

Ecotourism Book Series

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Ecotourism, or nature-based tourism that is managed to be learning-oriented as well as environmentally and socio-culturally sustainable, has emerged in the past 20 years as one of the most important sectors within the global tourism industry. The purpose of this series is to provide diverse stakeholders (e.g. academics, graduate and senior undergraduate students, practitioners, protected area managers, government and non-governmental organizations) with state-of-the-art and scientifically sound strategic knowledge about all facets of ecotourism, including external environments that influence its development. Contributions adopt a holistic, critical and interdisciplinary approach that combines relevant theory and practice while placing case studies from specific destinations into an international context. The series supports the development and diffusion of financially viable ecotourism that fulfils the objective of environmental, socio-cultural and economic sustainability at both the local and global scale.

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Environmental Impacts of Ecotourism

Edited by

Ralf Buckley

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Foreword

In 1991, I sat at a large wooden table in Arlie House, an historic country inn outside of Washington, DC. It was a beautiful spring day, and around the table with me sat a group of conservationists, tour operators, NGO representatives and donor agency officials. We had come to Arlie House from Africa, Asia and the Americas on the occasion of the first board meeting of a new organization called The Ecotourism Society. One of our most important tasks was to succinctly define the word, 'ecotourism'. After lengthy discussion, the group reached consensus on a brief but fundamental definition for this newly emerging idea: 'Ecotourism is responsible travel to natural areas that conserves the environment and improves the welfare of local people'.

Since that day, much has changed. But the basic tenets of ecotourism – conserving nature and benefiting local communities – have remained the same. During the 1990s, tourism exploded across the world stage. According to the World Travel and Tourism Council, tourism generates nearly 11% of global gross domestic product (GDP), employs some 200 million people and transports nearly 700 million international travellers per year – a figure expected to double by 2020. The World Tourism Organization reports that tourism is one of the top five exports for 83% of countries and the main source of foreign currency for at least 38% of countries. Even if we account for any possible statistical errors, the bottom line fact is indisputable – tourism is growing, and growing fast in many places.

At the top of that growth curve is nature and adventure travel, which has emerged as a leading tourism sector. Whether it is cruise ships plying the remote waters of Glacier Bay in Alaska, hikers flocking to the lush rainforests of northern Australia, or city dwellers heading to luxury safari lodges in Africa, more and more tourists are seeking out nature and the beauty of wild places.

Just as tourism has grown and changed, ecotourism also has gone through a kind of metamorphosis. In its early days, ecotourism was seen more as a type of travel and a specific market niche. Today, it is increasingly viewed as a travel concept or philosophy, based upon a set of principles that can, and should, be applied across the widest possible spectrum of the global tourism industry in an effort to make tourism truly sustainable and a positive benefit to the natural and cultural heritage of our planet. In that sense, ecotourism and nature travel should not be viewed as the same thing. A river-rafting trip through the jungle may be fun, may be interesting and may provide a great family vacation. But only if that trip directly promotes the protection of nature and tangibly contributes to the well-being of local people does it become ecotourism.

At this time in our history, we find ourselves at a crossroads where the Earth's last wild areas, the make-or-break world of economic survival for millions of people and the ever-expanding world of tourism meet. We know what ecotourism should be and, in a number of positive exam-

ples from around the world, we know what ecotourism can be – a catalyst for protecting nature and supporting cultural heritage. But for ecotourism to achieve its true potential, we must fully understand its impacts – both at the site-specific level and on a global scale. We need to know where it works and why, and we need to learn from its mistakes and understand its limitations. *Ecological Impacts of Ecotourism* helps us to do that, by collecting together a variety of research efforts that attempt to both define and then evaluate different kinds of environmental impacts, both positive and negative, that ecotourism may be having. It is an important step forward providing much-needed research on the ecological footprint of ecotourism.

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Preface

Ecotourism is widely recognized as the most rapidly growing sector within the global tourism industry. By definition, ecotourism is travel to minimally impacted natural areas and associated cultural locales. Ecotourists enjoy nature, and cultures that coexist harmoniously with the natural environment; they are conscious of minimizing their impacts on nature and local cultures and aim to improve socio-economics of local populations. Given this relatively noble profile, compared to other tourist types, can the ecotourist actually have adverse ecological impacts on places and peoples visited, the land, water and air traversed, and the animals and plants viewed?

The papers compiled in this volume attempt to answer questions of ecological impacts of ecotourism. They derive from case studies in countries such as Australia, Brazil, Canada, New Zealand, Russia and the USA. Some chapters, e.g. *Impacts of Ecotourism on Terrestrial Wildlife* by Ralf Buckley, also provide a broad overview of literature on the subject. Despite insufficient data and country- or site-specificity of analyses presented, the evidence is sufficient to caution ecotourists and their promoters against complacency with regard to the adverse impacts of ecotourism on natural areas. The volume raises important questions and issues that must be addressed if ecotourism, as a nature- and culture-friendly industry, is to benefit socio-economics of peoples and regions in less developed parts of the world.

At the Fifth World Parks Congress, convened in Durban, South Africa, from 8 to 17 September 2003, the global community celebrated the fact that about 12% of the world is under some form of legal protection for nature and associated cultural features. At that congress, tourism, particularly ecotourism, was frequently hailed as the most promising industrial partner for nature conservation and protected area management. Yet, the number of protected areas among more than 44,000 now recognized worldwide in which we have been able to clearly demonstrate benefits for both nature conservation and local economies are few. This paucity of success stories applies even for the sub-set of protected areas designated as World Heritage by UNESCO.

Of the 754 sites that are recognized as World Heritage, 582 are cultural. Many of them are monuments, e.g. the Taj Mahal of India. The remaining 172 sites contain natural (149) and mixed, natural/cultural (23) sites, respectively. The 172 sites comprise more than 500 protected areas. The Great Barrier Reef of Australia and the Serengeti of Tanzania are amongst the well-known World Natural Heritage sites; mixed sites include Machu Picchu of Peru, Tikal National Park in the Mayan Region of Guatemala and Australia's Uluru Kata-Tjuta National Park.

Despite the 'iconic' status of the 172 natural and mixed sites among the world's protected areas, tourism's performance in those sites is rather mixed. In Queensland, Australia, a thriving ecotourism

enterprise, centred on the Wet Tropics World Heritage area, has almost fully replaced timber-extraction as a basis for the regional economy within a decade. Jiuzhaigou and Huanglong World Heritage areas in Sichuan, China have fostered multi-million dollar tourism enterprises, corrected unsustainable visitor management practices and transfer millions of dollars for the benefit of local peoples, including some Tibetan communities. In the past, however, China, fast becoming the world's most important importer and exporter of tourists, had to resort to drastic measures in the Mount Huangshan World Heritage area, to curtail and reverse impacts of unsustainable tourism practices.

Assumptions of our ability to convert mass tourism to ecotourism rely on changes we anticipate and influence in society as a whole. Continuous growth of a literate and educated public, interested to know more about nature, biodiversity, wildlife and local cultures are a necessary condition for an ecotourism economy. Without the growth of that part of the mobile public that is curious about natural and cultural histories of places and people, and are eager to see and learn about them in modest comfort, travel and tourism will merely result in crowded cities and beaches. Conservationists and the industry need to invest more time, effort and resources into educational schemes to ensure that markets for ecotourism will grow continuously.

Education that can sustain the creation and growth for a market for ecotourism cannot solely be dependent on opportunities for viewing large charismatic species in land and water, in selected parts of the world. It must re-create an interest and curiosity about nature, wildlife and cultures through different approaches and techniques in outdoor education that can continue to expand the repertoire of natural and cultural heritage that can fascinate and inspire the visitor. Research on nature and culture, including how we impact those natural and cultural treasures that we seek out to view, study and learn about, is a necessary condition to building a knowledge base critical to the success of the ecotourism enterprise.

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Introduction

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Ecotourism has been espoused widely as a tool for commercial profit, community development and environmental conservation (UNEP/WTO, 2002). It can indeed achieve all these on occasion (Buckley, 2003). In the process, however, it does produce impacts on the natural environment. In particular, many ecotourism products rely on protected areas, where environmental impacts are of particular concern. As pressure on conservation areas from ecotourism and recreation continues to rise, an understanding of impacts and ways to manage them becomes increasingly important for land managers and tour operators alike (Eagles and McCool, 2002; Buckley, 2003; Buckley and King, 2003).

There is now a substantial literature on ecotourism as a component of the tourism industry (Fennell, 1999; Weaver, 2001a,b; Newsome *et al.*, 2002). This literature does consider environmental impacts, but rather briefly (Buckley, 2001; Newsome *et al.*, 2003, pp. 79–145). There is also a substantial literature on outdoor recreation and recreation ecology (Hammit and Cole, 1987; Liddle, 1997; Manning, 1999); and since much of ecotourism is commercialized outdoor recreation, this literature is highly relevant to the impacts of ecotourism. In addition, there is a longstanding body of research and practice on the management of protected areas and wilderness (e.g. Eagles and McCool, 2002; Hendee and

Dawson, 2002), some of which refers to visitor impacts.

This volume aims to review and synthesize available information worldwide on the environmental impacts of ecotourism. From a management perspective, we need to know the impacts of different numbers of people with different skills and backgrounds, in groups of various sizes, undertaking a range of different activities in various different ecosystems at different times of year under different management regimes, on a variety of specific environmental parameters of ecological concern. However, research data are available only for a rather limited set of activities, ecosystems, environmental parameters and management regimes. Some of the impacts of some activities in some countries have been studied in detail; others much less so or not at all. Both the choice and content of the following chapters necessarily reflects the availability of relevant research data.

As there are many factors that influence the environmental impacts of ecotourism, there are correspondingly many criteria on which to classify those impacts. For example, impacts may be classified by ecosystem, by activity, by impact mechanism or by the ecosystem component affected.

Different formats are useful to address different management issues. In considering whether and where to allow high-impact uses such as helicopters, off-road vehicles or horses,

for example, land managers need to know all the various impacts that such uses are likely to create. In considering how best to protect endangered wildlife, or how to manage wildlife watching so as to provide tourism opportunities without threatening wildlife populations, it is more useful to consider all the impacts that a range of different activities might have on the species concerned. Different chapters in this volume use different classification criteria, reflecting the structure of available research information.

The overall chapter structure follows a pragmatic approach, with reviews of more heavily studied topics, and case studies of impacts which are significant but as yet little analysed. In practice, there are few topics where a realistic choice is needed between classification by ecotourist activity, by impact mechanism or by ecosystem component. As one example, the impacts of off-highway vehicles (OHVs) on wildlife are equally relevant to management of OHVs, and to conservation of endangered or otherwise significant fauna. In this particular instance, we chose the activity classification, on the grounds that impacts of wildlife are a major cause for concern in management of OHVs, whereas OHVs are only one of many ecotourism activities with ecological impacts on animal species.

The focus of this book is the on-site environmental impacts of ecotourism: the recreation ecologists' contribution to the ecotourism literature. However, those on-site impacts do not occur in isolation, and the book's first three chapters aim to provide a context. The ecotourism sector benefits greatly from conservation of the natural environment and can also make positive contributions on occasion. The first chapter summarizes some of the mechanisms and the overall balance between positive and negative impacts. A detailed quantitative assessment is beyond the scope of this volume and would need another book.

Ecotourists often travel considerable distances to reach preferred destinations, and this long-distance travel also has significant environmental impacts, summarized by Simmons and Becken in Chapter 2. Notably, whereas ecotour operators and land management agencies have a range of tools to reduce environmental impacts on site, during long-distance

travel most ecotourists produce precisely the same *per capita* impacts as any other tourist. Finally, whereas most ecotourists visit briefly and head home, other visitors to the world's scenic places move there permanently. In some regions this so-called amenity migration completely eclipses both tourism and primary industries in its social, economic and environmental consequences. Perhaps the best-known examples are in the mountain states of the western USA: the Sierra Nevada of California; the Rocky Mountains of Colorado and Arizona; and the Greater Yellowstone Region (GYE) in Idaho, Montana and Wyoming. Migration to the GYE and adjacent areas of south-western Canada is particularly dynamic at present, and the issues involved are examined by Johnson in Chapter 3.

In the second section of the volume, the impacts of four common ecotourism activities are reviewed in turn. The effects of trampling by hikers are perhaps the most heavily studied of all recreational impacts, particularly in the montane ecosystems of North America, and one of the first where anyone attempted a quantitative synthesis of the research literature. That approach was taken by Cole in the mid-1980s, and in Chapter 4 he updates his previous reviews to the current state of the art. Similar, but more intense, impacts on soil and vegetation are produced by horse-riding and off-road vehicles, and these are reviewed in the two subsequent chapters. Impacts of recreational boating, the marine equivalent of off-road vehicles, are also reviewed in this section.

A corresponding review for freshwater locations, by Mosisch and Arthington, emphasizes the ecosystem more than the activity, and is placed accordingly in the book's third section. It is followed by a review of tourism impacts in polar ecosystems, compiled by the transatlantic team of Forbes, Monz and Tolvanen. This section also includes reviews of ecotourism impacts on the more heavily studied groups of animal species – whales and their relatives, birds and terrestrial wildlife.

The fourth section examines impacts specifically from a management perspective. Marion and Leung discuss how best to manage the hiking and camping impacts reviewed in earlier chapters; and Manning and his colleagues address how impacts are perceived by

ecotourists themselves, rather than by managers or scientists; and how they may be managed through various rationing and allocation tools.

In the first four sections of this volume, the authors set out specifically to review established fields of research, synthesizing the global scientific literature on the better-studied environmental impacts of ecotourism. The fifth, and final, section presents case studies from recent research, little-studied impacts and continents where English is not the primary language.

Education and interpretation is a commonly used approach in reducing impacts, but its effectiveness has very rarely been tested in any rigorous way. A recently completed 3-year study in a World Heritage rainforest in subtropical Australia is presented here by Littlefair. Protocols for rapid assessment of impacts at seakayak campsites have been developed by Monz on behalf of the US National Outdoor Leadership School, and an Alaskan case study is presented by Monz and Twardock.

Introduction and dispersal of plant and animal pathogens, initially invisible, may ultimately produce far more severe ecological consequences than more readily apparent impacts. Two examples from Australia are presented: a review of impacts caused by the jarrah dieback fungus, and a detailed experimental study of recreational swimming impacts on waterborne bacteria. Both of these are of particular significance for management. For the dieback fungus, only complete quarantining of entire water catchments from any human access seems to be effective in preventing the spread of the disease, which causes major ecological change in a wide range of Australian plant communities. For recreational swimming, the use of a carefully designed monitoring approach can identify impacts below the threshold of human health concern, as an early warning indicator for management action.

A somewhat different management approach is taken by Priskin in her study of off-road vehicles on a section of coastline in Western Australia. In this case the localized impact is easily identifiable: complete removal of vegetation. From a management perspective the critical issues are the aggregate broad-scale loss of plant cover, flow-on effects on dune stability and management tools to curtail continued proliferation of new tracks.

Finally, much of the internationally accessible research literature derives from the North American continent and is written in the English language. However, similar ecotourism activities, impacts and management issues occur equally in other continents and are described in other languages. We are fortunate to include case studies from Brazil and Russia, contributed by Magro and De Barros, and Chizhova, respectively. We trust there will be many more such studies in future.

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