

Contents

Foreword, RICHARD T.T. FORMAN	vii
Preface	xi
Acknowledgments	xv
Contributors	xxi
Section I. Introduction	1
1. Central Concepts and Issues of Landscape Ecology JOHN A. WIENS	3
2. Central Concepts and Issues of Biological Conservation RICHARD L. KNIGHT AND PETER B. LANDRES	22
3. Broad-Scale Ecological Science and Its Application BARRY R. NOON AND VIRGINIA H. DALE	34
Section II. Multiple Scales, Connectivity, and Organism Movement	53
4. Spatial Factors Affecting Organism Occurrence, Movement, and Conservation: Introduction to Section II KEVIN J. GUTZWILLER	55
5. Patch-, Landscape-, and Regional-Scale Effects on Biota KATHRYN FREEMARK, DANIEL BERT, AND MARC-ANDRÉ VILLARD	58
6. Corridors and Species Dispersal CLAIRE C. VOS, HANS BAVECO, AND CARLA J. GRASHOF-BOKDAM	84

7. Using Percolation Theory to Assess Landscape Connectivity and Effects of Habitat Fragmentation KIMBERLY A. WITH	105
8. Landscape Connections and Genetic Diversity HUGH B. BRITTEN AND RICHARD J. BAKER	131
9. Habitat Networks and Biological Conservation RICHARD J. HOBBS	150
10. Landscape Invasibility by Exotic Species JOHN L. VANKAT AND D. GRAHAM ROY	171
Section III. Landscape Change	193
11. Conservation in Human-Altered Landscapes: Introduction to Section III KEVIN J. GUTZWILLER	195
12. Human Conversion of Terrestrial Habitats PETER AUGUST, LOUIS IVERSON, AND JARUNEE NUGRANAD	198
13. Impacts of Landscape Transformation by Roads LAURIE W. CARR, LENORE FAHRIG, AND SHEALAGH E. POPE	225
14. Landscape Pattern, Timber Extraction, and Biological Conservation ERIC J. GUSTAFSON AND NANCY DIAZ	244
15. Animal Behavior in Fragmented Landscapes RICHARD H. YAHNER AND CAROLYN G. MAHAN	266
16. Effects of Landscape Change on the Physical and Chemical Components of Aquatic Ecosystems CAROLYN T. HUNSAKER AND ROBERT M. HUGHES	286
17. Effects of Landscape Change on Aquatic Biodiversity and Biointegrity ROBERT M. HUGHES AND CAROLYN T. HUNSAKER	309
18. Time Lags in Metapopulation Responses to Landscape Change KEES (C.J.) NAGELKERKE, JANA VERBOOM, FRANK VAN DEN BOSCH, AND KAREN VAN DE WOLFSHAAR	330
Section IV. Conservation Planning	355
19. Using Broad-Scale Ecological Information in Conservation Planning: Introduction to Section IV KEVIN J. GUTZWILLER	357
20. Landscape and Regional Planning for Conservation: Issues and Practicalities ROBERT J. LAMBECK AND RICHARD J. HOBBS	360

	Contents	xix
21. Assessing the Conservation Potential of Habitat Networks PAUL OPDAM		381
22. Use of Metapopulation Models in Conservation Planning DAVID R. BREININGER, MARK A. BURGMAN, H. RESIT AKÇAKAYA, AND MICHAEL A. O'CONNELL		405
23. Prescribing Habitat Layouts: Analysis of Optimal Placement for Landscape Planning CURTIS H. FLATHER, MICHAEL BEVERS, AND JOHN HOF		428
24. Aquatic Conservation Planning: Using Landscape Maps to Predict Ecological Reference Conditions for Specific Waters PAUL W. SEELBACH, MICHAEL J. WILEY, PATRICIA A. SORANNO, AND MARY T. BREMIGAN		454
Section V. Synthesis and Conclusions		479
25. Applying Landscape Ecology in Biological Conservation: Principles, Constraints, and Prospects KEVIN J. GUTZWILLER		481
Index		497