CONTENTS

Preface
Acknowledgments

1. A Generic Bioeconomics Model
   1.1 What is Conservation?
   1.2 What is a Model?
      Exercises
   1.3 A Dynamic Resource Harvesting Model
      Exercises
   1.4 An Economic Model
      Exercises
   1.5 A Dynamic Optimization Model
      Exercises
   1.6 A Model of Individual Behavior
      Exercises
   1.7 Individual Vessel Quotas
      Exercises
   1.8 The Veil of Uncertainty
      Exercises
1.9 Other Resources

2 Dynamic Optimization

2.1 Constrained Optimization

2.2 Optimal Control Theory in One Dimension

2.3 Nonlinear Control Problems

2.4 Discrete-time Optimal Control

2.5 Appenix

3 Basic Economic Concepts

3.1 Interest and Discounting

3.2 Supply and Demand

3.3 Demand Limited Economic Equilibrium

3.4 Optimal Discounting Strategies

3.5 External Costs

3.6 Competition, Cooperation, and the Theory of Values

3.7 The Economics of Uncertainty

4 Investing in Lowcosting Capacity

4.1 Optimal Lowcosting Capacity

4.2 Investment Decisions under Competition

4.3 Eliminating Nonsensical Capacity

4.4 Appendix: Optimal Investment
2.2 Predator-prey Models: 309
Exercises: 316

2.3 Mixed-species Harvesting: 317
Exercises: 323

9 Synopses: 328

Problem Solutions: 329

References: 355

Index: 365