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Restoring Rivers One Reach at a Time: Results from a Survey of U.S. River Restoration Practitioners

Emily S. Bernhardt,^{1,2,3} Elizabeth B. Sudduth,^{1,4} Margaret A. Palmer,^{3,5} J. David Allan,⁶ Judy L. Meyer,⁴ Gretchen Alexander,⁵ Jennifer Follastad-Shah,^{1,7} Brooke Hassett,^{1,3} Robin Jenkinson,⁸ Rebecca Lave,⁹ Jeanne Rumps,¹⁰ and Laura Pagano⁹

Abstract

Despite expenditures of more than 1 billion dollars annually, there is little information available about project motivations, actions, and results for the vast majority of river restoration efforts. We performed confidential telephone interviews with 317 restoration project managers from across the United States with the goals of (1) assessing project motivations and the metrics of project evaluation and (2) estimating the proportion of projects that set and meet criteria for ecologically successful river restoration projects. According to project managers, ecological degradation typically motivated restoration projects, but post-project appearance and positive public opinion were the most commonly used metrics of success. Less than half of all projects set measurable objectives for their projects, but nearly two-thirds of all interviewees felt that their projects had been

“completely successful.” Projects that we classified as highly effective were distinct from the full database in that most had significant community involvement and an advisory committee. Interviews revealed that many restoration practitioners are frustrated by the lack of funding for and emphasis on project monitoring. To remedy this, we recommend a national program of strategic monitoring focused on a subset of future projects. Our interviews also suggest that merely conducting and publishing more scientific studies will not lead to significant improvements in restoration practice; direct, collaborative involvement between scientists, managers, and practitioners is required for forward progress in the science and application of river restoration.

Key words: evaluation, interviews, monitoring, NRRSS, river restoration, success.

Introduction

Restoration of rivers and streams is an increasingly common approach to managing U.S. freshwaters, a trend that reflects a growing awareness of river degradation (U.S. EPA 2000) and societal desires for waterways that provide beneficial human uses although sustaining biodiversity and ecosystem goods and services (NRC 1992; Postel & Richter 2003; Bernhardt et al. 2005). River restoration is a term applied to a wide range of specific management activities, from replanting riparian trees or fencing live-

stock out of stream corridors to the removal of dams and full-scale redesign of river channels.

Despite rapid increases in river restoration funding and activity throughout the United States over the last 30 years, there has been little evaluation of river restoration outcomes (Bernhardt et al. 2005). The need for assessing river restoration costs and benefits is nearly universally appreciated (e.g., Kondolf 1995; Kondolf & Micheli 1995; Bash & Ryan 2002; Downs & Kondolf 2002; Palmer et al. 2005; Ruiz-Jaen & Mitchell Aide 2005). Although our scientific understanding of river ecosystems is becoming increasingly sophisticated, too little of this understanding is being translated or applied in the context of restoration projects (Pedroli et al. 2001; Wohl et al. 2005).

The National River Restoration Science Synthesis (NRRSS) working group was formed in 2001 to evaluate river restoration in the United States from a scientific perspective. As a first step, we set the goal of summarizing restoration activity for seven large regions of the country (“nodes”). We compiled approximately 37,000 records on river restoration projects from some approximately 800 data sources into an extensively calibrated common field database (Bernhardt et al. 2005) (the “NRRSS summary database”). We found that river restoration efforts are growing exponentially in every region of the United States and that more than 1 billion dollars a year are invested in efforts to restore our nation’s rivers (Bernhardt et al. 2005). The data synthesis effort was initially motivated

¹ Department of biology, BOX 90338, Duke University, Durham, NC 27708, U.S.A.

² Address correspondence to E. S. Bernhardt, email emily.bernhardt@duke.edu

³ Departments of Entomology and Biology, Plant Sciences Building, University of Maryland, College Park, MD 20742, U.S.A.

⁴ Institute of Ecology, 517 Biological Sciences Bldg., University of Georgia, Athens, GA 30602, U.S.A.

⁵ Chesapeake Biological Laboratory, University of Maryland Center for Environmental Science, P.O. Box 38, Solomons, MD 20688, U.S.A.

⁶ School of Natural Resources & Environment, University of Michigan, Ann Arbor, MI 48109, U.S.A.

⁷ Department of Biology, University of New Mexico, Albuquerque, NM 87131, U.S.A.

⁸ Department of Fish and Wildlife Resources, University of Idaho, Moscow, ID 83844, U.S.A.

⁹ Department of Geography, McCone Hall, University of California, Berkeley, CA 94720, U.S.A.

¹⁰ Center for Ecohydraulic Research, College of Engineering, 322 E. Front St., Suite 340, University of Idaho, Boise, ID, U.S.A.