

CURRICULUM VITAE

NAME

Ward, Sarah M

ADDRESS

Soil and Crop Sciences
College of Agricultural Sciences

Plant Sciences

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EDUCATION

BS, U OF LONDON

E CAROLINA U

Ph D, COLORADO STATE UNIVERSITY

ACADEMIC POSITIONS

1991 - 1994 Graduate Research Assistant, Colorado State University.

OTHER POSITIONS

2001 - Present Associate Professor, Colorado State University.

1994 - 2001 Assistant Professor, Colorado State University.

PUBLISHED WORKS

Refereed Journal Articles

A new source of restorable cytoplasmic male sterility in quinoa. *Euphytica*, 101, 157-163.

A recessive allele inhibiting saponin synthesis in two lines of Bolivian quinoa (*Chenopodium quinoa* Willd). *J Hered*, 92, 83-86.

Agricultural biotechnology training for extension educators. *Journal of Extension*
<http://www.joe.org/joe/2004february/rb6.shtml>, 42(1).

Allotetraploid segregation for single-gene morphological characters in quinoa (*Chenopodium quinoa* Willd). *Euphytica*, 116, 16-Nov.

Assessing the threat from hybridization to the rare endemic *Physayia beffli* Mulligan (Brassicaceae). *Biol Conserv*, 140, 110-118.

Assessment of silver-stained AFLP markers for studying DNA polymorphism in proso millet (*Panicum miliaceum* L). *Revista Brasileira Botanica*, 29, 609-615.

- (in press). Best management practices to prevent, delay, or manage herbicide resistance. *Outlooks on Pest Management (in press)*.
- Ecological genetics of invasive plants: what do we know? *Invasive Plant Science and Management (invited review for inaugural issue), 1*, 98-109.
- Genetic analysis of invasive plant populations at different spatial scales. *Biological Invasions*, 8, 541-552.
- Genetic diversity among proso millet (*Panicum miliaceum*) biotypes assessed by AFLP technique. *Plant Daninha*, 22, 167-174.
- Genetic diversity of jointed goatgrass (*Aegilops cylindrica*) determined with RAPD and AFLP markers. *Weed Sci*, 51, 287-293.
- Genetic variation in invasive populations of yellow toadflax (*Linaria vulgaris*) in the western United States. *Weed Sci*, 56, 394-399.
- Hybridization Between Invasive Populations of Dalmatian Toadflax (*Linaria genistifolia* subsp *dalmatica*) and Yellow Toadflax (*Linaria vulgaris*). *Invasive Plant Science and Management*, 2, 369-378.
- Increasing public understanding of transgenic crops through the World Wide Web. *Public Underst Sci*, 11, 293-304.
- Inheritance of Resistance to the Auxinic Herbicide Dicamba in Kochia (*Kochia scoparia*). *Weed Sci*, 57, 43-47.
- Interspecific hybridization transfers a previously unknown glyphosate resistance mechanism in *Amaranthus* species. *Evolutionary Applications*, 5, 29-38.
- Mechanism of resistance of evolved glyphosate-resistant Palmer amaranth. *J Agricult Food Chem*, 59, 5886-5889.
- Palmer amaranth: a review. *Weed Technology*, 27, 27-Dec.
- Recessive Gene Determining Male-Sterility in Quinoa. *J Hered*, 85, 231-233.
- Reducing the risks of herbicide resistance: best management practices and recommendations. *Weed Science (special issue)*, 60, 31-62.
- Response to selection for reduced grain saponin content in quinoa (*Chenopodium quinoa* Willd). *Field Crop Res*, 68, 157-163.
- Sampling weedy plant populations for genetic diversity analysis. *Weed Science*, 57, 593-602.
- Short and long-term impacts of biotechnology education on professionals who communicate science to the public. *Journal of Natural Resources and Life Science Education*, 33, 111-116.
- Use of random amplified polymorphic DNA markers for cultivar identification in mint. *Hortscience*, 36, 761-764.
- What does undergraduate enrollment in soil and crop sciences mean for the future of agronomy? *Agronomy Journal*, 99, 1169-1174.
- Ward, S. M., Cousens, R. D. (2014). Agricultural weed research: a critique and two proposals. *Weed Science*, 62, 672-678.

- Giacomini, D. A., Westra, P., Ward, S. M. (2014). Impact of genetic background in fitness cost studies: an example from glyphosate-resistant Palmer amaranth. *Weed Science*, 62, 29-37.
- Gaines, T., Ward, S. M., Bukun, B., Preston, C., Leach, J. E., Westra, P. (2012). Interspecific hybridization transfers a previously unknown glyphosate resistance mechanism in *Amaranthus* species. *Evolutionary Applications*, 5, 29-38.
- Gaines, T., Shaner, D. L., Ward, S. M., Leach, J. E., Preston, C., Westra, P. (2011). Mechanism of resistance of evolved glyphosate-resistant Palmer amaranth (*Amaranthus palmeri*). *Journal of Agricultural and Food Chemistry*, 59, 5886-5889.

Characterization of EPSPS gene amplification in Palmer amaranth. Published in online proceedings of the Weed Science Society of America Annual Meeting, Portland OR, February 7- 10.

Development of novel chloroplast markers for yellow toadflax (Linaria vulgaris), Dalmatian toadflax (Linaria dalmatica). Published in online proceedings of the Western Society of Weed Science Annual Meeting, Spokane WA, March 7-10.

Hybrid toadflax performance: preliminary results from a common garden experiment. Published in online proceedings of the Western Society of Weed Science Annual Meeting, Spokane WA, March 7-10.

Inheritance of EPSPS gene amplification in Palmer amaranth. Published in online proceedings of the Weed Science Society of America Annual Meeting, Portland OR, February 7-10.

Inheritance of EPSPS gene duplication in Palmer amaranth. Published in online proceedings of the Western Society of Weed Science Annual Meeting, Spokane WA, March 7-10.

Book Review

Conservation Genetics (pp. 663-673). Klug, Cummings and Spencer "Concepts of Genetics 8e" Prentice Hall.

Molecular marker and sequence methodologies and related terms (pp. 347-369). Motley T, and H Cross (eds) Darwin's Harvest Columbia University Press, New York.

Population Genetics (pp. 617-638). Klug, Cummings and Spencer "Concepts of Genetics 8e" Prentice Hall.

Quantitative Genetics and Multifactorial Traits (pp. 599-616). Klug, Cummings and Spencer "Concepts of Genetics 8e" Prentice Hall.

Monograph

Sing, S. E., DeCerke-Floate, R., Hansen, R., Pearce, H., Randall, C., Tosevski, I., Ward, S. M. (in press). *Biology and Biological Control of Dalmatian and Yellow Toadflax* (FHTET-05-15 ed., pp. 131). USFS Forest Health Technology Enterprise Team.

PAPERS PRESENTED/SYMPOSIA/INVITED LECTURES/PROFESSIONAL MEETINGS/WORKSHOPS

June 16, 2015, "Hybridization between Dalmatian and yellow toadflax", Toadflax Field Day, University of Wyoming/USDA-ARS, (Presenter) Ward, S. M.

March 19, 2015, "Hybridization between Introduced Toadflax Species in the Native Range: Cause for Concern?", Department of Biology Seminar Series, University of New Mexico, (Presenter) Ward, S. M.

February 12, 2015, "Pay-for-Play Publishing Scams: Threat to Scientific Publishing", Annual Meeting, Weed Science Society of America, (Presenter) Ward, S. M.

March 2014, "Hybridization between yellow and Dalmatian toadflax", Annual Meeting, Western Society of Weed Science, (Presenter) Ward, S. M., Colorado Springs, CO.

March 2014, "Invasive toadflax in the western U.S.", Annual Meeting, Western Society of Weed Science, (Presenter) Ward, S. M., Colorado Springs, CO.

March 27, 2014, "Hybridization in weedy species", Webinar series, USDA-USFS Rocky Mountain Research Station, (Presenter) Ward, S. M., Webinar.

February 2014, "Preliminary analysis of the EPSPS amplicon using 454 sequence data", Joint Annual Meeting, Weed Science Society of America/Canadian Weed Science Society, (Presenter) Giacomini, D., Vancouver, Canada.

2013, "Brenner, R. and S.M. Ward. Estimating competitiveness of hybrid toadflax. CSU Celebrate Undergraduate Research and Creativity, April 30, 2013."

2013, "Brenner, R. and S.M. Ward. Estimating competitiveness of hybrid toadflax. Front Range Student Ecology Symposium, Fort Collins, CO. February 20, 2013."

2013, "Giacomini, D.A., R.D. Sammons, B.J. Ulmer, T. Ulmasov, A. Dille, M. Dimmic, N. Tao, P. Westra, and S.M. Ward. Methods to study the inheritance of amplified EPSPS gene copies in Palmer amaranth. Weed Science Society of America Annual Meeting, Baltimore, MD, February 4-7, 2013."

2013, "Kappeler, K. and S.M. Ward. Investigating the spread of invasive knotweed in the Rocky Mountain region. CSU Celebrate Undergraduate Research and Creativity, April 30, 2013."

2013, "Ward, S.M. Estimating fitness costs of glyphosate resistance: Palmer amaranth as a case study. Global Herbicide Resistance Challenge Conference, Perth, Australia, February 18-22, 2013.", peer-reviewed/refereed.

2013, "Ward, S.M., A. Boswell, and S.E. Sing. Plastid DNA reveals cryptic hybridization in invasive Dalmatian toadflax populations. Weed Science Society of America Annual Meeting, Baltimore, MD, February 4-7, 2013."

2013, "Ward, S.M., M.F. Turner and S.E. Sing. Hybrid toadflax: a major management problem? Weed Science Society of America Annual Meeting, Baltimore, MD, February 4-7, 2013."

2012, "Giacomini, D.A., S.M. Ward, P. Westra. Fitness Associated with EPSPS Gene Amplification in Glyphosate Resistant Palmer Amaranth. Western Society of Weed Science Annual Meeting, Reno, March 12-15, 2012."

2012, "Norsworthy J.K., S.M. Ward, D. R. Shaw, R. Llewellyn, R. L. Nichols, T. M. Webster, K. W. Bradley, G. Frisvold, S. B. Powles, N. R. Burgos, W. Witt, M. Barrett. Best management practices to combat evolution of herbicide-resistant weeds in herbicide-resistant cotton and soybean. Weed Science Society of America Annual Meeting, Waikoloa, HI, February 6-9, 2012."

2012, "Ward, S.M. Weed Science Society of America and Undergraduate Education. Presented to the Association of Public and Land Grant Universities National Academic Programs Summit, Loveland, Colorado, June 18 2012."

2011, "Boswell, AS, SE Sing and SM Ward. Development of novel chloroplast markers for yellow toadflax (*Linaria vulgaris*) and Dalmatian toadflax (*Linaria dalmatica*). Western Society of Weed Science Annual Meeting, Spokane WA, March 7-10 2011."

2011, "Gaines TA, SM Ward, JE Leach, ST Chisholm and P Westra. Characterization of EPSPS gene amplification in Palmer amaranth. Weed Science Society of America Annual Meeting, Portland OR, February 7-10, 2011"

2011, "Giacomini DA, TA Gaines, SM Ward, P Westra. Inheritance of EPSPS gene duplication in Palmer amaranth. Western Society of Weed Science Annual Meeting, Spokane WA, March 7-10, 2011."

2011, "Giacomini, DA, SM Ward, TA Gaines, and P Westra. Inheritance of EPSPS gene amplification in Palmer amaranth. Weed Science Society of America Annual Meeting, Portland OR, February 7-10, 2011"

2011, "Turner MF, SE Sing and SM Ward. Hybrid toadflax performance: preliminary results from a common garden experiment. Western Society of Weed Science Annual Meeting, Spokane WA, March 7-10 2011."

2011, "Ward, SM. Interspecific hybridization between two invasive toadflax populations: cause for concern? Land Resources and Environmental Sciences

Department invited seminar, Montana State University, Bozeman MT April 29, 2011."

2011, "Ward, SM. Know your enemy: Retracing and reconstructing plant invasions. Presented as the 2011 William Fielding Hanna Lecture at the University of Manitoba, Winnipeg, Canada, April 1, 2011."

2010, "Giacomini D, SM Ward, P Westra and T Gaines. Apomixis in glyphosate-resistant Palmer amaranth. WSSA/SRM Joint Annual Meeting, Denver, CO, February 8-11, 2010."

2010, "Reconstructing Plant Invasions: Processes and Pitfalls. Invited presentation for Keynote Symposium Global Impacts: Plant Invasions in the 21st Century at the Weed Science Society of America/Society for Range Management Joint Annual Meeting, Denver, CO, February 8-11, 2010."

2010, "Turner MF, SM Ward, and SE Sing. Viability and invasive potential of hybrid toadflax populations. WSSA/SRM Joint Annual Meeting, Denver, CO, February 8-11, 2010."

2010, "Westra P, K Al-Khatib, P Stahlman, D Giacomini, SM Ward, D Shaner and R Klein. Evaluating the response of kochia populations to glyphosate. WSSA/SRM Joint Annual Meeting, Denver, CO, February 8-11, 2010."

TEACHING:

<u>Year</u>	<u>Semester</u>	<u>Course No./Title</u>	<u>Cr. Hrs.</u>	<u>Enrollment</u>
2016	Spring	SOCR344 - Crop Development Techniques	2	14
2015	Fall	SOCR496 - Group Study - Weed Management in Organic Systems	18	15
2015	Fall	SOCR675 - Presentations for Scientific Audiences	1	8
2015	Fall	SOCR330 - Principles of Genetics	3	142
2014	Fall	SOCR675 - Presentations for Scientific Audiences	1	5
2014	Fall	SOCR330 - Principles of Genetics	3	94
2014	Spring	SOCR344 - Crop Development Techniques	1	18
2014	Spring	SOCR496 - Group Study	18	5
2014	Spring	SOCR486 - Practicum	4	4
2013	Fall	SOCR675 - Presentations for Scientific Audiences	1	10
2013	Fall	SOCR330 - Principles of Genetics	3	133
2013	Summer	SOCR486 - Practicum	4	1
2013	Spring	SOCR495 - Independent Study	18	8
2013	Spring	SOCR792 - Seminar	1	6
2013	Spring	SOCR498 - Undergraduate Research	6	1
2012	Fall	SOCR330 - Principles of Genetics	3	143
2012	Fall	BZ698 - Research	18	15

2012	Fall	SOCR792 - Seminar	1	9
2012	Fall	SOCR498 - Undergraduate Research	6	1
2012	Summer	SOCR486 - Practicum	4	1
2012	Spring	SOCR344 - Crop Development Techniques	1	17
2012	Spring	SOCR799 - Dissertation	18	15
2012	Spring	SOCR699 - Thesis	18	11
2012	Spring	SOCR498 - Undergraduate Research	6	1
2011	Fall	SOCR796 - Group Study	18	4
2011	Fall	SOCR330 - Principles of Genetics	3	145
2011	Fall	SOCR784 - Supervised College Teaching	18	5
2011	Fall	SOCR498 - Undergraduate Research	6	1
2011	Summer	SOCR330 - Principles of Genetics	3	17
2011	Spring	SOCR799 - Dissertation	18	9
2011	Spring	SOCR792 - Seminar	1	6
2011	Spring	SOCR699 - Thesis	18	13
2011	Spring	SOCR498 - Undergraduate Research	6	1
2010	Fall	SOCR799 - Dissertation	18	12
2010	Fall	SOCR495 - Independent Study	18	0
2010	Fall	SOCR330 - Principles of Genetics	3	128
2010	Fall	SOCR498 - Undergraduate Research	6	1
2010	Summer	SOCR330 - Principles of Genetics	3	20
2010	Spring	SOCR344 - Crop Development Techniques	1	13
2010	Spring	SOCR799 - Dissertation	18	7
2010	Spring	ECOL695 - Independent Study	18	4
2010	Spring	SOCR495 - Independent Study	18	7
2010	Spring	SOCR486 - Practicum	4	4
2010	Spring	SOCR498 - Undergraduate Research	6	1
2009	Fall	SOCR799 - Dissertation	18	9
2009	Fall	SOCR330 - Principles of Genetics	3	98
2009	Summer	SOCR330 - Principles of Genetics	3	12
2009	Spring	SOCR799 - Dissertation	18	10
2008	Fall	SOCR799 - Dissertation	18	12
2008	Fall	SOCR535 - Origin and Evolution of Cultivated Plants	3	11
2008	Fall	SOCR330 - Principles of Genetics	3	90
2008	Spring	SOCR580A3 - Conserving and Restoring Native Plant Diversity	1	12
2008	Spring	SOCR344 - Crop Development Techniques	1	12
2008	Spring	SOCR580A1 - Genetic Diversity in Plant Populations	1	16
2008	Spring	SOCR580A2 - Genetics of Invasive and Weedy Plants	1	14
2008	Spring	SOCR495 - Independent Study	18	4
2008	Spring	HORT344 - Organic Greenhouse Production	1	13
2008	Spring	SOCR699 - Thesis	18	7
2007	Fall	SOCR699 - Thesis	18	7

COMMITTEES

Program in Molecular Plant Biology, (October 2012 - Present).

Soil and Crop Sciences Graduate Panel, (August 2013 - December 2015).

Search Committee for Postdoctoral Position in Agricultural Systems Modeling, (October 2014 - January 2015).

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Weed Science Society of America.

Weed Science Society of America.

Western Society of Weed Science.

Western Society of Weed Science.

CSU Plant Molecular Biology Program Executive Committee.

Faculty Honors Council.

Reviewer, Ad Hoc Reviewer, Murdock Charitable Trust.

Reviewer, Ad Hoc Reviewer, National Science Foundation.

Reviewer, Ad Hoc Reviewer, National Science Foundation-BREAD.

Member, Organic Agriculture Program Steering Committee.

Perspectives in Plant Ecology, Evolution and Systematics.

Committee Chair, Plant Molecular Biology Program.

Member, Search Committee for Assistant Professor of Crop Sciences.

Member, Search Committee for University Honors Program Director.

University of Melbourne/Montana State University, Bozeman, MT.

Committee Chair, Weed Science Society of America.

Committee Chair, Western Society of Weed Science.

Committee Chair, Western Society of Weed Science.

Reviewer, Grant Proposal, Agriculture and Agri-Food Canada. (March 2015 - Present).

Reviewer, Grant Panel, USDA_AFRI Biology of Weedy and Invasive Plants. (May 2013 - Present).

Editor, Associate Editor, Weed Science Society of America. (February 2008 - February 2014).

OTHER ACTIVITIES/ACCOMPLISHMENTS – SERVICE/OUTREACH

Director of Publications, Weed Science Society of America. (February 15, 2014 - Present).

Board of Directors Member-at-Large, Weed Science Society of America. (February 15, 2010 - February 14, 2014).

Technical Advisory Committee member, Southern Rockies Seed Network, Fort Collins, Colorado. (March 2015 - Present).
