



# CONSERVATION

CARL F. JORDAN

# CONSERVATION

*Replacing Quantity with Quality  
as a Goal for Global Management*

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In ecological economics, economic throughput is all of the energy and material that enter human society as "resources" (e.g., petroleum, timber, foodstuffs) and leave the system as "waste" (e.g., air pollution, garbage, sewage).

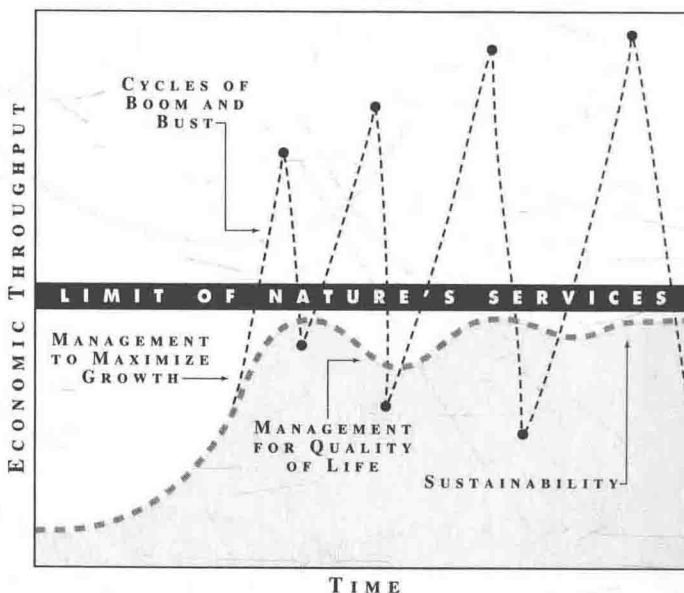
The "Limit of Nature's Services" represents the amount of resources that nature can supply and the amount of pollutants that it can absorb without the natural systems breaking down. For example, when the fish in a river die because of an overload of sewage input, the limit of nature's services (in this example purification) have been exceeded. Another example is desertification resulting from overgrazing.

On the time scale of the figure, the boom and bust cycles would have an interval of 30 to 50 years.

Both Management to Maximize Growth and Management for Quality of Life begin with an exponential growth in economic activity. As Management for Quality of Life approaches the limit of nature's services, feedback signals such as fish die-off and soil erosion are heeded, and remedial action is taken. Remedial actions may result in a tapering off of the rate of growth with a consequent increase in sustainability. In contrast, in economics where management is designed to maximize growth, resources (including clean air and water) are considered either infinite or replaceable, and the economy is seen as unhindered by any limits to growth. Management to Maximize Growth ignores negative environmental feedback signals and seeks only to expand. Recessions or crashes are considered to result from a maladjustment of the money circuit.

Ecological economics recognizes the importance of the money circuit, but views it as a subset of a larger system. That system is the movement of resources from the earth, through the economic system, and back to the earth. The resource system drives the economic system. The economic cycle functions only as long as the resource cycle functions (see Daly 1993).

Ecological economics also recognizes that technology can increase the efficiency of resource use, and through this means increase the limit of nature's services (see Daly 1991a).



● **To Carmen**

**with love**



## P R E F A C E

In the past, conservation was concerned with the management of natural resources and the prevention of species extinctions. Attention was focused on forests, prairies, mountains, oceans, and agricultural land, as well as on the species that inhabited them. Although the practice of conservation was justified in terms of benefiting humankind, human beings and their social institutions were not a central concern.

Today, economic, political, and cultural man\* is at the center stage of conservation. This new perspective results from a growing realization that lack of management techniques no longer generally limits the sustainable use of natural resources and the preservation of species. Rather, it is social institutions that usually are the stumbling blocks. One problem is an economic system that fails to adequately value a healthy and productive environment. A second is governmental policy that relies on command and control regulations instead of incentives for preserving environmental quality. A third is a lack of appreciation for the role of culture in development.

Most important in this change from resource-centered conservation to man-centered conservation is the replacement of *quantity of resource production* with *quality of life* as a goal of global management. The new conservation is no longer preoccupied with techniques of resource production. Instead, it is concerned with how the use of resources affects the well-being of humankind.

\*Note that "man" and "mankind" are occasionally used generically to include all people and both genders in this preface and throughout the text of this book.



This critical shift is not emphasized in most textbooks on conservation. The changing paradigm, if stated at all, is usually mentioned as an afterthought. In contrast, this book emphasizes an understanding of ecological economics, environmental policy, and culture as being paramount to achieving the goals of conservation.

The humanities, too, play an increasingly important role in modern conservation. The chapter on environmental ethics explores the issue of whether human beings have a moral imperative to protect the environment.

A question that almost always inspires furious debate between some economists and most conservationists is, Are things really getting worse? Conservationists often assume that they are. However, the chapters on conservation history and environmental trends show that there is very little data on a global scale to verify that assumption. But, although we cannot prove that *things are rapidly getting worse*, the data also leave little doubt that *things could be a lot better*.

Despite this text's emphasis on human beings' role in the environment, traditional conservation is not neglected. Resource management is brought up to date with concepts of how energy subsidies in resource systems are often at the root of ecological problems and how for remediation, the services of nature can be substituted for the services of fossil fuels. The chapter on biodiversity reviews the current controversy over the species approach versus the habitat approach in conservation biology. It also emphasizes that management to *preserve existing biodiversity* on a global scale requires an approach that is different from *management to increase biodiversity* on a local scale.

To give regional detail to the practice of conservation and to provide concrete examples of some of the problems and proposed solutions facing conservationists today, this book features four photo-essays: Deforestation in the Amazon Basin; Social Forestry in Thailand; Trivializing Indigenous Resistance to Deforestation Sarawak, Malaysia; and The Farmer First Approach to Agricultural Development in the Uplands of Mindanao, The Philippines. Each essay is placed appropriately within the chapter related to the essay's presentation.

Many books currently available focus on such specialized fields of conservation as conserving biodiversity, resource management, ecological economics, environmental policy, environmental ethics, and cultural anthropology. Few of these books are broad enough however, for use as a general introduction to conservation, or for use when examining the range of social sciences, natural sciences, and humanities that contribute to solving environmental problems.

This book differs from specialized texts in its comprehensive approach, which is suitable for a general introduction to a curriculum in conservation, or for an overview course, such as "Man and the Environment". It is appropriate for an environmental literacy requirement for liberal arts majors and preprofessional curriculums, and also a reference for the layperson. The artist wishing to portray human beings' impact on the environment, or the business person concerned about social responsibility will find here an overview of conservation problems. In addition, at the conclusion of each chapter a list of suggested readings gives direction to readers who wish to pursue in greater depth more aspects of the discussion that they find most interesting.



## ACKNOWLEDGMENTS

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## TO THE STUDENT

"To be an effective Conservationist, you must first build a soapbox. Then you can stand up on it, and people will listen to you." That has been the counsel of eminent ecologist, Eugene Odum, whenever a student asked his advice on a career in conservation.

Conservation is like politics. Anyone with an opinion can claim to be a conservationist or a politician. However, to be a politician that is elected, or to be a conservationist that is influential, one usually has to be established first in another field. Often, politicians start as business people or lawyers. In earlier days, conservationists began in basic sciences, such as zoology and ecology, or applied sciences, such as forestry or agronomy.

Although basic and applied life sciences still are good options, today there are many more opportunities for aspiring conservationists. Geographers look at conservation from a landscape perspective. Engineers can specialize in pollution control. Scientists in fields such as climatology and marine science monitor and model environmental trends. For those inclined toward the social sciences, there are opportunities in resource economics, environmental law and policy, and anthropology. The humanities contribute to conservation through environmental ethics and environmental history.

How can a budding conservationist know where to begin?

The overarching goal of this book is to provide an introduction to the fields relevant to conservation. It is intended to help the student with a broad interest in conservation select a specialty. Regardless of the specialty selected, it is important that he or she be aware of the broad array of factors that contribute to solving environmental problems. Having a vision of the many facets of conservation will help the conservationist build a better soapbox.

C.F.J.



## CONSERVATION

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## PHOTO ESSAYS

- Deforestation in the Amazon Basin (Chapter 2)
- Social Forestry in Thailand (Chapter 6)
- Trivializing Indigenous Resistance to Deforestation:  
Sarawak, Malaysia. (Guest Photo-Essay by J. Peter  
Brosius) (Chapter 8)
- The Farmer First Approach to Agricultural Development in  
the Uplands of Mindanao, The Philippines (Chapter 8)

# INTRODUCTION

Conservation has two roots, one in resource management and the other in natural history. In the past, most textbooks with the word *conservation* in the title were about resources, and there were two basic paradigms: *nonrenewable* resources were limited and *renewable* resources had to be managed with care to prevent them from becoming extinct. Managing resources in a way that was not wasteful and that ensured a sufficient supply for future generations was the major theme of conservation.

Conservation still is about resources and their management, but in recent years its emphasis has changed. Although there are always periodic shortages of certain nonrenewable resources, scarcities often lead to discoveries of new sources, more efficient extraction, technological substitution, and recycling. Today there is little evidence that scarcity of resources on a global basis is a threat to the economy and to human subsistence. The economic recession of the early 1990s was triggered more by global geopolitical events and world economic imbalances than by an actual scarcity of resources. The localized shortages of food that have occurred recently in Africa appear to have resulted not because of insufficient food in the global market but because of problems in getting existing food to the people or the people's inability to buy food.

Resources for fending off starvation on a global scale and for producing manufactured goods in developed countries do not at present seem limited. What does appear to be in danger of disappearing, however, are the resources for ensuring the *well-being* of the human race. Such resources include clean air, clean water, and refuges from the stress caused by a continuously close proximity to other people. Emerging "resource" problems include degradation of the global commons, namely, the oceans, atmosphere, and Antarctica; degradation of the local commons, including open land and parks close to urban centers; loss of species diversity, particularly in tropical forests; and loss of ecosystems with functions of particular importance to survival of life, such as wetlands. The limited ability of the environment to absorb waste and the stress caused by crowding are more critical factors than resource availability in setting boundaries for economic growth.

The other root of conservation is found in the writings of naturalists and philosophers who loved the natural landscape and the species that inhabited it. Their joy consisted in

the spiritual solace offered by the wilderness and the satisfaction in knowing that a multitude of wild species shared the landscape with them. For these conservationists the degradation and loss of rural and natural landscapes has been a greater concern than resource scarcity. For them, population growth and economic expansion are twin plagues that threaten all the things they hold most dear in life.

Many recent books on conservation have been written by the spiritual descendants of the early naturalists. For these conservationists new urgencies are replacing former priorities. Although the preservation of landscapes remains important, the loss of biodiversity (species extinction) has become critical. Landscapes lost can never be rehabilitated, if the species that comprise the landscapes are lost.

Resource conservationists and naturalists have often been at odds over strategies to manage the forests, lakes, and other ecosystems of the earth, but they are beginning to agree on one thing: improving quality of life should be given importance equal to or greater than increasing quantities of resources. Polluted air, poisonous water, urban congestion, and other manifestations of unbridled economic expansion and population explosions are unhealthy for humans as well as for wild species. The strategies of the two conservation groups are beginning to merge, now that they recognize that the well-being of humankind and of nature are inextricably intertwined.

Not only are conservation's priorities changing but also its emphasis is shifting from *techniques* of resource management and landscape preservation to *policies* that will promote conservation. Today, in general, it is not lack of technical expertise that is limiting efforts to use resources less wastefully, to mitigate pollution, and to save species from extinction. In many cases, it is already known what should be done, but action is stymied because of political, economic, and cultural barriers. This book reflects the changing paradigm.

### TEACHING CONSERVATION

What does this book do? How can it be used to teach students "conservation"?

It is easiest to start by telling the reader what this book is *not*, and what it does *not* do.

- It is not a compendium of environmental laws and regulations, although selected laws and regulations are discussed to illustrate certain points.
- It does not list conservation organizations and their activities, although organizations are mentioned when their activities illustrate a theme.
- It is not gloom-and-doom sensationalism; when pessimistic projections are cited, optimistic opinions are also aired.
- It is not a history of conservation and of leading figures in the field, although a review of both is given in order to set the stage.
- It is not a book on environmental ethics, but it does present an overview philosophy on human beings and their place in nature as a prelude to a call for action.
- It is not a manual on management of natural resources; books on specialized techniques of wildlife management, silviculture, fish culture, and the like are readily available elsewhere.