

Contents

Acknowledgments

ix

Part One Foundations

1

1 Introduction

3

Why Restore Wetlands?

5

Fundamental Characteristics of Wetlands

7

Setting Realistic Goals

8

Theory and Practice

10

References

18

2 Definitions

23

Introduction

23

Wetland Characteristics

24

Definitions

30

Classification Systems

32

Legal Frameworks

35

Wetland Ecosystem Services

40

References

42

3 Ecological Theory and Restoration

47

Introduction

47

Disturbance

48

Dispersal and Colonization

51

Succession

53

Ecosystem Development

60

Biological Invasions

62

References

65

4 Consideration of the Landscape

73

Introduction

73

Stressors of Natural, Agricultural, and Urban Landscapes

74

Wetland Functions and Placement on the Landscape

76

The Need for a Watershed Approach

78

Selecting and Prioritizing Sites for Restoration

80

References

86

Part Two	Restoration of Freshwater Wetlands	93
5	Inland Marshes	95
	Introduction	95
	Theory	103
	Practice	105
	References	119
6	Forested Wetlands	129
	Introduction	129
	Theory	138
	Practice	139
	References	152
7	Peatlands	161
	Introduction	161
	Peat—Origin, Composition, and Geographic Distribution	163
	Peatland Succession	165
	Theory	167
	Practice	170
	References	183
Part Three	Restoration of Estuarine Wetlands	193
8	Tidal Marshes	195
	Introduction	195
	Theory	202
	Practice	203
	References	221
9	Mangroves	233
	Introduction	233
	Theory	240
	Practice	241
	References	255
Part Four	From Theory to Practice	265
10	Measuring Success: Performance Standards and Trajectories of Ecosystem Development	267
	Introduction	267
	Performance Standards	268
	Trajectories of Ecosystem Development	276
	References	283

11 Case Studies	289
Introduction	289
Saline Tidal Marshes	289
Freshwater Marshes	293
Peat Bogs	296
Forested Wetlands	298
Urban Wetlands	301
References	305
12 Restoration on a Grand Scale	309
Saline Tidal Marshes (Delaware Bay, USA)	309
Mesopotamian Marshes (Iraq)	311
Freshwater Marshes (Yellow River Delta, China)	313
Coastal Marshes (Mississippi River Delta, Louisiana)	317
Mangrove Reforestation (Mekong River Delta, Vietnam)	320
References	322
13 Future of Wetland Restoration	327
Introduction	327
Population Growth and Global Food Demand	328
Eutrophication	328
Restoration in an Urban World	330
Climate Change	330
Wetland Restoration in the Twenty-First Century	334
References	336
Index	341