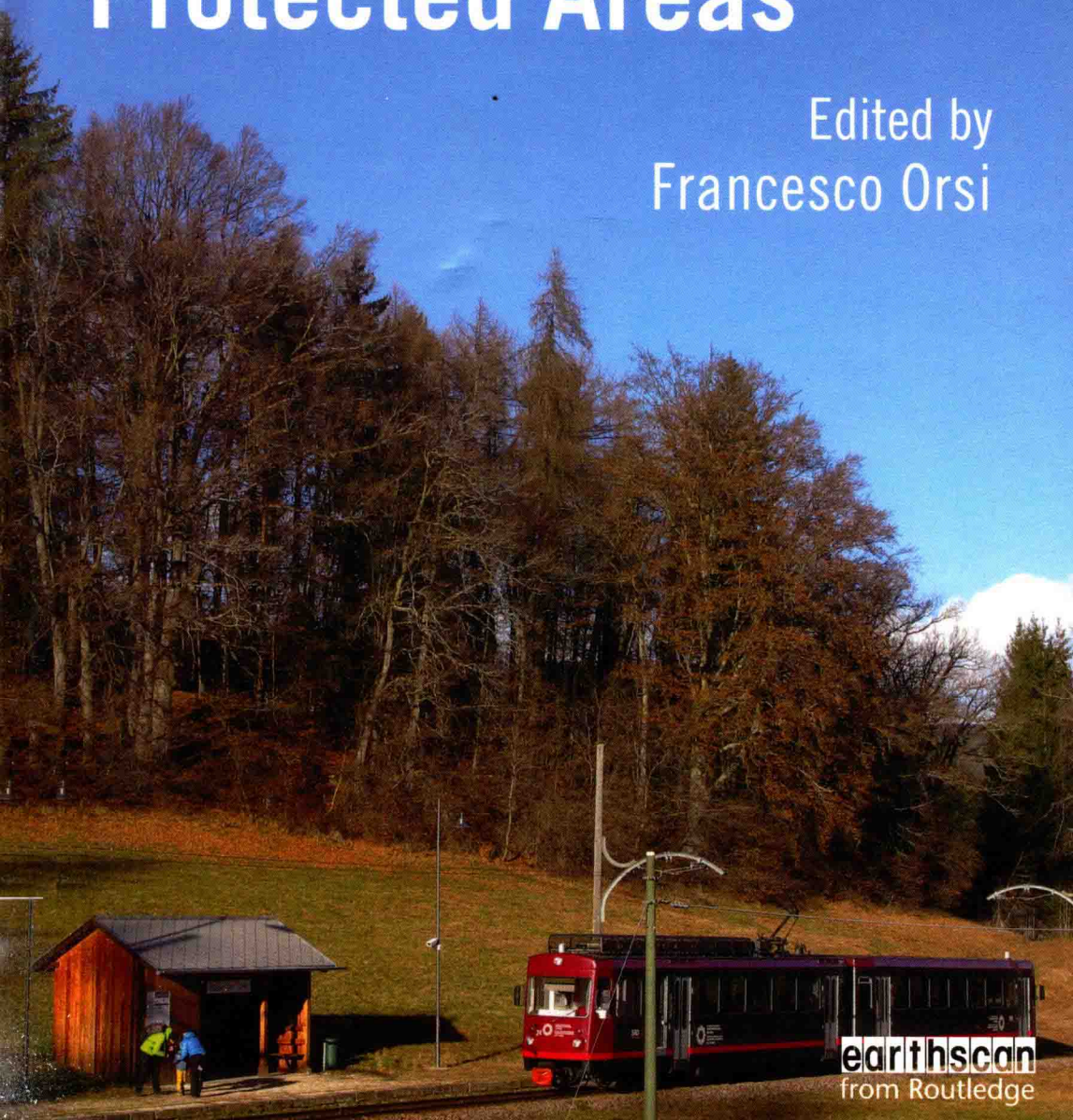


ROUTLEDGE STUDIES IN TRANSPORT, ENVIRONMENT AND DEVELOPMENT

Sustainable Transportation in Natural and Protected Areas

Edited by
Francesco Orsi



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Sustainable Transportation in Natural and Protected Areas

Protected areas are at the centre of nature-based tourism, which is increasingly popular across the world. As visitor numbers increase, so does awareness of the harmful effects that large crowds may have on both natural resources and individuals' recreational experience. This volume considers the challenge of transportation to and within natural and protected areas, the improvement of which has already been recognised as having great potential for mitigating the environmental impacts of tourism.

While several books have focused considerable attention on the management of protected areas in general, little has been said about the specific issue of sustainable transport, an emerging trend that is already reshaping visitation patterns in natural settings. This book provides current knowledge on issues associated with the transportation of visitors in natural and protected areas, and a comprehensive overview of the technical and strategic options available to tackle these issues.

It approaches the subject via three main topics: preferences, or the visitors' attitudes towards transportation; practices, where current approaches are assessed through examples and case studies of successful experiences and methodologies from around the world; and policies, where suggestions and recommendations are put forward for both local scale strategies and broad-scale regulatory action with global relevance. Contributors include academics in the field of natural resource management and tourism, with extensive experience in protected area management and active partnerships with natural park administrations.

Francesco Orsi is Assistant Professor in the Department of Geography at Kansas State University, USA. Previously he was a post-doctoral researcher in the Department of Civil, Environmental and Mechanical Engineering at the University of Trento, Italy.

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1 Introduction

Francesco Orsi

In 1909, after several years of work, the so-called ‘Große Dolomitenstraße’ (the great road of the Dolomites) was finally completed. The road, which measured around 160 kilometres, linked Bolzano/Bozen, Cortina d’Ampezzo and Dobbiaco/Toblach, crossing various mountain passes, and some of the finest dolomitic landscapes in what was then part of the Austro-Hungarian Empire and is today a portion of north-eastern Italy. The father of this endeavour was Theodor Christomannos, born in Vienna in 1854 from a family of Greek origin, who had very well understood the importance of roads to let people know those beautiful mountains and therefore kick-start tourism activities in the area (Christomannos, 1998; Faggioni, 2012). Until the late nineteenth century, in fact, only a few people ventured into the upper part of the dolomitic territory: these were mostly villagers or aristocrats who could hire local guides to climb some seemingly inaccessible peak. The perseverance of Christomannos, along with the support of the Alpine Club (Deutscher und Österreichischer Alpenverein), could eventually convince politicians to sign the approval for construction in 1897. In his writings, Christomannos speculated that, at a good pace, the entire road could be travelled in three days on foot or by coach (Christomannos, 1998). However, things went faster than he had anticipated and, right after completion, the first cars appeared on the road and proved the whole itinerary could be covered in just one day. Tourism development was not long in coming: annual overnight stays in the main villages passed from tens to thousands and, in a matter of few years, tourism had become the main economic activity in the region. Anyway, Christomannos (who died in 1911) could hardly imagine that a century later the thousands of visitors a year would become thousands a day and that the road during July and August would be systematically packed with vehicles of people aiming to pass from one valley to another, reach some popular trailhead or even just gain a nice viewpoint and take a picture. In fact, road traffic has become considerable in recent decades: noise and crowding are now major concerns, and administrators are afraid of the possible repercussions of traffic-related issues on tourism.

The story of Theodor Christomannos and the ‘Große Dolomitenstraße’ reminds us of the inextricable link between nature-based tourism and transportation, and warns about the possible detrimental effects of transportation on the environment and eventually tourism itself. Transportation and transportation-related

infrastructures provide access to nature and allow people to enjoy it. In fact, there would be no hiking in the wilderness without a road and a car to reach a trailhead, there would be no whale watching without a harbour and a boat to sail in whale-inhabited waters, there would be no downhill skiing without cableways to quickly climb slopes. By enabling outdoor recreation, transportation greatly benefits society through the provision of unique experiences to natural areas' visitors and the support of tourism-based economies. Nevertheless, all of these benefits come at a cost as transportation may also negatively affect the areas it serves and the experiences it provides. Cars, buses, ferries, snow coaches and all the transportation modes that people rely on to enjoy natural places bring significant impacts on the environment by releasing pollutants such as carbon dioxide or particulate, which impair organisms and contribute to climate change, and generating noise, which causes considerable disturbance to humans and animals. Transportation infrastructures like roads, railways, harbours and parking lots deeply modify the naturalness of places contributing to harmful processes (e.g. excessive runoff, habitat fragmentation) and influencing visitors' and residents' perception of the environment. Further, by allowing people to reach places more easily or to discover new places, transportation contributes to an increase in human pressure on natural resources and favours overcrowding, which detracts from the quality of the recreational experience.

Nature-based tourism is an extremely popular activity: people search for natural experiences and are willing to travel long distances and spend considerable amounts of time and money to have them. Various studies tell us that nature-based tourism has been growing significantly over the years, with protected areas being the cornerstone of such trend (Buckley, 2000; Balmford *et al.*, 2009). Officially designated areas (e.g. national parks), however, are not the only destination of people seeking opportunities for outdoor recreation: in fact, many non-protected areas worldwide provide excellent opportunities too and receive millions of visits every year. These areas, which we will broadly refer to as 'natural areas' hereafter, are rather heterogeneous in terms of stable human presence (i.e. from semi-wild areas to rural areas) and are often reasonably accessible from urban centres, therefore offering city dwellers convenient getaways, during weekends or short holidays. Due to increasing interest in nature-based recreation, many natural and protected areas, especially in affluent countries, have been experiencing significant transportation-related issues over the last 30 years or so. For example, the Peak District National Park, an easily accessible protected area between the cities of Manchester and Sheffield in the UK, has seen traffic levels on cross-park routes more than double in the period 1980–1999, this causing significant impact on the environment and frustration to both visitors and residents (PDNPA, 2010). The Shuswap Lake, a very popular recreation area in south-central British Columbia (Canada), has recently undergone a dramatic increase in boat traffic, which has resulted in noise, pollution and conflict between different users (e.g. kayakers vs. motorboat users) (Kramer, 2010). Visitors to the Shiretoko National Park, a popular tourist destination in the Hokkaido Island (Japan), experience traffic jams that can last for hours as they attempt to approach some of the most scenic spots with private vehicles (Ishikawa *et al.*, 2013).

The recognition of the seriousness of issues like those described in the examples above has raised global attention on the need for sustainable transportation systems in natural settings. Hence, managers of natural and protected areas worldwide have increasingly adopted rigorous measures to regulate the use of private motorized vehicles and foster a progressive shift to alternative forms of mobility. Among other initiatives, two can be cited for their extent and success: the Alternative Transportation Program (ATP) of the United States National Park Service (NPS) and the 'Alpine Pearls' project in Europe. The former, which was launched in 1998, is aimed at coordinating projects and policies for the implementation of alternative transportation systems (ATS) to and within units of the NPS (<http://www.nps.gov.transportation/index.html>). The latter, which is the outcome of two European Union's projects (Alps Mobility and Alps Mobility II – Alpine Pearls), started in 2006 as a cooperation between 29 municipalities in six Alpine countries (Austria, France, Germany, Italy, Slovenia, Switzerland) to promote soft mobility through improved public transportation systems (<http://www.alpine-pearls.com>). These and other experiences have shown that tackling some of the greatest issues commonly associated with transportation (e.g. traffic congestion, air pollution, noise) is actually possible and that visitors are willing to rethink their behaviour in order to address such issues. They have also shown that the use of alternative transportation makes it easier for managers to control visitor flows and use levels (e.g. a bus system lets managers know exactly how many people will get to a destination every hour), thus enhancing the protection of natural resources and recreational experiences. Nevertheless, designing and implementing truly sustainable transportation systems in natural settings is a hard challenge involving a wide array of intertwined environmental and socio-economic considerations that deserve great attention and in-depth technical knowledge.

This book explores the issues and opportunities associated with making transportation in natural and protected areas sustainable, and provides a set of concepts and strategic options for understanding the context and setting plans for action. The volume, which follows in the footsteps of that by Manning *et al.* (2014), adds new insights about the socio-economic implications of transportation in areas where people live and work, and provides an overview of sustainable transportation experiences in natural and protected areas outside the USA. The book hosts contributions from leading scholars working in the fields of transportation, outdoor recreation management and tourism. The structure of the book encompasses five parts, of which three – exploring preferences, practices and policies – constitute the core of the volume.

The first part of the book leads the reader through the concept of sustainable transportation, its complex space and time implications, its peculiar requisites in natural settings, and provides an overview of alternative transportation modes and how these should be used to assure sustainable transportation in natural areas.

Chapter 2, by Francesco Orsi, starts from the concept of sustainability to provide a tentative definition of sustainable transportation in natural settings. This is achieved by listing a set of nine sustainability requisites that transportation should fulfil. Such requisites pertain to the environmental externalities of transportation