INVASIVE PLANT SCIENCE AND MANAGEMENT





VOLUME 10 | NUMBER 2 APRIL–JUNE 2017 //dol.org/10.1017/inp.2017.26 Published online by Cambridge University Press

Invasive Plant Science and Management

Published quarterly by the Weed Science Society of America

Antonio DiTommaso, Editor

The Weed Science Society of America (WSSA) publishes original research and scholarship in the form of peer-reviewed articles in three international journals. *Weed Science* is focused on understanding "why" phenomena occur in agricultural crops. As such, it focuses on fundamental research directly related to all aspects of weed science in agricultural systems. *Weed Technology* focuses on understanding "how" weeds are managed. As such, it is focused on more applied aspects concerning the management of weeds in agricultural systems. *Invasive Plant Science and Management* is a broad-based journal that focuses not only on fundamental and applied research on invasive plant biology, ecology, management, and restoration of invaded non-crop areas, but also on the many other aspects relevant to invasive species, including educational activities, policy issues, and case study reports.

Associate Editors (Assignment Year)

Edith B. Allen, Botany & Plant Sciences Department, University of California, Riverside, CA 92521 (2008) Jacob N. Barney, Department of Plant Pathology, Physiology, & Weed Science, Virginia Tech, Blacksburg, VA 24061 (2012) John Cardina, Department of Horticulture & Crop Science, Ohio State University, Wooster, OH 44691 (2008) Stephen F. Enloe, Center for Aquatic and Invasive Plants, University of Florida, Gainesville, FL 32653 (2010) Songlin Fei, Department of Forestry and Natural Resources, Purdue University, West Lafayette, IN 47907 (2015) Guillaume Fried, Plant Health Laboratory, Anses, 34988 Montferrier-sur-Lez, France (2017) Catherine S. Jarnevich, US Geological Survey, Fort Collins, CO 80526 (2015) Marie Jasieniuk, University of California, Davis CA 95616 (2017) Darren J. Kriticos, CSIRO, Canberra, ACT 2601, Australia (2010) James K. Leary, Department of Natural Resources and Environmental Management, University of Hawaii at Manoa, Honolulu, HI 96822 (2014) Kelly G. Lyons, Department of Biology, Trinity University, San Antonio, TX 78212 (2008) Jane M. Mangold, Department of Land Resources and Environmental Sciences, Montana State University, Bozeman, MT 59717 (2014) John A. Randall, The Nature Conservancy, University of California, Davis, CA 95616 (2008) Rob J. Richardson, Department of Crop Science, North Carolina State University, Raleigh, NC 27695 (2014) Steve S. Seefeldt, UAF Cooperative Extension Service Tanana District, Fairbanks, AK 99775 (2014) Ryan M. Wersal, Lonza Specialty Ingredients, Alpharetta, GA 30004 (2014) Tracy Candelaria, Managing Editor

Hacy Canaciana, managing Danor

Officers of the Weed Science Society of America

Janis McFarland, President	Hilary Sandler, Secretary
Scott Senseman, President-Elect	Rick Boydston, Treasurer
Larry Steckel, Vice President	Sarah Ward, Director of Publications
Kevin Bradley, Past President	Mark Bernards, Chair, Constitution and Operating Procedures

Invasive Plant Science and Management (ISSN 1939-7291) is an official publication of the Weed Science Society of America, 12011 Tejon Street, Suite 700, Westminster, CO 80234 (720-977-7940). It is published quarterly, one volume per year, four issues per year beginning in March.

Membership includes receipt of *Weed Science, Weed Technology, Invasive Plant Science and Management*, and the online *WSSA Newsletter*. Dues should be sent to WSSA, 12011 Tejon Street, Suite 700, Westminster, CO 80234 no later than December 1 of each year. Membership in the society is on a calendaryear basis only.

New subscriptions and renewals begin with the first issue of the current volume. Please visit the *Invasive Plant Science and Management* subscription page at https://www.cambridge.org/core/journals/invasive-plant-science-and-management/subscribe; Email: subscriptions_newyork@cambridge.org in USA, journals@cambridge.org outside USA.

Invasive Plant Science and Management publishes four times a year in March, June, September, and December. Annual institutional electronic subscription rates: US \$384.00; UK £267.00.

Please use Editorial Manager to access manuscript submissions (http://www.editorialmanager.com/ipsm). Authors are asked to pay \$65 per page as a portion of the cost of publication, plus an additional processing charge of \$55 per manuscript if none of the authors are WSSA members. The Editor can make exceptions in advance when justified.

The Weed Science Society of America fully subscribes to the belief that progress in science depends upon the sharing of ideas, information, and materials among qualified investigators. Authors of papers published in *Invasive Plant Science and Management* are therefore encouraged, whenever practicable and when state and federal laws permit, to share genotypically unique, propagative materials they might possess with other workers in the area who request such materials for the purpose of scientific research.

Invasive Plant Science and Management published by the Weed Science Society of America. Copyright 2017 by the Weed Science Society of America. Printed in USA.

All rights reserved. Reproduction in part or whole prohibited.

Cover Photo: This photograph is from Gaskin and Littlefield (Pp 119–124). It shows discrete Russian knapweed (*Acroptilon repens*) clones arising from a sea of cheatgrass. Each representing a distinct genotype that is maintained by asexual, vegetative reproduction. Photo taken near Bridger, Carbon County, Montana in July 2015. Photo credit: Jeffrey L. Littlefield.



Volume 10 Number 2 April–June 2017

INVASIVE PLANT SCIENCE AND MANAGEMENT

Table of Contents

Research and Education

Invasive Russian Knapweed (<i>Acroptilon repens</i>) Creates Large Patches Almost Entirely by Rhizomic Growth. John F. Gaskin and Jeffrey L. Littlefield	119
Plant Community Effects and Genetic Diversity of Post-fire Princess Tree (<i>Paulownia tomentosa</i>) Invasions. Joseph B. Lovenshimer and Michael D. Madritch	125
Seedbank Dynamics of Two Swallowwort (<i>Vincetoxicum</i>) Species. Antonio DiTommaso, Lindsey R. Milbrath, Scott H. Morris, Charles L. Mohler, and Jeromy Biazzo	136
Invasive Blackberry Species in Oregon: Their Identity and Susceptibility to Rust Disease and the Implications for Biological Control. William L. Bruckart III, Jami L. Michael, Michal Sochor, and Bohumil Trávníček	143
Prioritizing Management of the Invasive Grass Common Reed (<i>Phragmites australis</i>) in Great Salt Lake Wetlands. A. Lexine Long, Karin M. Kettenring and Richard Toth	155
Regulation of the Invasive Plant <i>Heracleum persicum</i> by Private Landowners in Tromsø, Norway. Sophie Meier, Gregory N. Taff, Jens B. Aune, and Sebastian Eiter	166
Leafy spurge (<i>Euphorbia esula</i>) Control and Soil Seedbank Composition Fifteen Years after Release of <i>Aphthona</i> Biological Control Agents. Blake M. Thilmony and Rodney G. Lym.	180
Early-Season Treatment of Fig Buttercup (<i>Ranunculus ficaria</i>). Mark N. Frey and John Paul Schmit	191
Effect of Aminocyclopyrachlor on Native Prairie Species in the Northern Great Plains. Blake M. Thilmony and Rodney G. Lym	201
Notes and Commentary	
An Online Multi-Access Identification Key to the Propagules of Selected Biosecurity-Relevant Asteraceae (Daisy or Sunflower Family). Alexander N. Schmidt-Lebuhn and Gertraud Norton	210
Errata/Corrigenda	
Erratum Tuttle GM, Katz GL, Friedman JM and Norton AP	212
Corrigendum Meier S. Taff GN. Aune JB. and Eiter S	213