
Road Ecology

Science and Solutions

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Foreword

For a generation, North Americans have been in simultaneous pursuit of twin goals that are inherently in conflict. On the one hand, they seek to harvest the manifold benefits of an expanding road system, including a strong economy, more jobs, and better access to schools, friends, family, recreation, and cheaper land on which to build ever-larger homes. On the other, they have growing concerns about threats to the natural environment, including air and water quality, wildlife habitat, loss of species, and expanding urban encroachment on rural landscapes. They pursue the former goal by increasing their use of larger and larger vehicles and their demand for more roads to accommodate them. They pursue the latter by demanding more regulation of vehicles, policies to discourage auto use and increase use of mass transit, and stricter controls on local land development. Not surprisingly, these conflicting demands clash wherever transportation decisions are made, whether at the federal, state, or local levels. Thus analysis paralysis and stalemate often result.

Enmeshed in this gloomy scene, some choose to curse the darkness. But others seek to light a candle. Richard Forman, Daniel Sperling, and their colleagues have chosen the latter course. Assembling a team of experts from all sides of this tangle, they have neatly sidestepped most intractable parts of the struggle by accepting that there are already many cars, trucks, and roads and that, given continuing growth in population, there are likely to be more. Then they consider what can be done to mitigate some of the weightier problems, whether caused by the existing network or by future additions. The authors describe the tentacles of the road system as wrapping themselves around the land in an "uneasy embrace," in which nature affects the roads while the roads influence the land in countless ways.

For more than a century, the transportation community has been increasing its knowledge of how to guard the road system against nature's assaults, through better planning, design, materials, and construction. But we are just beginning to recognize the many ways that roads assault nature, and conse-

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quently realize our need to understand these phenomena so as to mitigate negative outcomes.

This book proclaims this need and elaborates a clear call for a new field of study, which is identified by the authors as "road ecology." For some time, existing requirements to assess environmental impacts before new road projects are undertaken have resulted in the development of a group of environmental experts skilled in the conduct of independent ad hoc studies of proposed projects. Their work has produced a process and a body of literature and has doubtless improved the design of many poorly conceived schemes. But this book makes clear that ad hoc environmental analysis has left many gaps in our understanding of effective mitigation for individual road projects and is unlikely to ever lead to effective mitigation of the macro effects of a growing system of roads.

By looking at problems associated with vegetation, wildlife, aquatic ecosystems, wind and atmospheric effects, and flows of water, sediment, and chemicals, the authors have described the issues and provided a target for researchers in many fields to focus their efforts. Until now, the fields of opportunity in road ecology have been ripe but the workers few. Let us hope that this book will provide the incentive and direction that will lead to a new generation of leaders and specialists dedicated to finding answers to these pressing problems.

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