Guest Editorial, part of a Special Feature on Exploring Opportunities for Advancing Collaborative Adaptive Management (CAM): Integrating Experience and Practice

Introduction to exploring opportunities for advancing collaborative adaptive management (CAM): integrating experience and practice

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ABSTRACT. This Special Feature of *Ecology and Society* seeks to communicate a practitioner's perspective on the application of collaborative adaptive management (CAM) to contemporary natural resource management problems. One goal is to create an ongoing mechanism for dialogue that can connect practitioners, researchers, and policy makers. The core 15 papers are grouped into 3 categories that: (1) describe lessons learned through the practice of applying CAM principles to a specific project or generalizing principles from outcomes of a specific project; (2) summarize lessons learned from the author's extensive CAM experiences; and (3) seek to be instructive of one or more CAM principles through a survey, evaluation, or comparison of multiple projects. Follow-up questions were submitted by authors to the online discussion section of *Ecology and Society* to stimulate interactive communication among readers and authors about their papers and CAM in general.

Key Words: *adaptive comanagement; case studies; collaborative adaptive management; Collaborative Adaptive Management Network; experiential learning; lessons learned; natural resource practitioners; science-policy dialogue*

INTRODUCTION

The combination of collaborative process and adaptive management has been variously referred to as adaptive comanagement (ACM; Olsson et al. 2004, Armitage et al. 2007) or collaborative adaptive management (CAM; Susskind et al. 2012). A CAM approach incorporates and links knowledge and credible science with the experience and values of stakeholders and managers for more effective decision making (http://adaptivemanagement.net/about/define-collaborative-adaptive-management).

Collaborative adaptive management exemplifies what McFadden et al. (2011) referred to as the Resilience-Experimentalist School of adaptive management (e.g., Gunderson et al. 1995), in which emphasis is placed on obtaining a shared understanding among stakeholders throughout the entire management process and in which active learning about system resilience is stressed. They described a second dominant adaptive management approach as the Decision-Theoretic School (e.g., Williams et al. 2007) in which emphasis is placed on the decision-making process through the use of decision theory, i.e., structured decision making, and communication is stressed largely during the setup phase of problem definition, objective setting, and alternative selection. These two schools are broadly represented by two organizations, the Collaborative Adaptive Management Network (CAMNet; http://www.adaptivemanagement.net/) for the Resilience-Experimentalist School and the Adaptive Management Conference Series (AMCS; http://www.phidot.org/AMCS/) for the Decision-Theoretic School. Although Resilience-Experimentalist and Decision-Theoretic distinctions exist in principle, in practice, they both integrate a strong emphasis on collaboration throughout the adaptive management process and apply decision analysis tools to guide smart choices because both are essential if the implementation of adaptive management is to be successful.

This Special Feature of *Ecology and Society* arose out of discussions among attendees at the fourth annual CAMNet Rendezvous in Tucson, Arizona, in March 2010. CAMNet is dedicated to the proposition that adaptive management, which involves active stakeholder collaboration, is the preferred paradigm for resolving many complex natural resource management problems. CAMNet Rendezvous are held in the tradition of the annual gatherings of fur trappers in the American West in the 1800s. They are designed to bring together innovative natural resource managers, policy makers, scientists, and citizens to share successes, challenges, and lessons learned from projects that are implementing CAM.

Two of CAMNet's goals for this Special Feature are: (1) to foster project- and program-based innovation, learning, and experimentation related to collaboration and adaptive management, as well as the application of these approaches to contemporary natural resource management problems, and; (2) create an ongoing mechanism for dialogue and information exchange that connects practitioners, researchers, and policy makers.

Exploring Opportunities for Advancing Collaborative Adaptive Management (CAM): Integrating Experience and Practice considers what is workable and what is not and creates an accessible record of hard-won institutional knowledge. This Special Feature is intended to pilot this concept for *Ecology and Society* and may result in an annual practitioners' issue. Relative to this goal, we ask adaptive management practitioners and readers of *Ecology and Society* to consider four questions about potential benefits of this and possible subsequent practitioners' issues of *Ecology and Society:* (1) Do such special issues facilitate progress in CAM; (2) is the format accessible to practitioners and is the content usable in practice; (3) are practitioners and would-be practitioners able to learn from each other through this venue, and; (4) does documentation of experiences lead to further theory development and subsequent evolution of practice? Some of these questions are initially addressed within this Special Feature, whereas others will require subsequent issues to test the intended outcomes.

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DESCRIPTION OF CONTENTS

Fifteen papers compose the core of this Special Feature, book-ended by this introduction and a summary contribution by Beratan (2014), which highlights common themes, major challenges, and implications for research and practice of the preceding contributions. The 15 papers roughly fall into 3 topical groups. First are five papers that stress lessons-learned from applying CAM principles to a specific project, i.e., case studies, or generalize CAM principles from experiences of a specific project. These include Green et al. (2013), who examined how collaboration contributed to resilience in water governance for the Okavango River Basin, Africa. Monroe et al. (2013) considered how intermediate steps of CAM, which focus on social learning within the Springs Basin Working Groups, Florida, can help overcome commonly cited barriers to CAM. Caves et al. (2013) detailed how more than strong stakeholder engagement is needed to address externalities that drive uncertainty at Las Cienegas National Conservation Area, Arizona, and they explored additional modifications to address the complexity of public lands resource issues. Childs et al. (2013) illustrated how to maintain a shared vision and momentum within the Agua Fria Watershed, Arizona, when collaboration between agency and nonagency stakeholders is mandated. The final case study by LoSchiavo et al. (2013) documented five key lessons learned during the decade-long development and implementation of the Comprehensive Everglades Restoration Plan collaborative adaptive management program, which could be useful to other practitioners.

The second group of two papers we labeled as experiential. They summarize broad lessons learned from the authors' extensive CAM experiences over years of practice implementing multiple projects. Scarlett (2013) examines CAM from the perspective of a U.S. Department of Interior decision maker in which policies and project decisions often involve trade-offs, which heighten the importance of collaborative decision making. Loftin (2014) reflects on 25 years of experience in applying adaptive management to large-scale water resource and ecosystem restoration projects to argue that 'success' should be measured in terms of achieving desired project performance and not just meeting planning requirements and on-time and within-budget measures.

The final group of eight papers is largely instructional. The papers describe one or more principles or aspects of CAM through a survey, evaluation, or comparison of multiple projects. Benson and Stone (2013) conducted a mail survey of practitioners to explore the potential disconnect between adaptive management theory and practice relative to legal requirements and processes in the U.S., which make it difficult to successfully implement CAM. Smedstad and Gosnell (2013) evaluated the National Riparian Service Team's efforts to catalyze CAM of public land riparian areas in seven cases from the western U.S. Margoluis et al. (2013) described results chains, proposed as a valuable tool for helping the conservation community clearly specify the theory of change behind the adaptive management actions they were implementing. Greig et al. (2013) compared seasoned practitioners' assessments of the difficulties encountered when implementing adaptive management in the U.S. Northwest Forest Plan and described a hierarchy of factors to enable or inhibit implementation of adaptive management in the forest sector.

Pratt-Miles (2013) reviewed four potential structures for multistakeholder collaboration, which have been used by medium- to large-scale adaptive management programs in the U. S. and identified factors to determine if any of these structures might be appropriate for a particular situation. Berkley (2013) explored the idea of integrating stakeholder assessments into CAM progress measurement by examining aspects of the Glen Canyon Dam Adaptive Management Program and the Missouri River Recovery Program. Curtin (2014) proposed to extend the resilience paradigm with the examination of components of adaptive decision making and governance processes through three core components of resilience design. Lastly, Laws et al. (2014) explored the idea that adaptive comanagement practices seeking cool reason often felt the heat of conflict by analyzing the incidence and impact of conflict on the adaptive comanagement of social-ecological systems. Beratan (2014) concludes this Special Feature by highlighting four common themes among this diverse collection of papers and then assesses some of the challenges faced by adaptive management practitioners and researchers in connecting CAM theory to practice.

The features of an electronic journal such as *Ecology and Society* are well suited to furthering this dialogue. A discussion page has been set up for each article to foster a conversation within and among adaptive management researchers and practitioners no matter their school of thought. Each author has submitted one or two follow-up questions to stimulate interactive communication among readers and authors about their paper. Additionally, Beratan (2014) poses a set of broader questions to be addressed through ongoing interchange among researchers and practitioners. Lastly, we encourage readers to use the discussion page for this paper to communicate their assessment of whether or not this Special Feature has made progress in addressing the questions posed at the outset regarding potential benefits of a regular practitioner's issue of *Ecology and Society*. All types of input are welcome, simple comments and queries as well as more formal commentaries. We encourage you to get engaged in this emerging community of practice to help shape the future of CAM.

Responses to this article can be read online at:
http://www.ecologyandsociety.org/issues/responses.
php/6438

nature. The GRP continues to deepen global expertise in certain key areas, including sustainable agriculture, floodplain management, environmental flows, navigation infrastructure management, monitoring, and adaptive management. For more information about TNC-GRP visit: http://www.greatriverspartnership.org/. Many of the reviewers of manuscripts for this Special Feature were faced with untraditional formats and content in submissions. We deeply appreciate their patience and constructive recommendations to aid those authors not well practiced in journal publication, and their tolerance of some atypical submissions to a professional journal. We thank Kathi Beratan and Jennifer Pratt Miles for helpful comments on this Introduction. We are particularly indebted to the assistance of Jennifer Miner, Jennifer Mullie, and Adele Mullie for stewarding our authors through the submission and review process. Lastly, we thank Ecology and Society's Editor in Chief, Lance Gunderson for his enthusiasm and willingness to experiment by providing a forum for CAM practitioners to express their perspectives.

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