

Contents

Series Preface	v
Preface	vii
Contributors	xi

Part I Theory and Methods

1	Introduction: Spatially Explicit Landscape Simulation Models	3
	ROBERT COSTANZA AND ALEXEY VOINOV	
2	Spatial Simulation Using the SME	21
	THOMAS MAXWELL, ALEXEY VOINOV, AND ROBERT COSTANZA	
3	Modular Ecosystem Modeling	43
	ALEXEY VOINOV, CARL FITZ, ROELOF M.J. BOUMANS, AND ROBERT COSTANZA	
4	Calibration of Large Spatial Models: A Multistage, Multiobjective Optimization Technique	77
	FERDINANDO VILLA, ALEXEY VOINOV, CARL FITZ, AND ROBERT COSTANZA	

Part II Case Studies

5	Habitat Changes in the Mississippi Delta: Future Scenarios and Alternatives	119
	ENRIQUE REYES, JAY F. MARTIN, MARY L. WHITE, JOHN W. DAY, AND G. PAUL KEMP	
6	Development and Application of the Everglades Landscape Model	143
	CARL FITZ, FRED SKLAR, T. WARING, ALEXEY VOINOV, ROBERT COSTANZA, AND THOMAS MAXWELL	
7	Spatial Modeling of Eelgrass Distribution in Great Bay, New Hampshire	173
	PAMELA BEHM, ROELOF M.J. BOUMANS, AND FREDERICK T. SHORT	
8	The Patuxent Landscape Model: Integrated Modeling of a Watershed	197
	ALEXEY VOINOV, ROBERT COSTANZA, ROELOF M.J. BOUMANS, THOMAS MAXWELL, AND HELENA VOINOV	
9	The Fort Hood Avian Simulation Model-V: A Spatially Explicit Population Viability Model for Two Endangered Species	233
	ANN-MARIE TRAME SHAPIRO, STEVEN J. HARPER, AND JAMES D. WESTERVELT	
10	Simulating Land Use Alternatives and Their Impacts on a Desert Tortoise Population in the Mojave Desert, California	249
	JOCELYN L. AYCRIGG, STEVEN J. HARPER, AND JAMES D. WESTERVELT	
11	A Dynamic Model of the Spatial Spread of an Infectious Disease: The Case of Fox Rabies in Illinois	275
	BRIAN DEAL, CHERYL FARELLO, MARY LANCASTER, THOMAS KOMPARE, AND BRUCE HANNON	
12	Landscape Optimization: Applications of a Spatial Ecosystem Model	301
	RALF SEPPELT AND ALEXEY VOINOV	
	Index	327