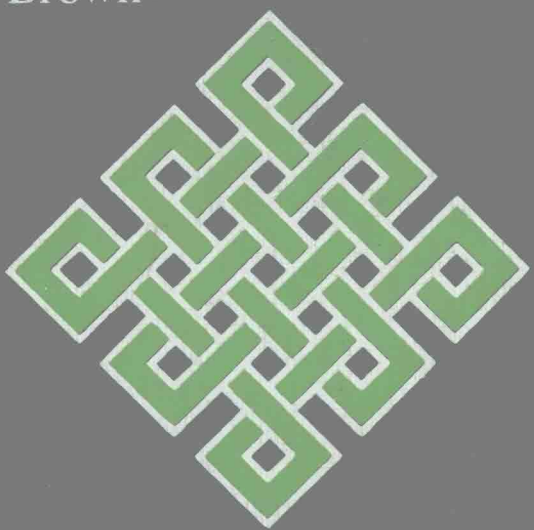
SOCIAL SCIENCE IN NATURAL RESOURCE MANAGEMENT SYSTEMS

edited by
Marc L. Miller, Richard P. Gale,
and Perry J. Brown



Social Behavior and Natural Resources Series
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SOCIAL BEHAVIOR AND NATURAL RESOURCES SERIES

Donald R. Field, Series Editor

Social Science in Natural Resource Management Systems, edited by Marc L. Miller, Richard P. Gale, and Perry J. Brown

Community and Forestry: Continuities in Natural Resources Sociology, edited by Robert G. Lee, Donald R. Field, and William R. Burch, Jr.

Economic Valuation of Natural Resources: Issues, Theory, and Applications, edited by Rebecca L. Johnson and Gary V. Johnson

ABOUT THE SERIES

The *Social Behavior and Natural Resources Series* is about human adaptation to natural resources and the constraints these resources place upon institutions and work and play in everyday life. Natural resources, after all, are products of society. The very definition of natural resources arises from the interaction of population, culture, and the biophysical environment.

Biological and physical scientists are providing us with a clearer picture of the nature of species and habitats and the requirements of systems to function under varying management regimes dedicated to conservation and preservation. Social scientists are providing complementary information about the human species, our habitat, and how social systems respond to a wide range of resource management policies.

The integration of social with the biological and physical world is the focus of this series. The present book is about the conduct and contributions of applied social science.

It is apropos that this be the inaugural volume in the series. Resource management issues are human problems which can only be solved with social science knowledge in combination with knowledge from the other sciences. The utilization of these different types of knowledge within the resource management arena depends upon the establishment of a partnership between scientists and managers. Sound management requires agreement on what information is pertinent, how information should be collected, and how information should be employed in decision making.

Here the social sciences can help. Social scientists have a keen appreciation of the power, as well as the limitations, of science to resolve policy conflicts. This is important for understanding how managers filter the concerns of competing constituencies and their own professional cadre while managing the natural resources under their charge.

There are many applied science volumes in sociology, anthropology, and political science that deal with post-industrial society, but this volume is unique in its exclusive attention to natural resources. *Social Science in Natural Resource Management Systems* represents the beginning of a new intellectual tradition in applied social science.

Donald R. Field

PREFACE

Social Science in Natural Resource Management Systems is the result of a lucky combination of personalities, events, and opportunities. Until several years ago, we three editors had independently designed our careers at three universities in the Pacific Northwest. In this, each of us forged an association with a different natural resource management system. Thus, one of us studied the management of marine fisheries, another addressed forest policy, while the third focused on parks and recreation.

In the course of our work, we all reached the conclusion that social science was highly relevant to natural resource management. We also discovered that although natural resource science was formally pluralistic, it was predominantly a natural science enterprise. In this milieu, we began to appreciate the need for interdisciplinary research. At the same time, we felt a certain sociological deprivation in the sense that few professionals in our various natural resource arenas were trained in the social sciences. Even rarer were social scientists who were interested in cross-natural resource management system studies.

In 1983, Gale spent his sabbatical at the University of Washington and began to collaborate with Miller. In short order, the utility of a comparative approach to natural resource problems became apparent. In 1986, the First National Symposium on Social Science in Resource Management was held in Corvallis, Oregon. At this event, Donald R. Field had the idea for a series of edited volumes treating social behavior and natural resources. He brought Miller and Gale together with Brown and gave the three of us the opportunity to consolidate the thought of social scientists at the symposium.

The purpose of *Social Science in Natural Resource Management Systems* is to foster exchange among the variety of social scientists who are concerned with natural resource policy. To this end, 23 authors have cooperated to prepare 14 articles reporting on the management of forests, parks marine fisheries, wilderness, and wildlife. Drawing examples from the United States, Canada, and New Zealand, the authors consider the major aspects of the application of social science to natural resource problems.

The plan of the volume is simple. A first section illustrates the concept of a natural resource management system and introduces the role of social science. A second section is composed of six articles which identify the mandate for applied social science and examine the status of natural resource sociology. A third section is composed of four articles which illustrate direct applications of social science to natural resource management. A final section

is composed of three articles which evaluate the behavior of management bureaucracies in natural resource systems.

This book is the production of many people and institutions. In particular, we express our gratitude to Becky A. Benton, Ora L. Chapman, Ruth Gainer, Christine McCartan, Andrea Montclair, and Vernon D. Ross at the Institute for Marine Studies, University of Washington; to Donette E. Pitt at the Department of Sociology, University of Oregon; and to Sherelyn R. Whittum at the Department of Resource Recreation Management, Oregon State University for administrative and word processing excellence. In addition, two special contributions must be noted. To Dr. Linda L. Iltis, who managed correspondence with authors and the publisher, in addition to overseeing production, and to Susan Stiles Gale, who technically edited the full text, we acknowledge enormous debts.

As a last point in this preface, we want to say that we have learned a great deal by preparing the articles which follow. It is our hope that this volume, and the series of which it is part, prove useful to those who promise to enhance the role and product of social science in natural resource management systems.

Marc L. Miller
Richard P. Gale
Perry J. Brown

CONTENTS

I

OVERVIEW

1

NATURAL RESOURCE MANAGEMENT SYSTEMS

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For more than a century, the United States has experimented with the management of natural resources including forests, forage, soil, fisheries, wildlife, water, and minerals. No generic conception of resource conservation has emerged over this period. Instead, conservation themes have been argued in diametric ways. Throughout the Progressive Era, resource conservation entailed the regulation of extractive practices to achieve sustainable production. Yet, the theme of regulation of non-extractive (along with extractive) practices to preserve aesthetic and recreational values also has roots in the Progressive Era. From that period forward, the twin ethics of *extractive conservation* and *aesthetic conservation* have sparked controversy over natural resource policies.[1]

Increasingly, the rules of representative government are crucial to the settling of resource disputes. One modern consequence is that natural resource policy is social policy. Importantly, a complex management process has expanded the role of science in formulating resource policy. Today, managers benefit from the research and advice of a pluralistic scientific community.

Social scientists are legitimate members of the natural resource scientific community. These include professionals who have been traditionally trained in sociology, political science, economics, anthropology, psychology, law, geography and history; professionals who have been educated in natural resource fields such as forestry and wildlife management; and professionals who have backgrounds in such associated fields as outdoor recreation, ecology, leisure studies, and environmental education. All these social scientists manifest an interdisciplinary perspective on resource management. Working in universities and colleges, in federal and state government, for non-profit organizations, and in the private sector, social scientists generate impact statements, resource management plans, and a host of other applied and academic research products.

An analytical framework can clarify the application of social science to natural resource problems. This lead article presents a framework centered on the concept of a natural resource management system. A first section sociologically defines this four-part system. A second section reviews the intertwined, if sometimes cross-threaded, histories of selected natural resource management systems. Final sections argue for comparative social science research.

THE NATURAL RESOURCE MANAGEMENT SYSTEM CONCEPT

From a sociological perspective, a *natural resource management system* is composed of four interacting elements: natural resources, management bureaucracies, profit-seeking industries, and diverse publics (Gale and Miller 1985, Miller and Gale 1986). *Natural resources* such as timber, forage, fisheries, water, wildlife, and minerals fall along a renewable-nonrenewable continuum. As the events of resource management have shown, these vary considerably in the degree to which they have utilitarian, aesthetic, recreational, historical, and scientific values. *Management bureaucracies* exist in resource systems because government has proved to be requisite for resource conservation. For example, resources once assumed to be unregulated common property, such as air and fisheries, are now managed by elaborate bureaucratic entities.

Resource management bureaucracies operate at all government levels. Those at the federal level include the U.S. Forest Service (USFS), the National Park Service (NPS), the Bureau of Land Management, the National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service, and the Bureau of Reclamation, among others. Rarely, however, is a specific natural resource associated with a single management bureaucracy. Forests, for

example, are under the jurisdiction of the NPS as well as under that of the USFS. Given that society has many ways of valuing resources, it is not surprising that bureaucracies at times compete to manage resources.

Profit-seeking industries include those which extract natural resources of direct commercial value and those which provide services and equipment to publics wanting experience with nature (e.g., the resort, hotel, service station, transportation, restaurant, recreational equipment, tourism, and guide industries). *Diverse publics* include highly organized embodiments of social movements (e.g., the Boone and Crockett Club, the Wilderness Society, Greenpeace) as well as relatively unorganized and politically inactive constituencies (e.g., consumers at large).

For convenience, we refer to natural resource management systems by resource.[2] Thus, "the forest system" conjures forest resources, management bureaucracies such as the USFS, profit-seeking industries such as the Weyerhaeuser Company and small logging companies, and diverse publics such as the Sierra Club and local hiking organizations. The "marine fisheries system" conjures fisheries resources, management bureaucracies such as the NMFS, profit-seeking industries involving commercial fishermen and fish processing companies, and diverse publics such as recreational and subsistence fishermen.

The concept of a natural resource management system offers several analytical advantages. First, it establishes all four components of systems as fair objects of social science research. Resource systems can be empirically and theoretically studied marshalling the spectrum of social science paradigms.

Second, management bureaucracies are portrayed as embedded within, rather than external to, natural resource management systems. The latter perspective, which characterized early resource managers, places agencies outside of systems as detached stewards and mediators of conflicts. With the idea that agencies are basic parts of systems, social science is pertinent not only to phenomena characterizing industries and publics, but also to bureaucratic phenomena. Further, communication, power and other social relations which connect the components of resource systems become available to inquiry.

Third, the concept of a natural resource management system illuminates the distribution and function of science in systems. Each of the three social components of systems separately produces scientific findings. Thus, natural resource social science is conducted by management bureaucracies, through organizations such as USFS Experiment Stations and NMFS Centers, by profit-seeking industries, through corporate research laboratories and trade associations, and by organized publics, through research sponsored by organizations such as the Sierra Club and the Friends of the

Earth. As a consequence, resource science provides common ground on which agencies, industries, and publics may exchange ideas and either avoid or engender controversy. (Political ideology and social morality are other grounds on which these parties debate resource policy.)

Finally, the natural resource management system concept provides a basis for comparing management experiences. As illustration, the articles included in this volume treat a variety of substantively different and compelling resource problems. In each case, the reader will find that the notion of natural resource management systems has currency in the interpretation of human behavior and processes of social change.

ORIGINS OF NATURAL RESOURCE MANAGEMENT SYSTEMS

The history of the United States reveals attitudes toward public lands and natural resources marked by six overlapping phases.[3] Clawson (1983) brackets the major period of *Acquisition* with the 1803 Louisiana Purchase and the 1867 procurement of Alaska from Russia.[4] *Disposal* begins with the 1812 establishment of the General Land Office and ends with the Taylor Grazing Act of 1934. *Reservation* starts with the Forest Reserve Act of 1891 and extends until the mid-1930s. *Custodial Management* overlaps much of this period, beginning in 1905 with the creation of the USFS and lasting until 1950. *Intensive Management* covers the period from 1950 to 1960. Finally, *Consultation and Confrontation* extends from 1960 to the present.[5]

Clawson's phases loosely correspond to the evolutionary sequence of natural resource management systems. Americans and resources were first linked through the development of profit-seeking industries (*Aquisition, Disposal*). Next, embryonic natural resource management systems expanded to include management bureaucracies (*Reservation, Custodial Management*). Finally, systems incorporated diverse publics (*Intensive Management, Consultation and Confrontation*).

Early America

American values concerning the relation between humankind and nature have undergone substantial revision since Jamestown.[6] From the Pilgrim point of view, wilderness represented all that was unholy. As Nash (1982:9) has shown, these settlers were schooled in the European and Judeo-Christian outlook on the environment before they crossed the Atlantic: "If paradise was early man's greatest good, wilderness...was his greatest evil.... Men dreamed of life without wilderness." The first Europeans to embark for the New World harbored dreams of a western earthly paradise, but they found

wilderness. The Puritan response to this disappointment was to convert the wild scene to rural scenery (cf., Cronon 1983). This domestication theme persisted into the nineteenth century.[7]

Throughout the colonial era, those on the cutting edge of Western exploration endorsed a utilitarian natural resource ethic. Although this has proved to be a dominant philosophy in U.S. history, it was challenged in the late 1800s with the urban emergence of Romanticism. This movement, which Nash (1982:47) associates with "...an enthusiasm for the strange, remote, solitary, and mysterious," derived from the Continental Primitivism of Jean-Jacques Rousseau and the American Primitivism of William Byrd II and William Bartram. Over the first half of the nineteenth century, nationalists endeavored to transform New World wilderness from a cultural liability to an asset. They were assisted by the landscape art of Thomas Cole and his Hudson River School, and the popular writings of authors such as William Cullen Bryant, James Fenimore Cooper and Francis Parkman.[8] In 1832, painter-illustrator George Catlin ventured west of the Mississippi to report on Native American life. Enthralled with the match he found between cultural and environmental systems, Catlin prophetically envisioned a "nation's park containing man and beast" (Huth 1957:135).

It was not, however, the thought of Catlin which provoked a change in American attitudes toward nature, but rather the extraordinary expositions of multitalented George Perkins Marsh. In 1864, Marsh published *Man and Nature* which fully documented the profound and often unsatisfactory influence of humankind upon flora, fauna, lands, and waters. Marsh's objective was not to indict humanity, but to reform human practices. To achieve this, he addressed his volume to the general public, rather than to specialists. *Man and Nature* was an immediate success. Marsh's (1965:35, 112) call for the "restoration of disturbed harmonies" and his injunction "to put a wiser estimate on the works of creation" were enormously appealing and heralded the beginning of a conservation movement.

Progressive Era

Between 1871 and 1916, the themes of extractive conservation and aesthetic conservation shaped natural resource reform in both the public and private sectors. In 1871, Congress established an independent Commission of Fish and Fisheries, the ancestor of the National Marine Fisheries Service as well as the U.S. Fish and Wildlife Service.[9] The first federal entity to deal with the conservation of a specific natural resource was created at a time when public concern for wildlife was widespread. As Reiger (1986) has noted, the monthly newspaper, *American Sportsman*, appeared in 1871 in direct response to the commercial exploitation of wildlife. Other periodicals soon followed seeking to educate the public to the responsibilities of the sportsman. These