Plant Physiological Ecology*. R.W. Pearcy, et al. (eds), Chapman and Hall, New York.

Winner, W.E., V.S. Berg, and P.J. Langston-Unkefer. 1989. The use of stable sulfur and nitrogen isotopes in studies of plant responses to air pollution. Pages 454-470 in *Stable Isotopes in Ecological Research*. W.D. Billings, et al. (eds), Ecological Research, Vol. 68, Ecological Studies. Springer-Verlag, NY.

Winner, W.E., J.S. Coleman, C. Gillespie, H.P. Mooney, and E.J. Pell. 1991. Consequences of evolving resistance to air pollutants. Pages 177-202 in Ecological Genetics and Air Pollution. G.E. Taylor, Jr., L.F., Pitelka, and M.T. Clegg (eds), Springer-Verlag Pub.

Winner, W.E. 1991. Plant adaptations and reproductions. Pages 587-606 in Biology: The Network of Life. M.C. Mix et al. Harper Collins Pub., NY.

Matyssek, R., P. Reich, R. Oren, and W.E. Winner. 1995. Response mechanisms of conifers to air pollutants. Pages 255-307 in EcoPhysiology of Coniferous Forests, W. Smith and T. Hinckley (eds), Physiological Ecology Series, Academic Press, NY.

**NON-REVIEWED BOOK CHAPTERS:** Fourteen

**EXTENSION PUBLICATIONS:** Four

**INVITED PRESS AND INTERNATIONAL PRESENTATIONS, EXAMPLES:**

Winner, W. E. 2001. Venice, Italy.

Winner, W. E. 2000. Fudan University, Shanghai, China.

Winner, W. E. 1999. York University, England.

Winner, W. E. 1998. University of Orleans and Nancy, France.

Winner, W. E. 1998. NBC Nightly News.

Winner, W. E. 1998. National Public Radio, Living on Earth.

Winner, W. E. 1998. Microsoft NBC News Network.