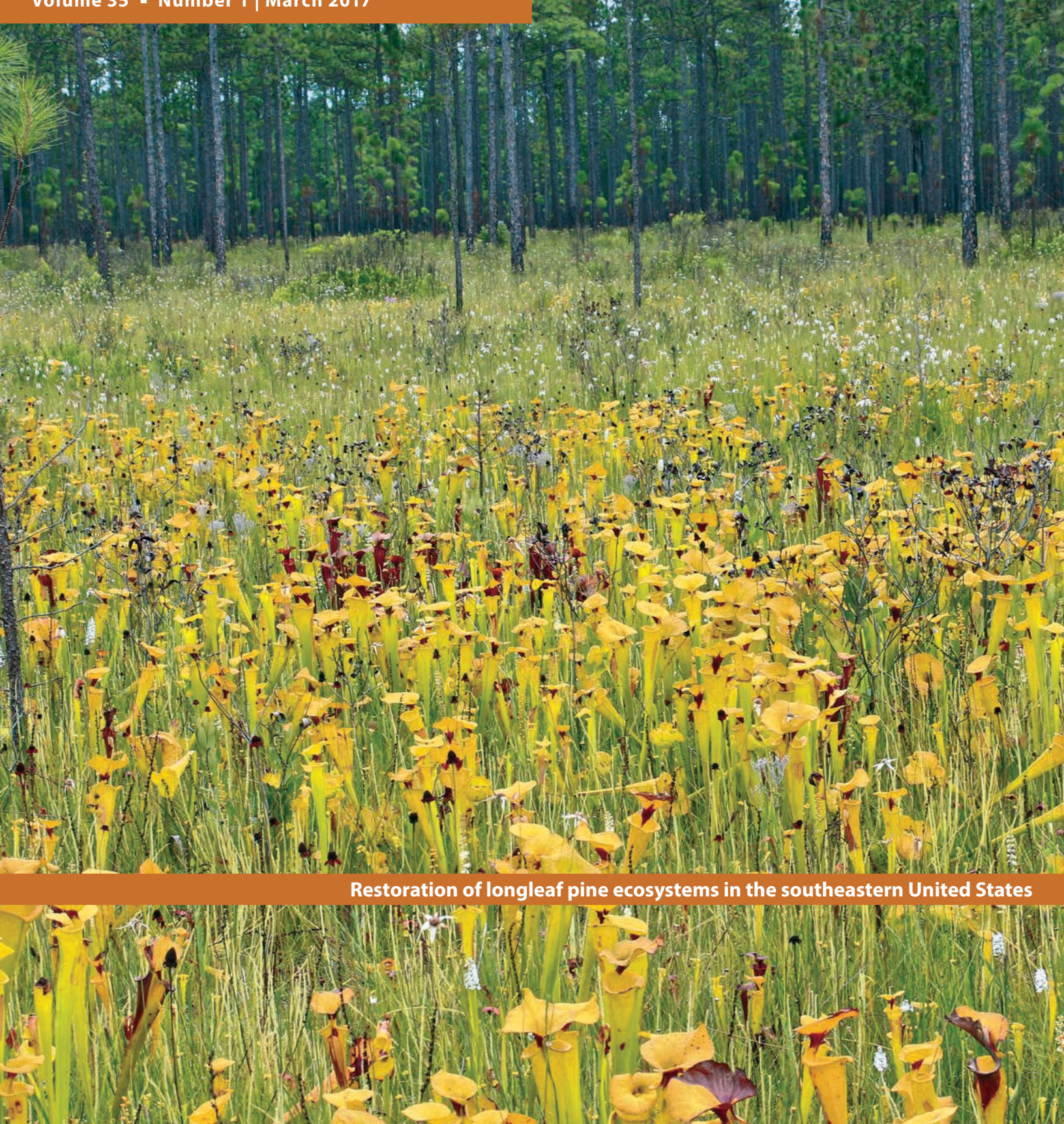


# Ecological Restoration

Volume 35 ■ Number 1 | March 2017



Restoration of longleaf pine ecosystems in the southeastern United States



**EDITORIAL**

In the Eye of a Hurricane There is Quiet

*Steven N. Handel*

Habit Forming: Voices from the Field

*The Editors*

**RESTORATION NOTES**

Soil Properties in Native, Reconstructed, and Farmed Prairie Potholes:  
A Chronosequence Study of Restoration Timeframes

*Matthew T. Streeter and Keith E. Schilling*

Managing Seedbank Composition to Enhance Wetland Restoration

*Travis Strehlow, Shawn DeKeyser and Breanna Kobiela*

Persistent Establishment of Outplanted Seedlings in the Mojave Desert

*Scott R. Abella*

Unexpected Rye Seed Growth in a Lab Study of Mycoremediation of  
Contaminated Incinerator Ash

*Valentin Schaefer, Kira Beukeboom and Zacchary Luck*

**ARTICLES**

Estimating Wetland Restoration Costs in Southeastern North Dakota

*Travis Strehlow, Shawn DeKeyser and Breanna Kobiela*

Effect of Thinning and Clear-cuts on the Transmission of Fire in Slash Pine  
Plantations during Restoration to Longleaf Pine

*Charles A. Hess and Walter R. Tschinkel*

Recovery of Basalt Substrate for Xeric Scrub Restoration in a Lava Field in  
Mexico City

*Fernando Estañol-Tecuatl and Zenón Cano-Santana*

Initial Transplant Size and Microsite Influence Transplant Survivorship and  
Growth of a Threatened Dune Thistle

*Samniqueka J. Halsey, Timothy J. Bell and Marlin Bowles*

An Analysis of Factors Driving Success in Ecological Restoration Projects by  
a University–Community Partnership

*Joy K. Wood, Warren G. Gold, James L. Fridley, Kern Ewing and Dev K. Niyogi*



## EDITORIAL BOARD

### Scott Abella

Natural Resource Conservation LLC,  
Boulder City, USA.

### Steven I Apfelbaum

Applied Ecological Services, Wisconsin, USA.

### James Aronson

Centre for Evolutionary and Functional Ecology  
Lab, Montpellier, France.

### Peter Bowler

Department of Ecology and Evolutionary  
Biology, University of California, Irvine, USA.

### Lindsay Campbell

USDA Forest Service Northern Research Station,  
NY, USA.

### Robin L. Chazdon

Department of Ecology and Evolutionary  
Biology, University of Connecticut, USA.

### Francisco A. Comín Sebastián

Pyrenean Institute of Ecology-CSIC, Spain.

### David Drake

Department of Forest and Wildlife Ecology,  
University of Wisconsin–Madison, USA.

### Erin Espeland

USDA-ARS Pest Management Research Unit,  
Sidney MT USA.

### Holly Jones

Department of Biological Sciences,  
Northern Illinois University, USA.

### Roger Mann

Virginia Institute of Marine Science, USA.

### Jill McGrady

Great Ecology Inc., La Jolla CA, USA.

### David Moreno-Mateos

Basque Center for Climate change – BC3,  
Basque Country, Spain.

### Andrew Rayburn

Independent Consulting Ecologist, Davis, USA.

### Carrie Reinhardt Adams

Environmental Horticulture Department,  
University of Florida, Gainesville, USA.

### Greg Spyreas

Illinois Natural History Survey, USA.

### Katharine Suding

Department of Ecology & Evolutionary Biology,  
University of Colorado Boulder, Boulder, USA.

### David J. Robertson

Pennypack Ecological Restoration Trust,  
Philadelphia PA, USA.

### Alan Unwin

School of Environmental and Horticultural  
Studies, Niagara College, Canada.

### Dennis Whigham

Smithsonian Environmental Research Center,  
USA.

### Ken Yocom

Department of Landscape Architecture,  
University of Washington, USA.

### Luis Zambrano González

Biology Institute, National Autonomous  
University of Mexico (UNAM), Mexico.

## Journal Staff:

Editor: *Steven N. Handel*

Associate Editor: *Myla F.J. Aronson*

Editorial Assistant: *Paulina A. Arancibia*

Abstracts Editors: *Amy E.K. Long, Paulina A. Arancibia and Max Piana*

Copy Editor: *Kate D. Douthat*

Rutgers, The State University of New Jersey,

School of Environmental and Biological Sciences: *Robert M. Goodman, Executive Dean*

Society for Ecological Restoration International: *Alan Unwin, Chair*

*Ecological Restoration* is published quarterly by the University of Wisconsin Press. © by the Board of Regents of the University of Wisconsin System. No part of this publication may be reproduced without the written consent of the publisher, University of Wisconsin Press. Requests for permission to reprint an article or illustration should be made directly to UW Press, 1930 Monroe St, 3rd Floor, Madison, WI 53711-2059, [permissions@uwpress.wisc.edu](mailto:permissions@uwpress.wisc.edu), [er.uwpress.org](http://er.uwpress.org).



Printed on 30% recycled text paper.

Contributions are welcome. Authors should upload their materials through *Ecological Restoration's* submission website, which can be found at [er.uwpress.org](http://er.uwpress.org). Submission guidelines can be found at [uwpress.wisc.edu/journals/journals/er\\_submissions.html](http://uwpress.wisc.edu/journals/journals/er_submissions.html).

Authorization to reproduce material from this journal, beyond one copy for personal use or that permitted by Sections 107 and 108 of U.S. Copyright Law, is granted for a fee. For fee schedule and payment information, contact [www.copyright.com](http://www.copyright.com); The Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, 978/750-8400, Fax: 978/750-4470.

*Ecological Restoration* is indexed in Elsevier BIOBASE, AGRICOLA, and in CSA's Ecology databases.

*Ecological Restoration* is affiliated with the Society for Ecological Restoration, 1017 O St. NW, Washington, DC 20001, 202/299-9518, [ser.org](http://ser.org). Members of the Society for Ecological Restoration receive *Ecological Restoration* at a discounted rate. Please visit the UW Press Web site at [uwpress.wisc.edu/journals](http://uwpress.wisc.edu/journals) for more information.

*Ecological Restoration* was founded at the University of Wisconsin–Madison Arboretum.

**Advertising:** Call 608/263-0534 for current rates. Advertisements or references to products by brandname or trademark do not imply an endorsement by the editors or publishers of this journal.

*Ecological Restoration* (ISSN 1522-4740, E-ISSN 1543-4079) is published quarterly by the University of Wisconsin Press, 1930 Monroe Street, 3rd Floor, Madison, WI 53711-2059. Periodicals postage paid at Madison WI and at additional mailing offices.

**Subscriptions:** Individual (please pre-pay), \$75 print and electronic, \$64 electronic only; \$45 students; \$165 businesses and nongovernmental organizations; libraries and government agencies, \$289 print and electronic, \$254 electronic only. Non-U.S. subscribers please add \$40 for foreign shipping. All correspondence regarding subscriptions, advertising, and related matters should be sent to Journals Division, 1930 Monroe Street, 3rd Floor, Madison, WI 53711-2059, USA; [uwpress.wisc.edu/journals](http://uwpress.wisc.edu/journals). Members of the Society for Ecological Restoration receive *Ecological Restoration* at a discounted rate.

Please visit our Web site at [uwpress.wisc.edu/journals](http://uwpress.wisc.edu/journals) for more information.

**POSTMASTER:** Send address changes to *Ecological Restoration*, 1930 Monroe Street, 3rd Floor, Madison, WI 53711-2059.

## Submissions

We welcome submissions to *Ecological Restoration* from any part of the world. Submissions should relate to the restoration of plants, animals, ecological communities, or landscapes. We understand ecological restoration to be a multidisciplinary and diverse effort and welcome manuscripts considering ecological, and social aspects of restoration, as well as political, economic, legal, and regulatory issues, and other subjects related to ecological restoration. Relevant topics also include techniques and tools for planning, site preparation, species introduction, undesired species control, and monitoring. Manuscripts dealing with plant or animal community composition or general ecology must relate the work explicitly to ecological restoration practice and theory. Similarly, material dealing with reclamation or rehabilitation in a broader sense, or with restoration for economic purposes—economic forestry, range management, waste disposal—must be connected to ecological restoration.

Material may be submitted for the following categories (listed as they are encountered in the Journal):

1. Perspectives
2. Restoration Notes (shorter items, < 1500 words describing project updates, events, innovative technologies, preliminary or unusual findings, thought-provoking concepts, imaginative solutions, commentary, policy reports, etc.)
3. Research articles or reviews on ecological restoration theory, experiments, socio-ecological linkages, education, restoration history, practice
4. Case studies (full length articles describing a particular restoration project or location and lesson learned)
5. Book, journal, website, or movie reviews

Authors of full-length articles or reviews should submit their material online at [er.msubmit.net](http://er.msubmit.net). Manuscripts must be submitted with a cover letter stating that the material has not been previously published, and has not been submitted elsewhere and will not be until a final decision has been reached by the editor. Questions about the online submission site, or general inquiries may be emailed to [ERjournal@aesop.rutgers.edu](mailto:ERjournal@aesop.rutgers.edu).

## Review and Editing Process

Manuscripts are reviewed externally by experts in the field. The process requires approximately four to six months. Restoration Notes are reviewed and edited in-house unless additional expertise is required to evaluate the submission.

## Style

Practitioners of ecological restoration are both a core audience and source of contributions to *ER*. Contributors should use a straightforward style free of unnecessary technical terms and jargon. We prefer the active voice (for example, “We measured three trees” instead of “Three trees were measured”). Please see our Submission Guidelines at [er.uwpress.org](http://er.uwpress.org) for more information.

## Tables, Photos, and Illustrations

Table and Figure captions should include useful and detailed information, and should be independent of the text. Figures will be reproduced in black and white in the print version of *Ecological Restoration* (usually requiring higher contrast) and can be reproduced in color in the online version. We use color photos on the front and back covers of the journal and welcome submissions of eye-catching, informative, high-quality photographs.

## Page Charges

Payment of \$50 per page is requested from authors with research grant or other institutional funds available to underwrite publication costs. Invoices will be sent after composition of pages. Authors with no grant or institutional funds do not need to pay publication costs. Ability to pay page charges is not a condition for acceptance of a manuscript.



With this issue we welcome new Editorial Board members to serve our readers. Representing a wide variety of disciplines within the restoration ecology world, board members will contribute their skills to editorial judgments and to identifying interesting projects that we may feature in future issues. We thank them for their contributions to this journal and improvements to our environment.

---

### **Scott Abella**

Scott Abella is an Assistant Professor in Restoration Ecology with the School of Life Sciences at the University of Nevada Las Vegas, and Owner of Natural Resource Conservation LLC, an international company dedicated to applied conservation science and ecological restoration. Scott regularly works with diverse stakeholders, ranging from non-profits and federal agencies to private companies, to develop conservation actions, assess their effectiveness, and involve students and the public in restoration projects. Scott has worked in a variety of ecosystems including eastern forests, Midwestern oak savannas and prairies, western forests, and arid lands in the U.S. and internationally. He has published over 100 peer-reviewed papers, including eight with graduate students, and authored the 2015 book titled *Conserving America's National Parks*. Website: [sites.google.com/site/scottrabella/](https://sites.google.com/site/scottrabella/), Abella Applied Ecology Lab: [abellaappliedecologylab.wordpress.com/](http://abellaappliedecologylab.wordpress.com/).

### **David Moreno-Mateos**

David Moreno Mateos is a restoration ecologist at the Basque Center for Climate change—BC3 (Basque Country, Spain) appointed by the Ikerbasque Foundation. He finished his PhD at the Universidad de Alcalá and the Spanish Research Council (CSIC) in 2008. He spent three years at UC Berkeley and two years at Stanford University as the Jasper Ridge Restoration Fellow. He studies ecosystem recovery after anthropogenic disturbances with especial emphasis on wetlands and forests. He aims to understand patterns of recovery of complex ecosystem attributes (e.g., stability) emerging from organism interactions. In his research, he uses empirical field-collected data and meta-analyses to understand and accelerate the processes of ecosystem recovery in the context of restoration. Website: [www.bc3research.org/en/david\\_moreno.html](http://www.bc3research.org/en/david_moreno.html).

### **Andrew Rayburn**

Andrew is a Certified Ecologist (Ecological Society of America) with over 15 years of applied ecological experience in grasslands, shrublands, rangelands, forests, and riparian ecosystems. His focus is on planning, implementing and evaluating multi-benefit habitat conservation and restoration projects in working landscapes, in which context he applied theories and methods from community, landscape, and spatial ecology. He is particularly interested in strategies to maintain and increase biodiversity in restored ecosystems, as well as approaches to restoration that account for present and future effects of climate change.

### **Katharine Suding**

Katharine Suding is a professor of ecology at the University of Colorado in Boulder. Her research is aimed at understanding the spatial and temporal dynamics of systems, why some systems change rapidly and others are surprisingly stable, and how this information can help us better meet conservation and restoration goals. She leads the Niwot Ridge LTER program and is a Fellow of the Ecological Society of America. She received her PhD from the University of Michigan and was on the faculty at the University of California Berkeley before moving to Boulder. Website: <http://www.colorado.edu/sudinglab/>.