Land Mosaics: The Ecology of Landscapes and Regions


Land resource exploitation becomes more and more intensive with the world population increasing rapidly. Today, less than 10% of the land surface remains in a mostly unchanged state, and only 4% has been set aside in natural reserves. Ecologists increasingly recognize that they must extend their science to embrace artificial environments and to develop these ideas into the discipline of landscape ecology. The book Land Mosaics: The Ecology of Landscapes and Regions is a new publication in this field. The author of the book is a notable landscape ecologist.

Mosaic patterns are found at all spatial scales. Land mosaics, however, are often measured at the scale of hundreds, even thousands, of kilometers. Thus, landscapes, regions, and continents are three scales of land mosaics. The mosaic pattern in the central feature of land and the ecological structure, function, and change of the mosaic is the central paradigm of the book.

The book is organized into five parts and 14 chapters. Part 1 introduces the foundations of landscapes and regions. Since a mosaic at any scale may be composed of patches, corridors, and matrix, they are the basic spatial elements of any land mosaic patterns. In this part, landscape is defined as a mosaic where a cluster of local ecosystems is repeated in similar form over a kilometers wide area. Region is defined as an area composed of landscapes with the same macroclimate and tied together by human activities. Some basic concepts and research methods dealing with landscape ecology and regional ecology are introduced.

Part 2 discusses patches, one of the basic landscape elements. A patch is a relatively homogeneous nonlinear area that differs from its surroundings. The patch dynamics, patch side effects on ecosystems and biodiversity, and genetics in a patch are discussed in Chapter 2. The structure and functions of boundaries, the edge effects, and width and curvilinearity of boundaries are introduced in Chapter 3. The patch shape and its ecological effects are examined in Chapter 4.

Corridors, another basic landscape element, are discussed in Part 3. In land mosaics, corridor is a strip of a particular type that differs from the adjacent land on both sides. Chapter 5 presents the general structure of corridors. Five specific ecological functions of corridors (habitat, conduit, filter, source, and sink) are explored. The structure and functions of windbreaks, hedgerows, and woodland corridors are presented in Chapter 6, and stream and river corridors are discussed in Chapter 7. Corridors are also commonly interconnected to form networks, as explored in Chapter 8.

Mosaics and flows are discussed in Part 4. Chapter 9 focuses on clusters or configurations of ecosystems where spatial arrangement is critical to movement, and spotlight the structure of whole landscape and regional mosaics. The wind and water flows and species movement in mosaics are presented in Chapters 10 and 11, respectively.

Part 5 focuses explicitly on changing mosaics. Chapter 12 examines change driven by national processes or by mainly unplanned human activities and the consequential ecological effects in land mosaics. Chapter 13 synthesizes and builds on the concepts and literature of Chapter 1 to 12, and focuses on the familiar and traditional day-to-day and year-to-year issues faced by planners, designers, conservationists, managers and policy makers. Chapter 14 also focuses on planning and management, but with a sustainability perspective that spans human generations.

Nearly 2000 references are cited in this book. Figures and tables are of very good quality. Many chapters contain an appendix to illustrate some basic concepts, equations, and methods that relate to contents of the chapter. Many sidebars are included in the book to provide brief sketches of related current advances in other scientific fields.

This book provides a good introduction as well as a scientific review of the new disciplines of landscape ecology. This is an appealing and highly readable text on this major emerging field. I highly recommend this book to all students, researchers, and policy makers. Chapter 14 also focuses on planning and management, but with a sustainability perspective that spans human generations.

Sustainable Development


The authors intend this book to be... targeted at Masters degree students in the broad field of Environmental Sciences and Management and their teachers and it is reviewed in...