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Stream Restoration in Dynamic Fluvial Systems: Scientific Approaches, Analyses, and Tools

Andrew Simon
Sean J. Bennett
Janine M. Castro
Editors

 American Geophysical Union
Washington, DC

Published under the aegis of the AGU Books Board

Kenneth R. Minschwaner, Chair; Gray E. Bebout, Kenneth H. Brink, Jiasong Fang, Ralf R. Haese, Yonggang Liu, W. Berry Lyons, Laurent Montési, Nancy N. Rabalais, Todd C. Rasmussen, A. Surjalal Sharma, David E. Siskind, Rigobert Tibi, and Peter E. van Keken, members.

Library of Congress Cataloging-in-Publication Data

Stream restoration in dynamic fluvial systems : scientific approaches, analyses, and tools / Andrew Simon, Sean J. Bennett, Janine M. Castro, editors.

p. cm. — (Geophysical monograph ; 194)

Includes bibliographical references and index.

ISBN 978-0-87590-483-2

1. Stream restoration. 2. Fluvial geomorphology. I. Simon, Andrew, 1954- II. Bennett, Sean J., 1962- III. Castro, Janine M. IV. American Geophysical Union. V. Series: Geophysical monograph ; 194.

QH75.S67396 2011

333.91'62153—dc23

2011027528

ISBN: 978-0-87590-483-2

ISSN: 0065-8448

Cover Image: Time series photographs (1997 and 2009) of a meander bend on Goodwin Creek, Mississippi, before and 2 years after restoration. This successful project is described in the book. Photographs by Andrew Simon and David Derrick.

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Printed in the United States of America.

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PREFACE

Stream restoration is a catchall term for modifications to streams and adjacent riparian zones undertaken to improve geomorphic and/or ecologic function, structure, and integrity of river corridors, and it has become a multibillion dollar industry worldwide. A vigorous debate currently exists in research and professional communities regarding the approaches, applications, and tools most effective in designing, implementing, and assessing stream restoration strategies given a multitude of goals, objectives, stakeholders, and boundary conditions. More importantly, stream restoration as a research-oriented academic discipline is, at present, lagging stream restoration as a rapidly evolving, practitioner-centric endeavor.

Our initial discussions for an edited volume on stream restoration led to a preliminary list of potential contributors assembled by the editors and Colin Thorne. Our approach for soliciting contributions to the volume was simple: we extended invitations to as many leading stream restoration scholars and practitioners as possible (though initially limited to 25). In addition, we made a concerted effort to have a diversified group of contributors. On the basis of the comments from the proposal peer reviewers, the editors altered a few of the contributions in consultation with select authors and solicited a few additional papers to achieve parity in both scope and content as suggested.

The final product of these efforts is a volume that brings together leading experts in both the science and practice of stream restoration, providing a comprehensive, integrative, and interdisciplinary synthesis of process-based approaches, tools, and techniques currently in use, as well as their philosophical foundations. Here nearly 70 researchers from

North America, Europe, and Australia contribute papers divided into six broad categories: (1) general approaches, (2) stream hydrology and hydraulics, (3) habitat essentials, (4) sediment transport issues, (5) structural approaches, and (6) model applications. The result is a concise, up-to-date treatise addressing key issues in stream restoration, stressing scientifically defensible approaches and applications from a wide range of perspectives and geographic regions. Most importantly, the volume furthers the ongoing dialogue among researchers and practitioners.

We should like to extend our appreciation to those who made this publication possible. We thank the authors who contributed to the volume, and those individuals who provided constructive and timely reviews of these papers (listed below). We thank Colin Thorne for offering many helpful suggestions in preparing the book proposal. Finally, we gratefully acknowledge the continued support of the University at Buffalo, the U.S. Fish and Wildlife Service, and the Agricultural Research Service of the U.S. Department of Agriculture.

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