

Andrew R. Dyer

Professor

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EDUCATION

PhD	Plant Ecology	1996	University of California, Davis.
MA	Wildlife Biology	1990	California State University, Fresno.
BA	Zoology	1981	California State University, Fresno

PROFESSIONAL BACKGROUND

Professor: University of South Carolina Aiken	2014-present
Washington Group Chair in Science and Mathematics: USC Aiken	2008-present
Faculty Athletics Representative (FAR), USC Aiken	2007-present
Associate Faculty: School of the Environment, USC	2000-present
Associate Professor: USC Aiken	2006-14
Director, Quality Enhancement Plan, USC Aiken	2009-2012
Assistant Professor: USC Aiken	2000-2006
Visiting Post-Doctoral Researcher: University of California, Davis	1999-2000
Post-doctoral Researcher: University of Michigan	1996-1999
Research Assistant: Dept. of Agronomy & Range Science, UC Davis	1991-1996

TEACHING EXPERIENCE

University: Dept. of Biology & Geology, USC Aiken. Fall 2000-present. Courses taught:

BIOL 103	Plant Science (non-majors)
BIOL 106	Environmental Life Science (non-majors)
BIOL 122	Biological Sciences II (biology, education, exercise science majors)
BIOL 320	Principles of Botany
BIOL 370	Ecology and Evolution
BIOL 490	Senior Seminar
BIOL 498	Research Design, Implementation and Analysis
BIOL 499	Senior Research (~110 student projects to date)
BIOL 570	Principles of Ecology
BIOL 576	Restoration Ecology

Advanced Placement Institute for SC biology teachers. 2005, 06, 07

Graduate: Range Ecology & Plant Identification. UC Davis
Zoology lab. California State University, Fresno

Science Teacher: Fresno High School, Fresno Unified School District, Fresno, CA. 1988-1990.

RESEARCH GRANTS AND AWARDS

- 2015 ASPIRE I- University of South Carolina
'Adaptive Trans-Generational Plasticity in *Cyperus esculentus*'
- 2012 ASPIRE III- University of South Carolina
'The Promotion of Transgenic and Controlled-Environment Greenhouse Research at USC Aiken'
- 2005 Research and Productive Scholarship (R&PS) grant
'The reproductive biology of *Cyperus rotundus* and *C. esculentus*'
- 2005 USC Aiken Research and Grants Support Program
'Invasive species ecology and undergraduate research at USCA'
- 2002 USDA Forest Service
A bibliography of habitat restoration in western rangelands.
- 2002 National Wild Turkey Federation
'The ecology and population biology of chufa, *Cyperus esculentus sativus*.'
- 2001 Research and Productive Scholarship, USC
'The quantitative and molecular genetics of invasive plant species.'
- 2000 USDA #ARS-X3W-3402 (co-PI)
'Adaptive variation and invasive potential of barbed goatgrass, *Aegilops triuncialis*.'

EDUCATION MEETINGS AND WORKSHOPS

- Center for Teaching Excellence: High-Impact Practices in Teaching – Jan 2016, USC Aiken
- International Association for Development of the Information Society (IADIS) – Cognition and Exploratory Learning in Digital Age (CELDA) - Oct 2012, Madrid, Spain
- The SoTL Commons: A Conference for Scholarship of Teaching and Learning - Mar 2012, Statesboro, GA
- SACS-COC Convention workshops– Dec 2009 and 2010, Atlanta, GA
- AAC&U Conference- Incorporating Research into the Undergraduate Curriculum – Nov 2008, Providence, RI
- AAC&U Conference- Institute on General Education – May 2007, Newport, RI
- BIO 2010 Workshop (SC EPSCoR/IDeA Program) – Mar 2006, Columbia, SC
- 12th Annual Institute on Teaching and Mentoring (Southern Regional Education Board) – Oct 2005, Arlington, VA
- Best Practices for the Retention of Minority Students in STEM Fields (EPSCoR/IDeA Program) – Mar 2005, Rock Hill, SC
- Increasing Success for Underserved Students: Redesigning Introductory Courses (Center for Academic Transformation) – Jan 2005, Orlando, FL
- Women and Minorities in Ecology Workshop (Ecological Society of America) – Aug 2004, Portland, OR
- GIS/Remote Sensing Workshop (Georgia Geospatial Literacy Project) – May 2003, Gainesville, GA

OTHER

- NCAA Division II Faculty Athletics Representative (FAR) Fellows Institute – 2009
- NCAA Division II Faculty Athletics Representative (FAR) Fellows Advanced Institute – 2015
- College Board AP Biology/Environmental Science test grading – 2006, 2007, 2008, 2011, 2012, 2014

BOOKS

- Dyer, A.** (in prep). *Nested Ecosystems: Why Your Health Depends on Environmental Health*. Island Press, Washington DC.
- Dyer, A.** 2014. *Chasing the Red Queen: The Evolutionary Race Between Agricultural Pests and Poisons*. Island Press, Washington DC. 217 pages.

PEER-REVIEWED PUBLICATIONS IN RESTORATION AND PLANT ECOLOGY

Invasive annual species:

- Dyer AR.** (in prep) Linking trait variation to growing conditions: the seed ecology of *Aegilops triuncialis*.
- Dyer AR, JE Cochran****, JM Flores**, KI Layne**, M Faucett** & AK Kule**. (in prep) Diversity and herbicide resistance of weeds in commercial potting soils and topsoils.
- Dyer AR, SJ Woodward** & JE Petersen**.** (in revision) Response variation across a strong rainfall gradient in naturalized annual grass species. *Plant Ecology*
- Fenesi A, **AR Dyer**, J Gered, D Sandor & E Ruprecht. 2014. Can trans-generational plasticity contribute to the invasion success of annual plant species? *Oecologia* 176:95-106.
- Rice KJ, JD Gerlach, **AR Dyer** & JK McKay. 2013. Evolutionary ecology along invasion fronts of the annual grass *Aegilops triuncialis*. *Biological Invasions* 15:2531-2545.
- Dyer AR**, J Hardison & KJ Rice. 2012. Phenology constrains response plasticity in cheatgrass (*Bromus tectorum* L.) *Plant Ecology* 213:103-112.
- Dyer AR**, C Brown, E Espeland, J McKay, H Meimberg & KJ Rice. 2010. The role of adaptive trans-generational plasticity in biological invasions of plants. *Evolutionary Applications* 3:1-14.
- Dyer AR.** 2007. Phenotypic plasticity may facilitate invasion by *Aegilops triuncialis*. *Aliso* 23:289-294.
- Dyer AR.** 2004. Dormancy-inducing factors in *Aegilops triuncialis* suggest multiple germination strategies. *Plant Ecology* 172:211-218.
- Dyer AR, JD Gerlach & KJ Rice.** 2003. Adaptive variation in an invasive annual range grass: germination patterns of *Aegilops triuncialis* in California, USA. **Proceedings of the VII International Range Congress VII:321-323.**
- Rice KJ, JD Gerlach, J McKay & **AR Dyer.** 2003. Evolutionary changes along invasion fronts in a range weed. **Proceedings of the VII International Range Congress VII:396-398.**
- Rice KJ & **AR Dyer***. 2001. Seed aging, delayed germination and reduced competitive ability in *Bromus tectorum*. *Plant Ecology* 155:237-243.
- ### **California grassland ecology:**
- Dyer AR, A Fenech & KJ Rice.** 2000. Accelerated seedling emergence in inter-specific competitive neighborhoods. *Ecology Letters* 3:253-259.
- Dyer AR & KJ Rice.** 1999. Effects of competition on resource availability and growth in a native bunchgrass in two California grasslands. *Ecology* 80:2697-2710.
- Dyer AR & KJ Rice.** 1997. Evidence of spatial genetic structure in a California bunchgrass population. *Oecologia* 112:333-339.

Dyer AR & KJ Rice. 1997. Intraspecific and diffuse competition: the response of *Nassella pulchra* in a California grassland. **Ecological Applications** 7:484-492.

California grasslands:

Corbin J, C D'Antonio, **AR Dyer** & M Stromberg. 2007. Chapter 1. Introduction. Pages 1-4 in *California Grasslands: Ecology and Management*, M. Stromberg, J. Corbin and C. D'Antonio (eds.). University of California Press, Berkeley, USA.

Corbin J, **AR Dyer** & E Seabloom. 2007. Chapter 13. Competitive interactions. Pages 156-168 in *California Grasslands: Ecology and Management*, M. Stromberg, J. Corbin and C. D'Antonio (eds.). University of California Press, Berkeley, USA.

Restoration ecology:

Dyer AR, EE Knapp & KJ Rice. 2016. Unintentional selection and genetic shifts in perennial grass populations during commercial seed production. **Ecological Restoration** 34:39-48.

Dyer AR. 2003. Burning and grazing management in a California grassland: growth, mortality, and recruitment of *Nassella pulchra*. **Restoration Ecology** 11:291-296.

Dyer AR. 2002. Burning and grazing management in a California grassland: effects on bunchgrass seed viability. **Restoration Ecology** 10:107-111.

Knapp EE & **AR Dyer.** 1998. When do genetic considerations require special approaches to ecological restoration? Pages 345-363 in P. L. Fiedler and P. Kareiva (eds.), *Conservation biology, 2E: For the coming decade*. Chapman and Hall, New York, USA.

Dyer AR, HC Fossum & JW Menke. 1996. Effects of burning and grazing on emergence and survival of purple needlegrass. **Madroño** 43(2):316-333.

Plant community ecology:

Rajaniemi TK, DE Goldberg, R Turkington & **AR Dyer.** 2012. Separating the effects of species interactions and productivity on species diversity and composition. **Perspectives in Plant Ecology, Evolution & Systematics** 14:373-380.

Rajaniemi TK, R Turkington, **AR Dyer** & DE Goldberg. 2006. Quantitative partitioning of regional and local processes shaping productivity-diversity relationships. **Ecology Letters** 9:121-128.

Turkington R, DE Goldberg, L Olsvig-Whittaker & **AR Dyer.** 2005. Effects of density on timing of germination and consequences for survival and growth in two communities of annual plants. **Journal of Arid Environments** 61:377-396.

Goldberg DE, R Turkington, L Olsvig-Whittaker & **AR Dyer.** 2001. Density dependence in an annual plant community: variation in direction and magnitude among life history stages. **Ecological Monographs** 71:423-446.

Dyer AR, R Turkington, DE Goldberg & C Sayre.** 2001. Effects of growing conditions and source habitat on plant traits and functional group definition. **Functional Ecology** 15:85-95.

Lessin LA**, **AR Dyer*** & DE Goldberg. 2001. Using upper boundary constraints to quantify competitive response of desert annuals. **Oikos** 92:153-159.

Allelopathy:

Smith AL** & **AR Dyer*.** 2013. Exploring the mechanisms of allelopathic interaction in the invasive annual plant, *Phyllanthus urinaria*. **Journal of the South Carolina Academy of Science** 11:13-16.

Resource management:

Dyer AR, TD Kelly & DL Chesemore. 1990. Distribution, abundance, and ecology of small mammals in Eucalyptus plantations grown with agricultural drain water in the San Joaquin Valley, California, 1987-1989. **Transactions of the Western Section of the Wildlife Society**. p.91-96.

Kelly TD, **AR Dyer** & DL Chesemore. 1990. Impact of Eucalyptus plantations grown with agricultural drain water on avian abundance in the San Joaquin Valley, California, 1987-1989. **Transactions of the Western Section of the Wildlife Society**. p.97-103.

*corresponding author

**undergraduate authors

PEER-REVIEWED PUBLICATIONS IN EDUCATION AND TEACHING

Foote, S.M. & **A.R. Dyer**. 2015. Think DEEP: A Critical Inquiry Program for First-Year Students. Pages 187-197 in Bers, Chun, Daly, Harington, Tobolowsky and Associates (eds.), *Foundations for Critical Thinking*. Columbia, SC: University of South Carolina, National Resource Center for the First-Year Experience and Students in Transition.

Foote, S.M. & **A.R. Dyer**. 2014. Assessing Deep Learning: Using a Portfolio to Evaluate Gains in Critical Inquiry among First-Year Students. **Assessment Update** 26:8,13-14.

Foote, S.M., D.M. Harrison, C.M. Ritchie & **A. Dyer**. 2012. Exploratory learning through critical inquiry: Survey of critical inquiry programs at mid-sized U.S. universities. International Association for Development of the Information Society – Cognition and Exploratory Learning in Digital Age 2012. p.153-165.

NON-PEER-REVIEWED PUBLICATIONS

Dyer AR. 2013. A Bibliography of *Aegilops triuncialis* (barbed goatgrass).

<http://web.usca.edu/dotAsset/9365173f-756c-4fbf-b2a6-93492090e4b1.pdf>

Dyer AR. 2013. A Bibliography of *Stipa (Nassella) pulchra* (purple needlegrass).

<http://web.usca.edu/dotAsset/a114e5d4-1f74-4888-b48a-fe8f8bf02876.pdf>

Dyer AR. 2010. The role of natural disturbance in grasslands. Pages 51-53 in *Restoration Ecology* by Sigurdur Greipsson. Jones and Bartlett Publishers.

Dyer AR. 2009. The Ecology of Chufa (*Cyperus esculentus sativus*).

<http://web.usca.edu/dotAsset/5c46b1f1-6efe-4916-9a63-710bfb736bdc.pdf>

Gerlach JD, **A Dyer** & K Rice. 1998. Grassland and foothill ecosystems of the Central Valley. **Fremontia** 26:39-43.

Dyer AR. 1993. Response of native bunchgrass to grazing, burning. **Restoration and Management Notes** 11:150-151.

RECENT ABSTRACTS, POSTERS, AND PRESENTATIONS

Lawson DM, CM Wolf & **AR Dyer**. 2015. Barbed Goatgrass (*Aegilops triuncialis*) Eradication on Naval Weapons Station Seal Beach, Detachment Fallbrook; adaptive management for invasive plant eradication. California Invasive Plant Council, 29 October 2015, San Diego, California

Dyer AR. 2014. Linking trait variation to growing conditions: the seed ecology of the invasive *Aegilops*

triuncialis. Bulletin of the Ecological Society of America 95, 10-15 August 2014, Sacramento, California.

- Lawson DM, CM Wolf & **AR Dyer**. 2013. Application of a field ecological study to optimize adaptive management for invasive plant eradication. International Congress for Conservation Biology, 21-25 July 2013, Baltimore, Maryland.
- Baxley J** & **A Dyer**. 2013. Ability of the remnant pathway left by the shoot of the large seed of *Aegilops triuncialis* to facilitate emergence of the smaller sibling seed. SC Academy of Sciences, 13 April 2013.
- Garza R** & **A Dyer**. 2013. Factors influencing the germination of dimorphic seeds in *Aegilops triuncialis*. SC Academy of Sciences, 13 April 2013.
- Layne KI** & **A Dyer**. 2013. The presence of glyphosate-resistant weed seeds in commercial potting soils. SC Academy of Sciences, Discovery Day- USC Aiken, Research Day- USC Columbia. (13, 14, 20 April 2013).
- Smith A** & **A Dyer**. 2013. Exploring the mechanisms of allelopathic interactions in the invasive annual plant, *Phyllanthus urinaria*. SC Academy of Sciences (1st place), 13 April 2013.
- Woodward S** & **A Dyer**. 2013. Evidence of genetic variation and adaptive phenotypic plasticity in two invasive annual grasses in California. SC Academy of Sciences, Discovery Day- USC Aiken, Research Day- USC Columbia (1st place). (13, 14, 20 April 2013).
- Foote SM, DM Harrison, CM Ritchie & **AR Dyer**. 2012. Exploratory learning through critical inquiry: Survey of critical inquiry programs at mid-sized U.S. universities. International Association for Development of the Information Society – Cognition and Exploratory Learning in Digital Age 2012. 19-21 October 2012, Madrid, Spain
- DuBose D** & **A Dyer**. 2012. Influence of growing season length on germination suppression in *Aegilops triuncialis*. South Carolina Academy of Sciences, 14 April 2012
- Rice K, C Brown, **A Dyer**, E Espeland, J McKay & H Meimberg. 2009. The role of trans-generational plasticity (i.e., maternal effects) in biological invasions. 19-22 March 2009. Conference: Synthesis of the Ecology and Evolution of Invasive Species.
- Bookert S** & **AR Dyer**. 2008. Dimorphic seeds show differential viability with age. South Carolina Academy of Sciences, 20 March 2008, Clemson, SC and USCA Undergraduate Research Day, 15 April 2008, USCA campus.
- Corbin JD & **AR Dyer**. 2007. Reasons for optimism and pessimism in the restoration of grasslands: lessons from competition studies. Bulletin of the Ecological Society of America 88.
- AR Dyer**, S Schoppell, S Walker** & T Mack**. 2006. The biochemistry of germination inhibition in *Aegilops triuncialis*. Bulletin of the Ecological Society of America 87.
- AR Dyer**. 2005. Extreme conditions influence community structure and composition in seasonal wetlands. British Ecological Society Annual Meeting.
- AR Dyer**. 2004. The strength of induced seed dormancy as an indirect result of maternal growing conditions. Bulletin of the Ecological Society of America 85.
- AR Dyer**, KJ Rice & JD Gerlach. 2003. Adaptive variation in an invasive annual range grass: germination patterns of *Aegilops triuncialis* in California, USA. African Journal of Range and Forage Science 20(2):92
- AR Dyer**. 2003. Adaptive strategies and plasticity may combine to facilitate invasion success. IV International Symposium on Grass Systematics and Evolution.
- AR Dyer**. 2002. Population-level variation of induced seed dormancy in an invasive annual grass. Bulletin of the Ecological Society of America 82.

AR Dyer. 2002. Ecology of seed responses: conflicts between dormancy, suppression, and adaptive strategies. Invited seminar: Dept. of Botany, University of Georgia.

Crawford C** & **AR Dyer.** 2002. Interspecific effects on the germination rate of *Nassella cernua*. South Carolina Academy of Sciences 64.

Scott E** & **AR Dyer.** 2002. Maternal and sibling influences on seed germination of *Aegilops triuncialis*. South Carolina Academy of Sciences 64.

Scott IE** & **AR Dyer.** 2001. Carolina Bay restoration: vegetation assessment of Lost Lake after 9 years. Bulletin of the Ecological Society of America 81.

**undergraduate authors

RECENT RADIO TALK SHOWS AND INVITED PRESENTATIONS

2015-11-12. Presentation to Aiken-Augusta Audubon Society on invasive species.

2015-8-12. Presentation to the South Carolina Agricultural Council.

2015-6-10. Arnold Arboretum of Harvard University. Hour-long presentation on *Chasing the Red Queen*.

2015-6-9. *Soundings* with Alan Stahler. Half hour discussion of *Chasing the Red Queen*. KVMR-FM Radio

2015-3-28. *Food Chain Radio* with Michael Olson. Hour-long conversation on *Chasing the Red Queen* and agriculture. NPR Radio

2015-2-3. *The Diane Rehm Show*. Hour-long panel discussion on pesticides and related topics. NPR Radio