

Contents

Technical boxes	viii
Preface to the third edition	ix
Acknowledgements	xi
About the companion website	xii
1 Introduction	1
Sources of information on past environments	2
<i>Nature and society</i>	5
The significance of the Holocene	6
References	7
2 Reconstructing Holocene environments	10
Dating the past	10
Historical and archaeological dating	11
Radiometric dating methods	13
Dendrochronology and radiocarbon calibration	19
Other dating methods	25
Conclusion	28
Palaeoecological techniques	32
Pollen analysis	33
Plant remains	40
Creatures great and small	44
Freshwater and marine organisms	46
Geological techniques	47
Ice and ocean	51
Stable isotope analysis	53
Geomorphology and climate	55
<i>Geo-archaeology</i>	59
Modelling the past	61
Models of environmental reconstruction	61
Computer model simulations	64
Conclusion	66
References	66
3 The Pleistocene prelude (>11 700 Cal. yr BP)	83
Ice Age environments	83
The glacial–interglacial cycle	83
Understanding the causes of long-term climatic change	88
The Last Glacial Maximum and after	92

The terminal Pleistocene (15 000–11 700 Cal. yr BP)	96
The Late Glacial in the North Atlantic region	96
Terminal Pleistocene climatic oscillation: A globally synchronous event?	102
Adjustment of geomorphic systems	105
Human ecology at the end of the Pleistocene	107
Megafaunal extinctions	110
References	115
4 Early Holocene adaptations (11 700–6000 Cal. yr BP)	128
Changes in the physical environment	128
Ice sheets and sea levels	128
Human adaptations to coastal environments	131
Lake ontogeny and soil development	135
The return of the forests	140
Europe	140
Eastern North America	142
Dry Mediterranean woodland	144
Tropical forests	145
Factors affecting forest re-advance	146
The ecology of Mesolithic Europe	151
The early Holocene in the tropics	154
Saharan palaeoecology	155
Early Holocene climates: Pattern and process	158
Conclusion	165
References	167
5 The first farmers	178
Agricultural origins	178
Southwest Asia	179
China and South Asia	184
Mesoamerica	186
Tropical domesticates	190
Independent innovation or diffusion?	193
The role of environmental change in early agriculture	194
Early agricultural impacts	199
European agricultural dispersals	201
Ecological consequences of early European agriculture	204
Conclusion	207
References	208
6 The taming of nature (6000–1000 Cal. yr BP)	217
Introduction	217
Changes in the natural environment	219
Climate and vegetation	219
The origin and development of blanket mires	228
Coasts and rivers	232

Cultural evolution	235
Hydraulic civilisation in Mesopotamia	236
Environmental impact in pre-Hispanic Mesoamerica	239
Pastoral nomadism	241
Mediterranean ecosystems	242
The making of the landscape: The British Isles	249
The primaeval forest	250
Shaugh Moor – A Bronze Age landscape	254
The environmental impact of permanent agricultural clearance	256
Conclusion	261
References	262
7 The impact of modern times (1000–0 Cal. yr BP)	277
Introduction	277
Climatic changes in historical times	280
Climate history and global warming	282
Consequences of Medieval and Little Ice Age climate change	288
Expansion at the periphery	291
Conquest of the Northlands	291
The Pacific	295
Ecological imperialism	300
Land-use history and soil erosion	303
Pollution histories	312
Eutrophication: natural or cultural?	312
Acidification and atmospheric pollution	318
References	323
8 The environmental future: A Holocene perspective	336
Holocene environmental crises	340
Environmental conservation and Holocene	
Environmental history	343
References	347
Appendix: Calibration table for radiocarbon ages	352
Glossary	353
Index	358