

CURRICULUM VITAE

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Date of Birth: May 21, 1955. U.S. Citizen. Married; 1 child.

EDUCATION:

Utah State University, Logan UT. Ph.D. in Range Ecology, 1984. Dissertation: Plant Gas Exchange of Two Bunchgrasses in Relation to Herbivory Tolerance.

Utah State University, Logan UT. M.S. in Range Ecology, 1980. Thesis: Chlorophyll Fluorescence Probe of Ultraviolet-B Photoinhibition of Primary Photoreactions in Intact Leaves.

University of Minnesota, St. Paul MN. B.S. *magna cum laude* in Botany, 1977. Honor's Thesis: The Effects of Chilling on Sterigma Development in *Coprinus cinereus*.

EMPLOYMENT:

1998-present: Professor, Department of Natural Resources and Environmental Science (formerly called Environmental and Resource Sciences), University of Nevada Reno. Adjunct Professor, Department of Biology, UNR.

1991-1998: Associate Professor. Department of Environmental and Resource Sciences (formerly called Range Wildlife and Forestry), University of Nevada Reno. Adjunct Associate Professor, Department of Biology, UNR.

1985-1991: Assistant Professor. Department of Range Wildlife and Forestry, University of Nevada Reno. Adjunct Assistant Professor, Department of Biology, UNR.

1983-1985: Postdoctoral Research Associate. Department of Biological Sciences, Idaho State University.

1977-1983: Graduate Research Assistant, Teaching Assistant, and Graduate Fellow. Department of Range Science, Utah State University.

1976-1977: Undergraduate Research Assistant and Teaching Assistant. Department of Botany, University of Minnesota.

1975-1977: Greenhouse Assistant. USDA Cereal Rust Laboratory, University of Minnesota.

PUBLICATIONS:

69. Mazzola MB, Allcock KG, Chambers JC, Blank RR, **Nowak RS** (2008) Effects of nitrogen availability and cheatgrass competition on the establishment of Vavilov Siberian wheatgrass. *Rangeland Ecology & Management* 61:475-484.
68. Allen EA, Chambers JC, **Nowak RS** (2008) Effects of a spring prescribed burn on the soil seed bank in sagebrush steppe exhibiting pinyon-juniper expansion. *Western North American Naturalist* 68:265-277.
67. Allen EA, **Nowak RS**. (2008) Effect of pinyon-juniper tree cover on the soil seed bank. *Rangeland Ecology & Management* 61:63-73.
66. Nadeau JA, Quall RG, **Nowak RS**, Blank RR. (2007). The potential bioavailability of organic C, N, and P through enzyme hydrolysis in soils of the Mojave Desert. *Biogeochemistry* 52:305-320.
65. DeFalco LA, Fernandez GCJ, **Nowak RS** (2007) Variation in the establishment of a non-native annual grass influences competitive interactions with Mojave Desert perennials. *Biological Invasions* 9:293-307.
64. Allcock K, **Nowak R**, Blank B, Jones T, Monaco, T, Chambers J, Tausch R, Doescher P, Saytal V, Tanaka J, Ogle D, St. John L, Pellant M, Pyke D, Schupp E, Call C (2006) Note: Integrating Weed Management and Restoration on Western Rangelands. *Ecological Restoration* 24:199-200.
63. Housman DC, Naumburg E, Huxman TE, Charlet TN, **Nowak RS**, Smith SD (2006) Increases in desert shrub productivity under elevated CO₂ vary with seasonal water availability. *Ecosystems* 9:374-385.

62. Hartle RT, Fernandez GCJ, **Nowak RS** (2006) Horizontal and vertical zones of influence for root systems of four Mojave Desert shrubs. *Journal of Arid Environments* 64:586-603.
61. Phillips DL, Johnson MG, Tingey DT, Catricala CE, Hoyman TL, **Nowak RS** (2006) Effects of Elevated CO₂ on Fine Root Dynamics in a Mojave Desert Community: A FACE Study. *Global Change Biology* 12:61-73.
60. Apple ME, Thee CI, Smith-Longozo VL, Cogar CR, Wells CE, **Nowak RS** (2005) Arbuscular mycorrhizal colonization of *Larrea tridentata* and *Ambrosia dumosa* roots varies with precipitation and season in the Mojave Desert. *Symbiosis* 39:131-136.
59. Morgan JA, Pataki DE, Körner C, Clark H, Del Grosso SJ, Grünzweig JM, Knapp AK, Mosier AR, Newton PCD, Niklaus PA, Nippert J, **Nowak RS**, Parton WJ, Polley HW, Shaw MR (2004) Water relations in grassland and desert ecosystems exposed to elevated atmospheric CO₂. *Oecologia* 140:11-25.
58. **Nowak RS**, Ellsworth DS, Smith SD (2004) *Tansley Review*: Functional responses of plants to elevated atmospheric CO₂ – Do photosynthetic and productivity data from FACE experiments support early predictions? *New Phytologist* 162:253-280.
57. **Nowak RS**, Zitzer SF, Babcock D, Smith-Longozo V, Charlet TN, Coleman JS, Seemann JR, Smith SD (2004) Elevated CO₂ does not conserve soil water in the Mojave Desert. *Ecology* 85:93-99.
56. Wilcox CS, Ferguson JW, Fernandez GCJ, **Nowak RS** (2004) Fine root growth dynamics of four Mojave Desert shrubs as related to soil moisture and microsite. *Journal of Arid Environments* 56:129-148.
55. DeFalco LA, Bryla DM, Smith-Longozo V, **Nowak RS** (2003) Are Mojave Desert annual species equal? Resource acquisition and allocation for the invasive grass *Bromus madritensis* ssp. *rubens* (Poaceae) and two native species. *American Journal of Botany* 90:1045-1053.
54. **Nowak RS**, Hansen JD, Nowak CL (2003) Effects of grass bug feeding and drought stress on selected lines of crested wheatgrass. *Western North American Naturalist* 63:167-177.
53. Fenstermaker LK, Charlet TN, Huxman TE, Coleman JS, **Nowak RS**, Smith SD (2002) Global climate change research in the Nevada desert. *IN*: Charlet DA (ed.) *Nevada Environmental Issues*. Kendall-Hunt Publishing Co., Dubuque, Iowa.
52. Titus JH, **Nowak RS**, Smith SD (2002) Soil resource heterogeneity in the Mojave Desert. *Journal of Arid Environments* 52:269-292.
51. Titus JH, Titus PJ, **Nowak RS**, Smith SD (2002) Arbuscular mycorrhizae of Mojave Desert plants. *Western North American Naturalist* 62:327-334.
50. **Nowak RS**, Jordan DN, DeFalco LA, Wilcox CS, Coleman JS, Seemann JR, Smith SD (2001) Leaf conductance decreased under free-air CO₂ enrichment (FACE) for three perennials in the Nevada desert. *New Phytologist* 150:449-458.
49. Smith SD, Huxman TE, Zitzer SF, Charlet TN, Housman DC, Coleman JS, Fenstermaker LK, Seemann JR, **Nowak RS** (2000) Elevated CO₂ increases productivity and invasive species success in an arid ecosystem. *Nature* 408:79-82.
48. Yoder CK, **Nowak RS** (2000) Phosphorus acquisition by *Bromus madritensis* ssp. *rubens* from soil interspaces shared with Mojave Desert shrubs. *Functional Ecology* 14:685-692.
47. **Nowak RS**, Nowak CL, Tausch RJ (2000) The probability that a fossil absent from a sample implies absent from the paleolandscape. *Quaternary Research* 54:144-154.
46. Pataki DE, Huxman TE, Jordan DN, Zitzer SF, Coleman JS, Smith SD, **Nowak RS**, Seemann JR (2000) Water use of Mojave Desert shrubs under elevated CO₂. *Global Change Biology* 6:889-897.
45. Phillips DL, Johnson MG, Tingey DT, Biggart C, **Nowak RS**, Newsom J (2000) Minirhizotron installation in rocky, sandy soils minimizing soil disturbance. *Soil Science Society of America Journal* 64:761-764.
44. Hamerlynck EP, Huxman TE, **Nowak RS**, Redar S, Loik ME, Jordan DN, Zitzer SF, Coleman JS, Seemann JR, Smith SD (2000) Photosynthetic responses of *Larrea tridentata* to a step-increase in atmospheric CO₂ at the Nevada Desert FACE Facility. *Journal of Arid Environments* 44:425-436.
43. Terry RG, **Nowak RS**, Tausch RJ (2000) Genetic variation in chloroplast and nuclear ribosomal DNA in Utah juniper (*Juniperus osteosperma*, Cupressaceae): Evidence for interspecific gene flow. *American Journal of Botany* 87:250-258.
42. Leavitt KJ, Fernandez GCJ, **Nowak RS** (2000) Plant establishment on steep, angle of repose slopes in mine waste dumps. *Journal of Range Management* 53:442-452.
41. Yoder CK, Vivin P, DeFalco L, Seemann JR, **Nowak RS** (2000) Root growth and function of three Mojave Desert grasses in response to elevated atmospheric CO₂ concentration. *New Phytologist* 145:245-256.

40. Yoder CK, **Nowak RS** (1999) Soil moisture extraction by evergreen and drought-deciduous shrubs in the Mojave Desert during wet and dry years. *Journal of Arid Environments* 42:81-96.
39. Tausch RJ, **Nowak RS** (1999) Fifty years of ecotone change between shrub and tree dominance in the Jack Springs Pinyon Natural Research Area. Pages 71-77 *IN: McArthur ED, Ostler WK, Wamboldt CL, comps. Proceedings: Shrubland Ecotones. Proc. RMRS-P-11. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.*
38. Yoder CK, **Nowak RS** (1999) Hydraulic lift among native plant species in the Mojave Desert. *Plant Soil* 215:93-102 (plus cover photograph).
37. Jordan DE, Zitzer SF, Hendrey GR, Lewin KF, Nagy J, **Nowak RS**, Smith SD, Coleman JS, Seemann JR (1999) Biotic, abiotic and performance aspects of the Nevada Desert free-air CO₂ enrichment (FACE) facility. *Global Change Biology* 5:659-668.
36. Moore DJ, **Nowak RS**, Tausch RJ (1999) Gas exchange of *Juniperus osteosperma* and *Juniperus occidentalis* across local and regional environmental gradients in the Great Basin of western North America. *Tree Physiology* 19:421-433.
35. **Nowak RS**, Moore DJ, Tausch RJ (1999) Ecophysiological patterns of pinyon and juniper. Pages 35-46 *IN: Mosen SB, Stevens R, Tausch RJ, Miller R, Goodrich S (eds.). Proceedings: Ecology and Management of Pinyon-Juniper Communities within the Interior West. RMRS-P-9. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.*
34. Huxman TE, Hamerlynck EP, Moore BD, Smith SD, Jordan DN, Zitzer SF, **Nowak RS**, Coleman JS, Seemann JR (1998) Photosynthetic down-regulation in *Larrea tridentata* exposed to elevated atmospheric CO₂: Interactions with drought under glasshouse and field (FACE) exposure. *Plant Cell and Environment* 21:1153-1161.
33. Moore DJ, **Nowak RS**, Nowak CL (1998) Photosynthetic acclimation to temperature and drought in the endemic Chelan rockmat, *Petrophytum cinerascens* (Rosaceae). *American Midland Naturalist* 139:374-382.
32. Sala A, **Nowak RS** (1997) Ecophysiological responses of three riparian graminoids to changes in soil water table. *International Journal of Plant Science* 158:835-843.
31. Kuyper KF, Yandell U, **Nowak RS** (1997) On the taxonomic status of *Eriogonum robustum* (Polygonaceae), a rare endemic in western Nevada. *Great Basin Naturalist* 57:1-10.
30. Halford AH, **Nowak RS** (1996) Distribution and ecological characteristics of *Lewisia longipetala* (Piper) Clay, a high altitude endemic plant. *Great Basin Naturalist* 56:225-236.
29. Callaway RM, DeLucia EH, Moore DJ, **Nowak RS**, Schlesinger WH (1996) Competition and facilitation: contrasting effects of *Artemisia tridentata* on *Pinus ponderosa* versus *P. monophylla*. *Ecology* 77:2130-2141.
28. Tausch RJ, Nowak CL, **Nowak RS** (1995) Climate change and plant species response over the Quaternary: Implications for ecosystem management. pp 14-19 *IN: Tinus RW (ed). Interior West Global Change Workshop. U.S. Forest Service Rocky Mountain Forest and Range Experiment Station Gen. Tech Report RM-GTR-262.*
27. Anderson JE, **Nowak RS**, Toft NL, Rasmuson K (1995) Gas exchange and resource-use efficiency of *Leymus cinereus* (Poaceae): Diurnal and seasonal responses to naturally declining soil moisture. *American Journal of Botany* 82:699-708.
26. Zhao YG, Fernandez GCJ, Bowman DC, **Nowak RS** (1994) Selection criteria for drought-resistance breeding in turfgrass. *Journal American Society Horticultural Science* 119:1317-1324.
25. Tausch RJ, Chambers JC, Blank RR, **Nowak RS** (1994) Differential establishment of perennial grass and cheatgrass following fire on an ungrazed sagebrush-juniper site. pp 252-257 *IN: Roundy BA, McArthur ED, Haley JS, Mann DK (compilers). Proceedings, Wildland Shrub and Arid Land Restoration Symposium, October 1993. U.S. Forest Service Intermountain Research Station Gen. Tech. Report INT-GTR-315.*
24. Nowak CL, **Nowak RS**, Tausch RJ, Wigand PE (1994) A 30,000 year record of vegetation dynamics at a semi-arid locale in the Great Basin. *Journal of Vegetation Science* 5:579-590.
23. Kolseth TL, Guitjens JC, **Nowak RS**, Gifford GF (1994) Evaporation and yield of three riparian graminoids. pp 485-491 *IN: Marston RA, Hasfurther VR (eds). Proceedings, Annual Symposium of the American Water Resources Association: Effects of Human-Induced Changes on Hydrologic Systems, June 1994.*
22. Nowak CL, **Nowak RS**, Tausch RJ, Wigand PE (1994) Tree and shrub dynamics in northwestern Great Basin woodland and shrub steppe during the Late-Pleistocene and Holocene. *American Journal of Botany* 81:265-277.

21. Tausch RJ, **Nowak RS**, Bruner AD, Smithson J (1994) Effects of simulated fall and early spring grazing on cheatgrass and perennial grass in western Nevada. pp 113-119 *IN*: Monsen SB, Kitchen SG (eds). Proceedings - Ecology and Management of Annual Rangelands. USDA Forest Service General Technical Report INT-GTR-313.
20. Murray KJ, Tenhunen JD, **Nowak RS** (1993) Photoinhibition as a control on photosynthesis and production of *Sphagnum* mosses. *Oecologia* 96:200-207.
19. **Nowak RS**, Nowak CL, Anderson JE (1993) Differential response to nitrogen form and concentration for *Oryzopsis hymenoides* and *Elymus lanceolatus*. *Great Basin Naturalist* 53:222-236.
18. **Nowak RS** (1993) Assessing physiological requirements of plant species as a prerequisite for their use in mine reclamation. Proceedings Vol. I, 10th National Meeting, American Society for Surface Mining and Reclamation, Princeton, WV. pp 23-29.
17. Anderson JE, **Nowak RS**, Ratzlaff TD, Markham OD (1993) Managing soil moisture on waste burial sites in arid regions. *Journal of Environmental Quality* 22:62-69.
16. Cramer GR, **Nowak RS** (1992) Supplemental manganese improves the relative growth, net assimilation and photosynthetic rates of salt-stressed barley. *Physiologia Plantarum* 84:600-605.
15. Melgoza G, **Nowak RS** (1991) Competition between cheatgrass and 2 native species after fire: Implications from observations and measurements of root distribution. *J. Range Manage.* 44:27-33.
14. Melgoza G, **Nowak RS**, Tausch RJ (1990) Soil water exploitation after fire: Competition between *Bromus tectorum* (cheatgrass) and two native species. *Oecologia* 83:7-13.
13. **Nowak RS**, Nowak CL, DeRocher T, Jones MA, Cole N (1990) Prevalence of *Oryzopsis hymenoides* near harvester ant mounds: Indirect facilitation by ants. *Oikos* 58:190-198.
12. Smith SD, **Nowak RS** (1990) Ecophysiology of Plants in the Intermountain Lowlands. *IN*: Osmond CB, Pitelka LF, Hidy GM (eds.) *Ecological Studies*, Vol. 80. *Plant Biology of the Basin and Range*. Springer-Verlag, Heidelberg. pp 179-241.
11. Toft NL, Anderson JE, **Nowak RS** (1989) Water use efficiency and carbon isotope composition of plants in a cold desert environment. *Oecologia* 80:11-18.
10. **Nowak RS**, Anderson JE, Toft NL (1988) Gas exchange of *Agropyron desertorum*: Diurnal patterns and responses to water vapor gradient and temperature. *Oecologia* 77:289-295.
9. Hansen JD, **Nowak RS** (1988) Feeding damage by *Irbisia pacifica* (Hemiptera: Miridae) on host plant growth: Effects of feeding and drought. *Annals of the Entomological Society of America* 81:599-604.
8. Anderson JE, Shumar ML, Toft NL, **Nowak RS** (1987) Control of the soil water balance by sagebrush and three perennial grasses in a cold-desert environment. *Arid Soil Research and Rehabilitation* 1:229-244.
7. **Nowak RS**, Caldwell MM (1986) Photosynthetic characteristics of crested wheatgrass and bluebunch wheatgrass. *J. Range Manage.* 39:443-450.
6. Hansen, JD, **Nowak RS** (1985) Evaluating damage by grass bug feeding on crested wheatgrass. *Southwestern Entomologist* 10:89-94.
5. **Nowak RS**, Caldwell MM (1984) A test of compensatory photosynthesis in the field: Implications for herbivory tolerance. *Oecologia* 61:311-318.
4. **Nowak RS**, Caldwell MM (1984) Photosynthetic activity and survival of foliage during winter for two bunchgrass species in a cold-winter steppe environment. *Photosynthetica* 18:192-200.
3. Caldwell MM, Dean TJ, **Nowak RS**, Dzurec RS, Richards JH (1983) Bunchgrass architecture, light intensity, and water-use efficiency: assessment by fiber optic point quadrats and gas exchange. *Oecologia* 59:178-184.
2. Caldwell M.M, Robberecht R, **Nowak RS**, Billings WD (1982) Differential photosynthetic inhibition by ultraviolet radiation in species from the arctic-alpine life zone. *Arctic and Alpine Research* 14:195-202.
1. Caldwell MM, Richards JH, Johnson DA, **Nowak RS**, Dzurec RS (1981) Coping with herbivory: Photosynthetic capacity and resource allocation in two semiarid *Agropyron* bunchgrasses. *Oecologia* 50:14-24.

MANUSCRIPTS SUBMITTED AND IN PREPARATION:

Mazzola MB, Chambers JC, Allcock KG, Blank RR, Pyke DA, Schupp EW, Doescher PS, **Nowak RS**. Effects of resource availability and propagule supply on native species recruitment in sagebrush ecosystems invaded by *Bromus tectorum*.

Nadeau JA, Quall RG, **Nowak RS**, Smith SD, Blank RR. Responses of enzyme activities involved in C, N, and P mineralization to short intense precipitation events in the Mojave Desert. In revision for *Biogeochemistry*.

- Clark, NM, Apple ME, Allcock KG, **Nowak RS**. Effects of elevated CO₂ on root respiration rates of two Mojave Desert shrubs. IN revision for Global Change Biology.
- Clark NM, Rillig MC, **Nowak RS**. Arbuscular mycorrhizal fungal abundance in the Mojave Desert: Seasonal dynamics and impacts of elevated CO₂. In preparation for Oecologia.
- Verburg PSJ, Young AC, Stevenson BA, Glanzman I, Arnone JA III, Marion GM, Holmes C, **Nowak RS**. Does increased summer precipitation and N deposition alter fine root dynamics in a Mojave Desert ecosystem? In preparation.
- DeFalco LA, Ivans CK, Vivin P, Seemann JR, **Nowak RS** (200X) Photosynthesis and resource allocation for three Mojave Desert grasses in response to elevated atmospheric CO₂. In revision for Plant Ecology.
- DeFalco LA, Fernandez GCJ, Smith SD, **Nowak RS**. Plant-plant interactions in a Mojave Desert shrubland exposed to elevated atmospheric CO₂ during two years of contrasting rainfall. In preparation for XXX.
- DeSoyza A, Wells CE, Pataki D, Schorran D, Cheng W, **Nowak RS**. Altered patterns of soil respiration under elevated CO₂ at the Nevada Desert Free-air CO₂ Enrichment (FACE) Facility. In preparation for Global Change Biology.
- Ferguson S, **Nowak RS**. Long term accumulation and loss of fine roots under elevated CO₂ in the Mojave Desert. In preparation for New Phytologist.
- Donohue BL, **Nowak RS**. Photosynthetic and morphological acclimation of wet meadow graminoids to decreasing soil water availability. In preparation for American Journal of Botany.
- Nowak RS**, Anderson JE, Toft NL. Water and nitrogen limitations in semiarid ecosystems: Soil nitrogen pools, plant productivity, and plant population dynamics. In preparation for Western North American Naturalist.
- Nowak RS**, Anderson JE. Rooting characteristics of a native sagebrush-steppe plant community and monocultures of 4 aridland species. In preparation for Journal of Arid Environments

GRANTS AND CONTRACTS:

48. **Nowak RS**, P.I.; Pregitzer KS, Co-PI. International Studies of Arid Lands: Development of Chinese Collaborations. UNR International Activities Grants Program, 2008-2009: \$3,000.
47. **Nowak RS**, P.I.; Weisberg PJ, Bennett C, and Camilli K, Co-P.I.'s. Tree health within the Lake Tahoe Basin: Interactions with fuel management treatments. State of Nevada. 2008-2010: \$126,350.
46. Weisberg, P.J., PI; R.S. **Nowak**, co-PI. Tree Crown Mortality Associated with Roads in the Lake Tahoe Basin: A Remote Sensing Approach. Nevada Department of Transportation. 2008-2010: \$100,000.
45. **Nowak**, R.S., PI; S.D. Smith, J.A. Arnone, and, R.D. Evans, Co-P.I.'s. Biotic processes regulating the carbon balance of desert ecosystems (supplement & renewal). US Department of Energy Terrestrial Carbon Processes Program. 2007-2009: \$1,275,000.
44. **Nowak RS**, Sparrow A, Perryman B, Co-PI's. Assess the Potential for Collaborative Research in Turkmenistan and Nevada. Nevada Agricultural Experiment Station. 2006-2007: \$26,876.
43. **Nowak RS**, PI; Smith SD, Arnone JA, Fenstermaker L, Co-P.I.'s. Biotic Processes Regulating the Carbon Balance of Desert Ecosystems (renewal). US Department of Energy Terrestrial Carbon Processes Program. 2006-2007; \$731,507.
42. **Nowak RS**, P.I.; Allcock KG, Co-P.I. Minimizing risk of cheatgrass invasion and dominance at the Idaho National Laboratory. SM Stoller Corp, Idaho Falls, ID. 2006-2010: \$209,601.
41. **Nowak RS**, P.I. Effects of de-icing salts on vegetation in the Lake Tahoe Basin. Nevada Department of Transportation and California Department of Transportation. 2005-2009: \$605,468.
40. Smith SD, P.I.; **Nowak RS**, Fenstermaker LK, Young M, Co-P.I.'s. Effects of changing water and nitrogen inputs on a Mojave Desert ecosystem. U.S. Department of Energy Program for Ecosystem Research. 2005-2007: \$312,102.
39. **Nowak RS**, P.I.; Ogle DG, Co-PI. Restoration of cheatgrass infested rangelands with native species. USDI – BLM. 2003-2008: \$101,000.
38. **Nowak RS**, PI; Smith SD, Arnone JA, Fenstermaker L, Co-P.I.'s. Biotic Processes Regulating the Carbon Balance of Desert Ecosystems (renewal). US Department of Energy Terrestrial Carbon Processes Program. 2003-2006; \$2,532,230.
37. **Nowak RS**, PI; Apple M, Smith SD, Co-PI's. Effects of elevated CO₂ on root function and soil respiration in a Mojave Desert ecosystem (renewal). US DOE Terrestrial Carbon Program. 2002-2007: \$480,000.

36. Smith SD, PI; **Nowak** RS, Evans RD, Reynolds JF, Arnone JA, Co-PI's. Collaborative Research: Responses of productivity and nutrient dynamics to elevated CO₂ in an intact Mojave Desert ecosystem. NSF Ecosystem Program. 2002-2006: \$1,200,000.
35. Smith SD, P.I.; **Nowak** RS, Fenstermaker LK, Co-P.I.'s. Responses of a Mojave Desert ecosystem to simulated global change. U.S. Department of Energy Program for Ecosystem Research. 2002-2005: \$728,724.
34. **Nowak** RS, P.I.; Chambers J, Co-P.I. Effects of fire on the survival and seedling establishment of Great Basin species used by sage grouse. USDA Forest Service. 2001-2004: \$39,614.
33. **Nowak** RS, P.I.; Glimp H, Doescher P, Tanaka J, Schupp E, Rasmussen A, Call C, Chambers J, Tausch R, Pyke D, Blank R, Jones T, Pellant M, Co-P.I.'s. Integrated Restoration Strategies Towards Weed Control On Western Rangelands. USDA IFAFS Program. 2001-2006: \$2,918,000.
32. Smith SD, P.I.; **Nowak** RS, Qualls RG, Wagner D, Co-P.I.'s. Influence of microbiotic crusts on Mojave Desert vegetation. The Andrew W. Mellon Foundation. 2000-2005: \$325,000.
31. **Nowak** RS, Coleman JS, Fenstermaker L, Smith SD, Co-P.I.'s. Biotic Processes Regulating the Carbon Balance of Desert Ecosystems. US Department of Energy Terrestrial Carbon Processes Program. 2000-2003; \$2,250,000.
30. Smith SD, P.I.; **Nowak** RS, Devitt D, Co-P.I.'s. Roles of plants in the closure and monitoring of RWMS landfills at the NTS: Phase II. Plants as natural sampling lysimeters and vegetation response to a changing climate. U.S. Department of Energy Nevada Environmental Research Park Cooperative Agreement Program. 2000-2002; \$320,000.
29. **Nowak** RS, P.I.; Phillips DL, Eissenstat DM, Bryla DR, Tingey DT, Johnson MG, Anderson LJ, Smith SD, Co-P.I.'s. Collaboration: Effects of Elevated CO₂ on Root Dynamics and Root Function in a Mojave Desert Ecosystem. US DOE Terrestrial Carbon Program (renewal). 1999-2002: \$566,526.
28. **Nowak** RS, P.I. Responses of Aridland Plants to Environmental Changes. Nevada Agricultural Experiment Station (Hatch). 1999-2002.
27. **Nowak** RS, P.I.; S.D. Smith, Devitt D, Co-P.I.'s. Roles of plants in the closure and monitoring of RWMS landfills at the NTS: Phase I. Rooting and root channel macropore characteristics of key species. U.S. Department of Energy Nevada Environmental Research Park Cooperative Agreement Program. 1998-2000; \$240,000 (\$120,000 to UNR, \$120,000 to UNLV).
26. Smith SD, P.I.; Coleman JS, Evans RD, **Nowak** RS, Cheng W, Moore BD, Seemann JR, Co-P.I.'s. Effects of elevated CO₂ on a Mojave Desert ecosystem. Interagency Terrestrial Ecology and Global Change Program (NSF/DOE/NASA/USDA). 1998-2001: \$1,300,000.
25. Coleman JS, P.I.; **Nowak** RS, Shaulis LK, Smith SD, Co-P.I.'s. Constructing a long-term ecological research program at the NTS. NSF EPSCoR Grants Program. 1998-2001: \$500,000.
24. Seemann JR, **Nowak** RS, Smith SD, Co-P.I.'s. Infrastructure support for the NTS Desert FACE Facility. US DOE Nevada Operations Office, Nevada Test Site. 1996-1999: \$745,000.
23. **Nowak** RS, P.I.; Phillips D, Tingey D, Johnson M, Smith SD, Co-P.I.'s. Collaboration: Effects of elevated CO₂ on root dynamics and function in a Mojave Desert ecosystem. NSF/DOE/USDA/NASA Interagency Terrestrial Ecology and Global Change Program. 1996-1999: UNR \$459,000; EPA \$293,000.
22. Smith S, P.I.; Luo Y, Ball JT, **Nowak** RS, Seemann JR, Co-P.I.'s. Effects of elevated atmospheric CO₂ on vegetation dynamics of a hot desert ecosystem. NSF/DOE/USDA/NASA Interagency Terrestrial Ecology and Global Change Program. 1996-1998; \$415,000.
21. **Nowak** RS, P.I.; Tausch RJ, Mensing SA, Nowak CL, Co-P.I.'s. Conceptual and Predictive Models of Paleovegetation Dynamics in the Great Basin. USDA NRICGP Forest/Range/Crop/Aquatic Ecosystem. 1995-1998; \$100,000.
20. **Nowak** RS, P.I. Dynamics of northern Great Basin woodland and shrub steppe vegetation during the late-Pleistocene and Holocene. U.S. Forest Service Intermountain Research Station. 1994-1995: \$17,111.
19. **Nowak** RS, P.I. Livestock management in a montane riparian ecosystem: Effects on vegetation. Nevada Agricultural Experiment Station (Hatch). 1994-1999.
18. Seemann JR, P.I.; **Nowak** RS, Smith SD, Coleman J, Co-P.I.'s. Nevada DOE EPSCoR Proposal, Cluster 2: Responses of Desert Vegetation to Increasing Atmospheric CO₂. 1994-2000: \$1,789,500.
17. Warwick JJ, P.I.; Stacey PB, **Nowak** RS, Vinyard GL, Co-P.I.'s. An integrated analysis of livestock management in a Great Basin riparian ecosystem. USDA CSRS NRICGP Forest/Range/Crop/ Aquatic Ecosystems. 1994-1997: \$100,000.

16. **Nowak** RS, P.I.; Tausch RJ, Co-P.I. Environmental, Genetic, and Ecophysiological Variation of Western and Utah Juniper and their Hybrids: A Model System for Vegetation Response to Climate Change. U.S. Department of Energy, Program for Ecosystem Research. 1993-1997: \$579,537.
15. **Nowak** RS. Water dynamics of native plant species in the Mojave Desert. U.S. Department of Energy, Nevada Field Office. 1993-1996: \$152,122.
14. **Nowak** RS, P.I.; Pardini RS, Whalen BJ, Co-P.I.'s. Whittell Biochemistry and Biology Field Research Station. USDA, CSRS, Building and Facilities Program. 1992-1995: \$451,050.
13. **Nowak** RS. Photosynthetic acclimation to temperature and drought in the endemic Chelan rockmat. U.S. Forest Service Pacific Northwest Research Station. 1992-1993: \$7,800.
12. **Nowak** RS, P.I.; J.C. Guitjens, Co-P.I. Water use efficiency of plants in riparian ecosystems. Nevada Agricultural Experiment Station (Hatch). 1991-1994.
11. **Nowak** RS, P.I. Morphologic, genetic, and isotopic characteristics of Utah juniper as diagnostic indicators of temperature and drought. U.S. Forest Service Intermountain Research Station. 1990-1993; \$73,310.
10. **Nowak** RS, P.I. Relationship between drought severity and the fractionation of hydrogen and oxygen isotopes in Utah juniper. U.S. Forest Service Interior West Global Change Program. 1991-1992: \$12,403.
9. **Nowak** RS, P.I.; Guitjens JC, Gifford GF, Co-P.I.'s. Plant-Soil-Water Relationships of Riparian Graminoids. USDA, CSRS, Rangeland Research Grants Program. 1990-1993; \$75,000.
8. **Nowak** RS, P.I. Carbon and nitrogen auto-analyzer. Nevada Agricultural Experiment Station. 1989-1990.
7. **Nowak** RS, P.I.; Ball TJ, Seemann JR, Miller WW, Co-P.I.'s. Physiology of Irrigated Alfalfa, *Medicago sativa*. Nevada Agricultural Experiment Station (Hatch). 1989-1991.
6. **Nowak** RS, P.I. Plant Water Relations in Forested Riparian Zones. Nevada Agricultural Experiment Station (McIntire-Stennis). 1988-1991.
5. **Nowak** RS, P.I. Exploitation of Soil Resources after Controlled Burns: Interactions of Native Species with Cheatgrass. Nevada Agricultural Experiment Station (Hatch). 1986-1989.
4. Tausch RJ, P.I.; **Nowak** RS, Co-P.I. Control of Cheatgrass on Western Nevada Rangelands by Simulated Grazing Management. U.S. Department of Agriculture, CSRS, Western Region IPM Program. 1986-1988; \$41,000.
3. **Nowak** RS, P.I. Evapotranspiration on Simulated Waste Disposal Trenches. U.S. Department of Energy, Idaho National Engineering Laboratory. 1985-1989; \$62,876.
2. **Nowak** RS, P.I. Water and Nitrogen Amendments in Semi-arid Ecosystems. U.S. Department of Energy, Idaho National Engineering Laboratory. 1985-1989; \$73,045.
1. **Nowak** RS, P.I. Harvester Ants in Great Basin Rangelands: Effects on Plant Size and Density. University of Nevada Reno, Graduate School, Research Advisory Board. 1986-1987; \$6,497.

GRANTS AND CONTRACTS PENDING:

Tyler, SW, P.I.; Verburg, P, Menon, M, and **Nowak**, RS, Co-P.I.'s. Dynamics and management of nitrate in desert soils: Quantifying the role of the carbon to nitrogen ration and plants. NSF. 2008-2011: \$287,409.

RESEARCH INTEREST:

Plant physiological ecology. Current research areas: 1) Invasion, competition, and ecology of exotic annual grasses, especially cheatgrass and red brome, in arid ecosystems. 2) Effects of global changes on vegetation dynamics and on plant ecophysiology and productivity. 3) Dynamics of water and nutrients in native plant communities and their effects on carbon balance, water balance, rooting dynamics, and competition for soil resources. 4) Ecology, physiology, and conservation of rare or endemic plant species.

PAPERS PRESENTED:

124. Koyama A, Smith SD, **Nowak** RS, Evans RD (2008) Soil organic carbon balance in a desert ecosystem after 10years exposure to elevated carbon dioxide. American Geophysical Union Fall Meeting, San Francisco CA.
123. Munck I, Bennett C, Camilli K, **Nowak** R (2008) Effects of salt on tree health in Lake Tahoe forests. California Forest Pest Council Annual Meeting, Woodland CA.

122. Munck I, Bennett C, Camilli K, **Nowak R** (2008) Effects of salt on tree health in Lake Tahoe forests. Society of American Foresters National Convention, Reno NV.
121. **Nowak RS** (2008) Control of invasive plants in the Great Basin, USA. Third Asia-Pacific Forum on Ethnobotany, Urumqi, Xinjiang, China.
120. Perkins LB, **Nowak RS** (2008) Structural equation model of selected grass species competing against cheatgrass. Ecological Society of America, Annual Meeting, Milwaukee WI.
119. Holmes CD, **Nowak RS** (2007) Response of soil moisture content to five years of predicted global climate change treatments in the Mojave Desert. Ecological Society of America, Annual Meeting, San Jose CA.
118. Clark NM, **Nowak RS** (2007) Elevated CO₂ does not affect arbuscular mycorrhizal fungi in the Mojave Desert. Ecological Society of America, Annual Meeting, San Jose CA.
117. Camilli K, Bennett C, **Nowak B** (2007) Effects of road de-icing salts on the health of conifers in the Lake Tahoe Basin. American Phytopathological Society Annual Meeting, San Diego CA. *Phytopathology* 97:S17.
116. Bennett C, Camilli K, **Nowak B** (2007). Effects of road de-icing salts on the health of conifers in the Lake Tahoe Basin. Main Station Field Lab Day, UNR College of Agriculture, Biotechnology, and Natural Resources.
115. Bennett C, Camilli K, **Nowak B** (2007) Effects of road de-icing salts on conifers in the Lake Tahoe Basin. California Forest Pest Council Annual Meeting, Woodland CA.
114. Bennett C, Camilli K, **Nowak R** (2007) Effects of de-icing salts on conifer trees in the Tahoe Basin. Western Area State Highway Transportation Officials Conferences: March, South Lake Tahoe CA; July, Las Vegas NV.
113. Ellsworth LM, Landmesser J, Allcock K, **Nowak R** (2007) Integrating weed management and restoration on Great Basin rangelands: Management options and applications to larger scales. Symposium presentation, Society for Range Management Annual Meeting, Reno NV.
112. **Nowak R**, Pellant M (2007) Cheatgrass, secondary weeds, and restoration issues in the Great Basin. Symposium presentation, Society for Range Management Annual Meeting, Reno NV.
111. Monaco TA, Jones TA, Landmesser J, **Nowak RS** (2007) Screening native cultivars as a transition community. Symposium presentation, Society for Range Management Annual Meeting, Reno NV.
110. Blank RR, Burnham J, Chambers J, Lindgren A, Mazzola M, Morris, C, **Nowak R**, Shaff S (2007) The effect of sucrose application on soil nutrient availability. Symposium presentation, Society for Range Management Annual Meeting, Reno NV.
109. Allcock KA, **Nowak RS** (2007) Integrated statistical strategies: Making sense across site comparisons. Symposium presentation, Society for Range Management Annual Meeting, Reno NV.
108. Clark N, **Nowak R** (2006) Effects of elevated CO₂ on the root respiration rates of two Mojave Desert shrubs. Ecological Society of America, Annual Meeting, Nashville TN.
107. Verburg P, Young A, Stevenson B, Glanzmann I, Arnone J, **Nowak R** (2006) Response of fine roots to experimental nitrogen and water additions in a Mojave Desert ecosystem. Soil Science Society of America, Annual Meeting, Indianapolis, IN.
106. Landmesser J, Allcock K, Jones T, Monaco T, Nowak R, Pyke D, Schupp E (2006) Success of cheatgrass (*Bromus tectorum*) control and native plant restoration techniques on western rangelands. Nevada Wildland Fire and Outreach Conference, Reno NV.
105. Allcock KA, Mazzola M, Nowak R, Chambers C, Blank, R, Doescher P, Pyke D, Schupp E (2006) Integrating weed control and restoration on western rangelands: A functional group approach. Nevada Wildland Fire and Outreach Conference, Reno NV.
104. Landmesser J, Allcock K, **Nowak R** (2005) Integrating Weed Control and Restoration on Western Rangelands. 8th Biennial Conference of Research on the Colorado Plateau, Flagstaff, AZ.
103. Landmesser J, Jones T, Monaco T, **Nowak R**, Pyke D, Schupp E (2005). Success of cheatgrass (*Bromus tectorum*) control and native plant restoration techniques on western rangelands. Ecological Society of America, Annual Meeting, Montreal Canada.
102. Holmes C, **Nowak R**, Young M (2005). Intact biological soil crust does not affect soil moisture in the Mojave Desert. Ecological Society of America, Annual Meeting, Montreal Canada.
101. deSoyza AG, **Nowak RS**, Knight EA, Babcock DH, Smith-Longozo V (2004). Effects of elevated atmospheric CO₂ on soil respiration in a Mojave Desert ecosystem. Ecological Society of America, Annual Meeting, Montreal Canada.

100. Clark N, Phillips D, Johnson M, Tingey D, **Nowak R** (2005). Effects of elevated CO₂ on fine root biomass of two Mojave Desert shrubs. Ecological Society of America, Annual Meeting, Montreal Canada.
99. Allcock K, Blank T, Chambers J, Doescher P, Mozzola M, **Nowak R** (2005). Integrating weed control and restoration on western rangelands. Ecological Society of America, Annual Meeting, Montreal Canada.
98. **Nowak RS**, Ferguson S, Young A, Aranjuelo I, Landmesser J (2005). Fine root production under elevated CO₂ for a Mojave Desert ecosystem. Ecological Society of America, Annual Meeting, Montreal Canada.
97. deSoyza AG, **Nowak RS**, Knight EA, Babcock DH, Smith-Longozo V (2004). Effects of elevated atmospheric CO₂ and rainfall on soil respiration at the Nevada Desert FACE Facility. Mojave Desert Symposium, Redlands CA.
96. Holmes CD, **Nowak RS**, Hartle RT (2004). Response of soil water balance to predicted global climate change treatments in the Mojave Desert. Ecological Society of America, Annual Meeting, Portland OR.
95. Allen E, **Nowak R** (2004). Effects of overstory density on seed banks in pinyon-juniper woodlands. Ecological Society of America, Annual Meeting, Portland OR.
94. Allcock KG, Lortie CJ, **Nowak RS** (2004). Do resource pulses determine community invisibility? Water and cheatgrass in Great Basin sagebrush steppe. Ecological Society of America, Annual Meeting, Portland OR.
93. Pellant M, Pyke D, Shaw N, **Nowak R**, McIver J (2004). Linking science and management to accomplish restoration in the Great Basin Desert. Ecological Society of America, Annual Meeting, Portland OR.
92. **Nowak RS**, Phillips D, Tingey DT, Johnson MG (2004). Effects of elevated CO₂ on root growth and physiology of desert plants. International FACE Workshop, Monte Verita, Switzerland.
91. **Nowak RS**, Chambers JC, Doescher PS, Pyke DA, Schupp EW (2003). Integrating weed control and restoration on Great Basin rangelands. Invasive Plants in Natural and Managed Systems-Ecology and Management of Alien Plant Invasions Workshop, Ft. Lauderdale, FL.
90. Chambers JC, **Nowak RS**, Doescher PS, Pyke DA, Schupp EW (2003). Using post-fire re-vegetation to control invasive plants in sagebrush steppe and pinyon-juniper woodlands. Invasive Plants in Natural and Managed Systems-Ecology and Management of Alien Plant Invasions Workshop, Ft. Lauderdale, FL.
89. Hartle RT, **Nowak RS** (2003). *Larrea tridentata* defense of root territory in the Mojave Desert. Ecological Society of America, Annual Meeting, Savannah, GA.
88. Apple ME, Smith-Longozo VL, Richards R, **Nowak RS** (2003). Root respiration and elevated CO₂ in Mojave Desert shrubs at the Nevada Desert FACE Facility in drought and rainy years. Ecological Society of America, Annual Meeting, Savannah, GA.
87. Allen EA, **Nowak RS** (2003). The immediate effect of fire on the soil seed bank of pinyon-juniper woodlands. Ecological Society of America, Annual Meeting, Savannah, GA.
86. Morgan JA, Pataki DE, Gruenzweig JM, Körner C, Niklaus PA, Polley HW, **Nowak RS**, Newton P (2003). Grassland productivity responses to rising atmospheric carbon dioxide are driven primarily by water relations. Ecological Society of America, Annual Meeting, Savannah, GA.
85. **Nowak RS** (2002) Integrating Weed Control and Restoration on Western Rangelands. Invited paper presented at "Invasive Plants and Restoration in the West: A Partnership Workshop", sponsored by the Center for Invasive Plant Management, Montana State University, December 9-11, 2002.
84. Zitzer SF, Arnone J, Billings SA, Fenstermaker LK, **Nowak RS**, Smith SD, and Weatherly H (2002). Effects of elevated CO₂ on desert shrub litter production at the Nevada Desert FACE Facility. Ecological Society of America, Annual Meeting, Tucson, AZ.
83. Hartle RT, and **Nowak RS** (2002). A field study of plant territory defense in Mojave Desert shrubs. Ecological Society of America, Annual Meeting, Tucson, AZ.
82. DeFalco LA, and **Nowak RS** (2002). Seasonality of simulated rainfall influences the interaction between the invasive annual grass *Bromus madritensis* ssp. *rubens* and Mojave Desert perennials. Ecological Society of America, Annual Meeting, Tucson, AZ.
81. Smith-Longozo VL, Apple ME, Cogar CR, Wells CE, and **Nowak RS** (2002). Mycorrhizal colonization varies with season in shrubs of the Mojave Desert. Ecological Society of America, Annual Meeting, Tucson, AZ.
80. Apple ME, Smith-Longozo VL, Wells CE, and **Nowak RS** (2002). The influence of elevated CO₂ on *Larrea tridentata* roots at the Mojave Desert FACE site. Ecological Society of America, Annual Meeting, Tucson, AZ.
79. Wells CE, Apple M, Smith-Longozo V, Cogar C, Bielenberg D, and **Nowak RS** (2002). Changes in fine root form and function under elevated CO₂ in the Mojave Desert. American Society of Plant Biologists, Annual Meeting, Denver, CO.

78. Bielenberg DG, Wells CE, Moehs CP, **Nowak RS**, and Seemann JR (2002). Germination in elevated carbon dioxide affects gene expression, Rubisco content, and biomass partitioning of creosote bush seedlings. American Society of Plant Biologists, Annual Meeting, Denver, CO.
77. Wilcox CS, **Nowak RS**, and Ferguson JW (2002). Fine root growth dynamics of Mojave Desert shrubs as related to soil moisture and microhabitat patches. British Ecological Society, Annual Meeting.
76. Wells CD, Pataki D, Schorran W, Cheng C, Cogar C, and **Nowak RS** (2001). Increased soil respiration under elevated CO₂ at the Nevada Desert FACE Facility. Ecological Society of America, Annual Meeting, Madison, WI.
75. Smith-Longozo VL, DeFalco LA, and **Nowak RS** (2001). Comparison of parental and growth condition effects between the invasive annual grass *Bromus madritensis* ssp. *rubens* and two native Mojave Desert annual species. Ecological Society of America, Annual Meeting, Madison, WI.
74. DeFalco LA, and **Nowak RS** (2001). Biomass and nitrogen allocation in an invasive annual grass and two native Mojave Desert annuals. Ecological Society of America, Annual Meeting, Madison, WI.
73. Zitze S, Charlet T, Huxman T, Smith S, and **Nowak RS** (2001). Interaction of rainfall and elevated CO₂ on population and growth dynamics of native Mojave Desert winter annuals and an exotic annual grass. Ecological Society of America, Annual Meeting, Madison, WI.
72. **Nowak RS**, Zitzer SF, Babcock D, and Smith S (2001). Elevated CO₂ does not conserve soil moisture in the Mojave Desert. Ecological Society of America, Annual Meeting, Madison, WI.
71. Zitzer SF, Coleman J, **Nowak RS**, Smith SD, and Seemann J (2000). Litter accumulation beneath Mojave Desert shrubs exposed to predicted 21st century atmospheric CO₂ levels using Free Air CO₂ Enrichment. Ecological Society of America, Annual Meeting, Snowbird, UT.
70. **Nowak RS**, Tausch RJ, and Smith-Longozo VL (2000). Influence of environment on timing and amount of Utah juniper twig growth. Ecological Society of America, Annual Meeting, Snowbird, UT.
69. **Nowak RS**, Smith SD, and Titus JH (2000). Soil resource heterogeneity in the Mojave Desert. Ecological Society of America, Annual Meeting, Snowbird, UT.
68. DeFalco LA, and **Nowak RS** (2000). Plant-plant interactions in a Mojave Desert plant community exposed to elevated atmospheric CO₂ during a year with above-average precipitation. Ecological Society of America, Annual Meeting, Snowbird, UT.
67. **Nowak RS**, Seemann JR, Coleman JS, and Smith SD (2000). Responses of desert vegetation to elevated atmospheric CO₂: The Nevada Desert FACE Facility. FACE 2000 Conference, Tsukuba, Japan.
66. DeFalco LA, and **Nowak RS** (2000). Plant-plant interactions within an intact community exposed to elevated atmospheric CO₂ at the Nevada Desert FACE Facility. FACE 2000 Conference, Tsukuba, Japan.
65. Wells CD, Pataki DE, Schorran W, Cheng W, and **Nowak RS** (2000). A system for soil CO₂ flux measurements at the Nevada Desert FACE Facility. FACE 2000 Conference, Tsukuba, Japan.
64. **Nowak RS**, Jordan DN, DeFalco LA, Coleman JS, Seemann JR, Smith SD (2000). Effects of elevated CO₂ on leaf conductance and temperature for three desert perennials at the Nevada Desert FACE Facility. FACE 2000 Conference, Tsukuba, Japan.
63. **Nowak RS**, Nowak CL, and Tausch RJ (1999). Responses of Great Basin vegetation to global change. Great Basin Biological Research Conference, Reno, NV.
62. Titus JH, Fenstermaker LK, **Nowak RS**, Smith SD, and Coleman JS. Long-term desert ecological research site. Great Basin Biological Research Conference, Reno, NV.
61. Tausch RJ, **Nowak RS**, and Lyons-Weiler J (1999). Understory communities and environmental conditions associated with juniper species and subspecies in the Great Basin. Great Basin Biological Research Conference, Reno, NV.
60. Pataki DE, Huxman TE, Jordan DN, Smith SD, **Nowak RS**, Zitzer SF, Coleman JS, and Seemann JR (1999). Plant water relations in a natural Mojave Desert ecosystem during two years of free air CO₂ enrichment. Great Basin Biological Research Conference, Reno, NV.
59. Smith S, Huxman T, Zitzer S, Charlet T, Housman D, Coleman J, **Nowak R**, and Seemann J (1999). Elevated CO₂ stimulates production of Mojave Desert annuals at the Nevada Desert FACE Facility. Great Basin Biological Research Conference, Reno, NV.
58. Huxman TE, Smith SD, Zitzer SF, Housman DC, Pataki DE, **Nowak RS**, Coleman JS, and Seemann JR (1999). Influence of increasing CO₂ on primary production in an intact Mojave Desert ecosystem during contrasting wet and dry years. Great Basin Biological Research Conference, Reno, NV.

57. Housman DC, Zitzer SF, Coleman J, **Nowak** RS, and Seemann J (1999). Survival and growth characteristics of naturally recruited seedlings of Mojave Desert shrubs *Larrea tridentata* and *Ambrosia dumosa* exposed to elevated atmospheric CO₂ (FACE) during a wet year. Ecological Society of America, Annual Meeting, Spokane WA.
56. DeFalco LA, Bryla DM and **Nowak** RS (1999). The effects of nitrogen fertilization and plant density on resource acquisition by non-native and native Mojave Desert ephemerals. Ecological Society of America, Annual Meeting, Spokane WA.
55. Jordan DN, Biggart C, Zitzer SF, DeFalco LA and **Nowak** RS (1999). Interaction of leaf conductance and soil water availability of three native Mojave Desert species exposed to Free Air CO₂ Enrichment (FACE). Ecological Society of America, Annual Meeting, Spokane WA.
54. Yoder CK, and **Nowak** RS (1999). Competition for phosphorus between an exotic annual grass and Mojave Desert shrubs. Ecological Society of America, Annual Meeting, Spokane WA.
53. **Nowak** RS, DeFalco LA, Vivin P, Yoder C, and Biggart C (1999). Effects of elevated CO₂ on root systems of Mojave Desert vegetation. US DOE Joint Science Team Meeting, Indianapolis, IN.
52. **Nowak** RS, Coleman J, Seemann J, and Smith S (1999). Global change biology of deserts: Field studies by the Nevada Global Environmental Change Program. US DOE Joint Science Team Meeting, Indianapolis, IN.
51. Smith SD, Huxman TE, **Nowak** RS, and Zitzer SF (1999). Responses of a Mojave Desert ecosystem to elevated atmospheric CO₂: Results from the Nevada Desert FACE Facility. Water in the Desert Symposium, California Academy of Sciences.
50. Zitzer SF, Coleman JS, Jordan D, **Nowak** RS, Seemann J, and Smith S (1999). Litter accumulation beneath Mojave Desert shrubs exposed to predicted 21st Century atmospheric CO₂ levels (FACE): Comparison of evergreen *Larrea tridentata* with various deciduous shrubs. Mojave Desert Science Symposium, Las Vegas, NV
49. Phillips D, Johnson M, Tingey D, Biggart C, **Nowak** RS, and Newsom J (1998). Minirhizotron installation in rocky, sandy soils minimizing soil disturbance. Ecological Society of America, Annual Meeting, Baltimore, MD.
48. DeFalco LA, **Nowak** RS, and Seemann JR (1998). Photosynthetic down-regulation in three Mojave Desert grasses exposed to elevated atmospheric CO₂. Ecological Society of America, Annual Meeting, Baltimore, MD.
47. **Nowak** RS, DeFalco LA, Biggart C, Jordan DN, and Smith SD (1998). Effects of elevated atmospheric CO₂ on leaf conductance and leaf temperature of *Larrea tridentata* at Desert FACE. Ecological Society of America, Annual Meeting, Baltimore, MD.
46. Luo Y, Reynolds JF, Smith SD, Seemann JR, **Nowak** RS, and Coleman JS (1997). Comparative responses of ecosystems to elevated CO₂: A modeling collaboration in the Duke Forest and Mojave Desert FACE (Free-Air CO₂ Enrichment) Programs. 5th International CO₂ Conference, Sydney, Australia.
45. DeFalco LA, Yoder C, Vivin P, and **Nowak** RS (1997). Effects of early- and late-season drought on three Mojave Desert grasses under an elevated atmospheric CO₂ concentration. 3rd International IGBP-GCTE Workshop, Durham, NC.
44. Huxman TE, Hamerlynck EP, Shaulis L, Jordan DN, Smith SD, **Nowak** RS, and Seemann J (1997). Gas exchange responses of *Larrea tridentata* to elevated CO₂: A comparison of field (FACE) and greenhouse results. 3rd International IGBP-GCTE Workshop, Durham, NC.
43. Zitzer SF, Jordan DN, **Nowak** RS, Seemann JR, and Smith SD (1997). Biotic, abiotic, and engineering aspects of the Mojave Desert Free-Air CO₂ Enrichment (FACE) Facility. 3rd International IGBP-GCTE Workshop, Durham, NC.
42. **Nowak** RS (1997). Ecophysiological patterns in pinyon-juniper woodlands. Ecology and Management of Pinyon-Juniper Communities within the Interior West, Conference, Provo UT.
41. Smith SD, **Nowak** RS, Seemann JR, Jordan DN, and Hendrey GR (1997). The Nevada Desert FACE Facility (NDFE): Description and early results. Ecological Society of America, Annual Meeting, Albuquerque NM.
40. Jordan DN, Salsman KJ, DeFalco LA, **Nowak** RS, and Smith SD (1997). Responses of two Mojave Desert plants to elevated atmospheric CO₂ in a controlled environment glasshouse. Ecological Society of America, Annual Meeting, Albuquerque NM.
39. Yoder CK, and **Nowak** RS (1997). Soil water dynamics among native shrub species in the Mojave Desert. Society for Range Management, Annual Meeting, Rapid City SD.

38. Sala A, and **Nowak** RS (1996). Ecophysiological responses of three riparian graminoids to changes in soil water table. Ecological Society of America, Annual Meeting, Providence RI.
37. Geng X, and **Nowak** RS (1996). Relationship of hydrogen and oxygen stable isotopes in cellulose and drought severity. Ecological Society of America, Annual Meeting, Providence RI.
36. Yoder CK, and **Nowak** RS (1996). Spatial and temporal patterns of hydraulic lift among native plant species in the Mojave Desert. Ecological Society of America, Annual Meeting, Providence RI.
35. Moore DJ, and **Nowak** RS (1996). Gas exchange of *Juniperus occidentalis* and *Juniperus osteosperma* across local and regional environmental gradients in the Great Basin. Ecological Society of America, Annual Meeting, Providence RI.
34. Moore DJ, and **Nowak** RS (1995). Photosynthetic acclimation to temperature in the endemic *Petrophytum cinerascens*. Ecological Society of America, Annual Meeting, Snowbird UT.
33. **Nowak** RS and Tausch RJ (1995). Environmental, Genetic, and Ecophysiological Variation of Western and Utah Juniper and their Hybrids: A Model System for Vegetation Response to Climate Change. US DOE Program for Ecosystem Research Principal Investigator's Meeting, Knoxville, TN.
32. Tausch RJ, Nowak CL, and **Nowak** RS (1995). Climate change and plant species responses over the Quaternary: Implications for ecosystem management. Proceedings, USFS Interior West Global Change Workshop, Fort Collins, CO.
31. **Nowak** RS (1993). Assessing physiological requirements of plant species as a prerequisite for their use in mine reclamation. Invited Speaker for Symposium: An Ecological Approach to Mined Land Reclamation. American Society for Surface Mining and Reclamation, Annual Meeting, Spokane, WA.
30. **Nowak** RS, and Anderson JE (1991). Effects of irrigation and fertilization on productivity and demography of sagebrush-steppe vegetation. Ecological Society of America, Annual Meeting, San Antonio TX.
29. Tausch RJ, and **Nowak** RS (1991). Prediction of annual evapotranspiration from leaf biomass on a burned sagebrush site in western Nevada. Ecological Society of America, Annual Meeting, San Antonio TX.
28. Seeger BL, and **Nowak** RS (1991). Photosynthetic characteristics and water use efficiency of three graminoids within a montane meadow system. Ecological Society of America, Annual Meeting, San Antonio TX.
27. Halford AS, and **Nowak** RS (1991). Ecology and distribution of a California high-altitude endemic plant *Lewisia pygmaea* ssp. *longipetala*. Ecological Society of America, Annual Meeting, San Antonio TX.
26. **Nowak** RS, Nowak CL, and Anderson JE (1990). Productivity and carbon allocation for 2 semiarid grasses: Responses to nitrogen form and concentration. Ecological Society of America, Annual Meeting, Snowbird UT.
25. Tausch RJ, **Nowak** RS, and Smithson J (1990). Control of cheatgrass in western Nevada by simulated fall and early spring grazing. Society for Range Management, Annual Meeting, Reno NV.
24. **Nowak** RS (1989). Growth and physiological requirements of plants. Shortcourse: Reclamation of Mining-Disturbed Lands in the Great Basin. Nevada Cooperative Extension.
23. Leonard SG, **Nowak** RS, and Tausch RJ (1989). Effects of different levels of cheatgrass abundance on soil water use in native plant communities. Society for Range Management, Annual Meeting, Billings MT.
22. Melgoza G, **Nowak**, RS and Tausch RJ (1989). Exploitation of soil water resources after fire: Interaction of cheatgrass with native species. Society for Range Management, Annual Meeting, Billings MT.
21. Toft NL, Anderson JE, and **Nowak** RS (1988). Instantaneous and long-term measurements of water use efficiency are consistent for plants in a cold-desert community. Ecological Society of America, Annual Meeting, Davis CA.
20. Leonard SG, **Nowak** RS, and Tausch RJ (1988). Water relations of perennial range species competing with cheatgrass: Effects of clipping. Society for Range Management, Annual Meeting, Corpus Christi TX.
19. Melgoza G, **Nowak** RS, and Tausch RJ (1988). Soil water exploitation by native species and cheatgrass after a wildfire in a sagebrush community. Society for Range Management, Annual Meeting, Corpus Christi TX.
18. **Nowak** RS, Nowak CL, DeRocher T, Jones MA, and Cole N. (1987). Occurrence of Indian ricegrass near harvester ant mounds. Ecological Society of America, Annual Meeting, Columbus OH.
17. Anderson JE, Shumar ML, Toft NL, and **Nowak** RS (1987). Use of soil water by plants in a cold-desert ecosystem. Annual Meeting of the Idaho Academy of Science, Moscow ID.
16. Shumar ML, Anderson JE, and **Nowak** RS (1987). Patterns of soil moisture extraction by four species from cold-desert steppe. Society for Range Management, Annual Meeting, Boise ID.
15. Anderson JE, Toft NL and **Nowak** RS (1987). Diurnal stomatal and photosynthetic responses of basin wildrye and crested wheatgrass. Society for Range Management, Annual Meeting, Boise ID.

14. Anderson JE and **Nowak** RS (1986). Stomatal conductance in two species of cold-desert bunchgrasses. Ecological Society of America, Annual Meeting, Syracuse NY.
13. **Nowak** RS, and Tausch R (1986). Preludes to the control of cheatgrass. Annual Meeting of the Nevada Committee of Conservation of Plant Material, Reno NV.
12. **Nowak** RS, Anderson JE, and Shumar ML (1986). Rooting characteristics and water use of 4 species and the native sagebrush steppe community in southeastern Idaho. Society for Range Management, Annual Meeting, Kissimmee FL.
11. **Nowak** RS, and Anderson JE (1985). Diurnal changes in stomatal conductance for two bunchgrass species. Ecological Society of America, Annual Meeting, Minneapolis MN.
10. Anderson JE, and **Nowak** RS (1985). Stomatal responses to temperature and humidity result in contrasting diurnal gas exchange patterns in two cool-season grasses. Australian Society of Plant Physiologists, Annual Meeting, Canberra A.C.T., Australia.
9. **Nowak** RS, and Anderson JE (1985). Diurnal changes in photosynthesis and stomatal conductance of basin wildrye. Society for Range Management, Annual Meeting, Salt Lake City UT.
8. Markham OD, **Nowak** RS, Anderson JE, and Reynolds TD (1985). Biological processes and plot studies at the Idaho National Engineering Laboratory. Rainfall Simulator Workshop, Tucson AZ.
7. **Nowak** RS, and Anderson JE (1984). Evapotranspiration and soil moisture profiles for different plant communities on simulated waste disposal sites. Research in Arid and Semiarid Lands, Ecological Research Division, U.S. D.O.E., Washington D.C.
6. **Nowak** RS, and Caldwell MM (1983). Potential carbon gain of crested and bluebunch wheatgrasses during the fall and winter. Society for Range Management, Annual Meeting, Albuquerque NM.
5. **Nowak** RS, and Caldwell MM (1982). Photosynthetic efficiency of a grazing tolerant bunchgrass, *Agropyron desertorum*. Botanical Society of America, Annual Meeting, University Park PA.
4. **Nowak** RS, and Caldwell MM (1982). Leaf regrowth and photosynthesis of *Agropyron desertorum* and *A. spicatum* after clipping. Society for Range Management, Annual Meeting, Calgary Alberta.
3. **Nowak** RS, and Caldwell MM (1981). Gas exchange rates of two bunchgrasses following partial defoliation. Ecological Society of America, Annual Meeting, Bloomington IN.
2. **Nowak** RS, and Caldwell MM (1981). Responses of photosynthesis and respiration to light intensity and leaf temperature in two field-grown bunchgrasses. Society for Range Management, Annual Meeting, Tulsa OK.
1. **Nowak** R.S and Caldwell MM (1980). Chlorophyll fluorescence probe of ultraviolet radiation-induced damage to the primary photosynthetic system of intact leaves. Ecological Society of America, Annual Meeting, Tucson AZ.

TEACHING EXPERIENCE:

All courses taught at University of Nevada, Reno. A single asterisk (*) indicates the course can be taken by both undergraduate and graduate students; 2 asterisks (**) indicate the course is for graduate students only. The pound symbol (#) indicates a team-taught course.

*Ecology and Management of Invasive Plants – 2001, 2003, 2005, 2008

Plant Ecology – 1990, 1992, 1994, 1996, 2000

**Plant Physiological Ecology – 1987, 1989, 1991, 1993, 1995, 1997, 1999, 2000, 2002, 2004, 2006, 2008

*#Regional and Global Issues in Environmental and Resource Sciences – 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006

**#Research Methods in Range Wildlife and Forestry – 1987, 1989

**Research Methods in Plant Physiological Ecology – 1991, 1993, 1995, 1997, 1999, 2000

Forest Tree Physiology & Genetics – 2007

GRADUATE AND POSTDOCTORAL STUDENTS:

Completed M.S.:
G. Melgoza (1989)
A. Halford (1992)
B. Seeger (1993)
K. Kolar (1994)
X. Geng (1997)

	K. Leavitt (1998)
	D. Moore (1998)
	C. Wilcox (2002)
	A. Young (2004)
	R. Hartle (2004)
	E. Allen (2006)
	N. Clark (2007)
Completed Ph.D.	K. Murray (1994)
	C. Yoder (1998)
	L. DeFalco (2003)
Completed Postdoctoral:	A. Sala (1991-1993)
	R. Terry (1995-1997)
	P. Vivin (1997-1998)
	D. Bryla (1998-1999)
	J. Titus (1998-2000)
	C. Wells (2000-2001)
	M. Apple (2001-2003)
	K. Allcock (2003– 2007)
Current M.S.:	C. Holmes
Current Ph.D.:	L. Perkins
Current Postdoctoral:	I. Munck

PROFESSIONAL SERVICE:

ad hoc reviewer for professional journals, including: American Journal of Botany, American Midland Naturalist, Ecology, Global Change Biology, Great Basin Naturalist, International Journal of Plant Science, Journal of Arid Environments, Journal of Range Management, Oecologia, Quaternary Research, Plant Cell and Environment, Proceedings of the National Academy of Science

ad hoc reviewer for grant programs, including: various NSF, USDA & BLM programs

Panel Member for: USDA Rangelands Research Grants Program; NSF/DOE/NASA/USDA/EPA Interagency TECO Program; USGS BRD Global Change Research Program; NSF Science & Technology Center Program; NSF Ecological and Evolutionary Physiology Program; USDA NRICGP Managed Ecosystem Program; EPA / DOE Non Linear Responses to Global Change & Effects of Multiple Factors

Panel Manager for: USDA NRICGP Managed Ecosystem Program (2008, 2009)

Associate Editor for *Western North American Naturalist*: 2000-2003

Associate Editor for *Phyton*: 2005 – 2006

Associate Editor for *Rangeland Ecology & Management*: 2006 – 2008

Secretary, Rangeland Ecology Section of the Ecological Society of America: 2002-2006 (2 terms)

INSTITUTIONAL SERVICE:

I. University of Nevada, Reno

- A. Library Committee – 1986-1988
- B. Graduate Council – 1988-1991; Chair, Courses and Curriculum Committee: 1988-1990; Graduate Council Representative on University Curriculum Committee: 1988-1990; New Graduate Admissions Committee: 1988-1989; *ad hoc* Language Requirement Committee: 1988-1989; Chair, *ad hoc* Graduate Student Enrollment Committee: 1989-1990; Admissions and Readmissions Committee: 1991
- C. Search committee for Director, Hydrology/Hydrogeology Graduate Program – 1989-1990
- D. Whittell Board of Control – 1989-1997; Chair: 1989-1991, 1993-1996
- E. Ecology Evolution & Conservation Biology Graduate Program –Curriculum Committee: 1992; Comprehensive Examination Committee: Chair 1994-1996, Member 1997; Oversight Committee for the Laboratory for Ecological and Evolutionary Genetics: 1994-1997.
- F. Building Committee for FA Remodel Project – 1991-1994
- G. Hydrologic Sciences Graduate Program – Adjunct Faculty; H/H 5-year Planning Committee: 1992

- H. Environmental Science and Health Graduate Program – Faculty
- I. Biology Department – Adjunct Faculty
- J. University Herbarium Committee – 1994-2007; Chair: 2004-2007
- K. Faculty Senate – 1999-2002; At-Large Member, Executive Board: 2000-2002

2. College of Agriculture Biotechnology & Natural Resources

- A. Events Committee – 1986-1987
- B. Greenhouse Committee – 1988-1990; 2005 – present.
- C. *ad hoc* Space Committee – Chair: 1991-1994
- D. Courses and Curricula Committee – 1988-1991; Chair: 1989-1990
- E. Scholarship Committee – 1993
- F. Personnel Committee – 1995-1997; Chair: 1996-1997
- G. Research Committee – 2004-2007

3. Department of Environmental and Resource Sciences

- A. *ad hoc* Research Space Committee – Chair: 1986
- B. Bylaws Committee – 1986-1988
- C. Search committee, Quantitative Plant Ecologist position – 1989-1990
- D. Curriculum Committee – 1994-1996, 2002-2006
- E. Peer Review Committee – 1995-1999, 2006-present
- F. Hatch Review Committee – 1996
- G. Search Committee, Restoration Ecologist – 1999-2000
- H. Chair, Search Committee, Landscape Ecologist – 2001
- I. Search Committee, Plant Ecologist – 2002
- J. Search Committee, Fire Ecologist – 2004
- K. Search Committee, Plant Ecologist – 2005-2006

4. Other UCCSN / Departments

- A. Search Committee, Plant Physiologist position, Desert Research Institute – 1987-1988
- B. Advisory committee for DRI greenhouse facility – 1987-1990
- C. Search committee, Plant Taxonomist position, Biology Department – 1991-1992
- D. Search committee, Ecosystem Ecologist position, Desert Research Institute – 1997
- E. Search committee, Fritz Went Laboratory Director, Desert Research Institute – 1999

PROFESSIONAL SOCIETIES AND HONORS:

Botanical Society of America
Ecological Society of America
International Association for Vegetation Science
Sigma Xi
Society for Range Management
Bachelor of Science *magna cum laude*, University of Minnesota, 1977
Graduate Research Fellowship, Utah State University, 1979-1980
College of Agriculture “Researcher of the Year” Award, 1994-1995.