

Routledge Introductions to Environment Series

Biodiversity and Conservation

Second edition

Michael J. Jeffries

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Biodiversity and Conservation

The value of planet Earth's biodiversity has been estimated at US\$16–54 trillion per year. Trillions of dollars of food, raw materials, pharmaceuticals, oxygen production, soil nutrient enrichment, climate regulation and sheer aesthetic delight and wonder. We are reliant on biodiversity to keep the planet healthy and resilient.

The second edition of *Biodiversity and Conservation* continues to offer an introductory guide through the maze of interdisciplinary themes that combine under the concept of 'biodiversity'. Using engaging examples throughout, the text combines biological sciences with its insights into the origins, variety and distribution of biodiversity, with the analysis of the social and political context, the threats to and opportunities for the survival of natural systems. Whilst retaining its existing structure the new edition reflects advances that have demonstrated the importance of living systems as drivers of environmental services vital to human health and security. The processes driving the creation and distribution of biodiversity have been updated to reflect new research. The final chapter has been revised to tackle more explicitly the contrasting approaches to conservation.

The text remains the only introductory book bringing together the full range of science and social sciences, theory and practice that goes to make up biodiversity and conservation.

Michael J. Jeffries is Senior Lecturer in Ecology at Northumbria University.

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Biodiversity and Conservation

Second edition

Michael J. Jeffries

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Contents

<i>Series editors' preface</i>	vii
<i>List of plates</i>	ix
<i>List of figures</i>	xi
<i>List of tables</i>	xiii
<i>List of boxes</i>	xv
<i>Author's Preface</i>	xvii
The Rio Earth Summit	1
The junket in Jo'burg	2
Chapter 1 Biodiversity: from concept to crisis	5
The road to Rio: the conceptual history of biodiversity	5
Biodiversity through time	19
The current crisis	37
Summary	42
Discussion questions	42
Further reading	42
Chapter 2 The creation of biodiversity	44
Evolution, ecology and the origins of confusion	44
The ecology of biodiversity	47
Ecological renaissance: emerging general rules	69
The evolution of biodiversity	70
What do all those species do? Part I: biodiversity and ecosystem function	77
What do all those species do? Part II: ecosystem integrity and ecosystem health	79
The imbalance of nature	80
Summary	80
Discussion questions	80
Further reading	81
Chapter 3 An inventory of planet Earth	82
Types of biodiversity	83
Measuring biodiversity	96
Global biodiversity patterns	106

	More things in Heaven and Earth . . .	124
	Summary	125
	Discussion questions	125
	Further reading	125
Chapter 4	Extinction	127
	Current losses of biodiversity	127
	The causes of extinction	138
	Wildlife in wartime	151
	Valuing biodiversity: economics for conservation	152
	Conservation's targets	164
	Summary	165
	Discussion questions	165
	Further reading	165
Chapter 5	The conservation of biodiversity	167
	Evolving concepts for biodiversity conservation	168
	The legislative framework	174
	Protected areas	184
	Ex-situ conservation	189
	Mars calling? Mu Arae beckons	202
	Summary	202
	Discussion questions	202
	Further reading	202
	<i>Glossary</i>	204
	<i>Further reading</i>	213
	<i>Bibliography</i>	223
	<i>Index</i>	227



Series editors' preface ***Environmental Science*** ***titles***

The last few years have witnessed tremendous changes in the syllabi of environmentally related courses at Advanced Level and in tertiary education. Moreover, there have been major alterations in the way degree and diploma courses are organised in colleges and universities. Syllabus changes reflect the increasing interest in environmental issues, their significance in a political context and their increasing relevance in everyday life. Consequently, the 'environment' has become a focus not only in courses traditionally concerned with geography, environmental science and ecology but also in agriculture, economics, politics, law, sociology, chemistry, physics, biology and philosophy. Simultaneously, changes in course organisation have occurred in order to facilitate both generalisation and specialisation; increasing flexibility within and between institutions is encouraging diversification and especially the facilitation of teaching via modularisation. The latter involves the compartmentalisation of information which is presented in short, concentrated courses that, on the one hand are self-contained but which, on the other hand, are related to prerequisite parallel and/or advanced modules.

These innovations in curricula and their organisation have caused teachers, academics and publishers to reappraise the style and content of published works. While many traditionally styled texts dealing with a well-defined discipline, e.g. physical geography or ecology, remain apposite there is a mounting demand for short, concise and specifically focused texts suitable for modular degree/diploma courses. In order to accommodate these needs Routledge has devised the Environment Series which comprises Environmental Science and Environmental Studies. The former broadly encompasses subject matter which pertains to the nature and operation of the environment and the latter concerns the human dimension as a dominant force within, and a recipient of, environmental processes and change. Although this distinction is made, it is purely arbitrary and for practical rather than theoretical purposes; it does not deny the holistic nature of the environment and its all-pervading significance. Indeed, every effort has been made by authors to refer to such interrelationships and provide information to expedite further study.

This series is intended to fire the enthusiasm of students and their teachers/lecturers. Each text is well illustrated and numerous case studies are provided to underpin general theory. Further reading is also furnished to assist those who wish to reinforce and extend their studies. The authors, editors and publishers have made every effort to provide a series of exciting and innovative texts that will not only offer invaluable learning resources and supply a teaching manual but also act as a source of inspiration.

A. M. Mannion and Rita Gardner

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Note on the text

Bold is used in the text to denote words defined in the Glossary. It is also used to denote key terms.



Plates

1	The O'Hara farm, Galway	7
2	Scotswood Community Garden, Newcastle upon Tyne	12
3	Greenpeace anti-whaling protest	14
4	Intact tropical rainforest	14
5	Human impact on rainforest	17
6	Knock-on effect of rainforest logging: logged rainforest replanted with cannabis	18
7	Ecotron experiment	45
8	A diversity gradient with altitude	52
9	A species-rich marsh, Aberlady Bay, Scotland, a Local Nature Reserve	57
10	Habitat heterogeneity	60
11	Habitat complexity	62
12	Disturbance and succession	67
13	Mount Kupe, part of the Cameroon Mountain Endemic Bird Area	108
14	The value of wetlands: direct use production	117
15	The value of wetlands: ecosystem services	117
16	<i>Partula turgida</i>	131
17	Habitat fragmentation	139
18	Nature reserve wardens intercept illegal logging in Mozambique	148
19	Grey Seals on the Farne Islands, north east England	157
20	Mount Kupe Forest Project, Cameroon	161
21	Mount Kupe Forest Project	161
22	Elephants in Zimbabwe	174
23	The author wrestling with a would-be Zimbabwean handbag at a crocodile farm at Victoria Falls	179
24	A campsite in a Zimbabwean National Park	192
25	<i>Partula</i> snail reintroduction	195
26	Jersey Wildlife Preservation Trust training programme	198
27	The Penguin Parade, Edinburgh Zoo	198



Figures

1.1	The appearance and increasing usage of the term biodiversity	13
1.2	The geological calendar	21
1.3	<i>Mixotricha paradoxa</i>	24
1.4	Ediacaran animals	26
1.5	<i>Hallucigenia sparsa</i>	28
1.6	Increasing insect family diversity through time	29
1.7	Animal family diversity since the Cambrian explosion	29
1.8	Vascular plant diversity since the Devonian period	30
1.9	Extinction rates of marine animal families since the Cambrian period	33
1.10	Simplified cross-section of the Chicxulub crater site, Mexico	33
1.11	The Chicxulub impact site and Cretaceous/Tertiary continents	34
1.12	Simplified diagram of the 'Iridium anomaly spike' from Alvarez <i>et al.</i>	35
1.13	Gastric brooding frog car bumper sticker	38
1.14	Coral bleaching incidents, 1979–90	41
2.1	Distribution of the Southern Beech, genus <i>Nothofagus</i>	50
2.2	Elevational gradient of Peruvian bats and birds	51
2.3	Species:area and species:isolation patterns for butterflies of the Pacific islands	54
2.4	A metapopulation of greater waterboatmen, <i>Notonecta</i> sp.	56
2.5	Habitat heterogeneity promotes species diversity	59
2.6	Habitat complexity promotes species diversity	61
2.7	Competition between two beetle species	64
2.8	Trophic interactions	66
2.9	Huston's 1994 synthesis of disturbance, population growth and interactions as determinants of local diversity	68
2.10	Allopatric speciation	74
2.11	Sympatric speciation	75
3.1	Whittaker's five kingdoms of life and recent three domain revision	88
3.2	The Udzungwa partridge	97
3.3	Estimates of described and likely totals of species for selected taxa	98
3.4	Proportions of different taxa from described species	99
3.5	Proportions of different taxa from conservative estimates of actual total numbers of species	100
3.6	Description rates for Corvidae (crows) and Lycaenopsis (part of the blue butterfly family)	101
3.7	May's 'crude estimate' of the abundance of terrestrial animals of different body sizes	102
3.8	Top fifteen countries for endemic vertebrates	107
3.9	African Endemic Bird Areas	109

xii • Figures

3.10	Latitudinal gradient of numbers of Endemic Bird Areas	110
3.11	African Centres of Plant Diversity	112
3.12	Global biogeographical realms	113
3.13	Gross global vegetation classification	114
3.14	Latitudinal extent of different wetland types	116
3.15	Extent of dambos in Zimbabwe	120
3.16	Global biodiversity hot spots	121
3.17	Centres of origin of cultivated plants	122
4.1	Historic extinctions in the wake of humanity's advance across the planet	128
4.2	Bird extinctions on Pacific islands	129
4.3	Reconstructions of the dodo	132
4.4	Known animal extinctions from islands and continents since 1600	132
4.5	Models of species loss following forest clearance	133
4.6	Helmeted honeyeater colony sites	141
4.7	Hurricane impact on bat numbers in American Samoa	142
4.8	Zimbabwean CAMPFIRE literature: wildlife = money	163
5.1	Zimbabwean CAMPFIRE literature: conservation's multiple foci	168
5.2	UK National Parks and Areas of Outstanding Natural Beauty	171
5.3	Extent of Zimbabwean protected areas	173
5.4	Global extent of protected areas	190



Tables

1.1	Major themes within biodiversity	8
1.2	Historic, current and foreseeable importance of biodiversity to humans	20
3.1	Categories and definitions of biodiversity	83
3.2	The taxonomic hierarchy	89
3.3	Surviving and extinct cattle and sheep breeds	94
3.4	Numbers of described species and estimates of actual numbers for selected taxa	98
3.5	Bird taxonomic diversity of top five South American countries plus Galapagos Islands	107
3.6	Five countries with largest numbers of Endemic Bird Areas	109
3.7	Endemic Bird Areas of Zimbabwe, Cameroon, Mauritius and UK	110
3.8	Flowering plant diversity, selected countries	111
3.9	Example vegetation types and extent from Udvardy's system	114
3.10	Extent of freshwater wetlands, globally and in Europe versus Africa	115
3.11	Example of biodiversity continental hotspots	121
3.12	Diversity, threat and uniqueness of three continental islands, with Kenya as a comparison	123
3.13	Diversity, threat and uniqueness of three oceanic island systems	124
4.1	Known extinctions up to 1995	130
4.2	Loss rates of example ecosystems, based on Udvardy's global classification	136
4.3	Summary data for the value of selected ecosystem services	159
5.1	Extent, use and loss of forests from around the world	184
5.2	Historic examples of protected areas and allied laws	185
5.3	Numbers of IUCN category I–V reserves globally, in Europe and in Africa	192
5.4	Extent of land surface included within protected areas across selected global regions	192
5.5	Extent of selected global terrestrial biomes within protected areas	193
5.6	Numbers of individuals held in zoos versus numbers actually born in zoos for five charismatic mammals	197



Boxes

1	The nature of television	16
2	<i>Mixotricha paradoxa</i> : a creature or community?	24
3	The Garden of Ediacara	26
4	<i>Hallucigenia sparsa</i> : weird wonder or upside-down worm?	28
5	Evidence for the K/T impact hypothesis	32
6	Characteristics of mass extinctions	36
7	Genetic biodiversity: methods and measures	84
8	Microbial metabolic diversity	85
9	Classifications of life through European history	87
10	Types of biodiversity: the example of ponds in the United Kingdom	95
11	New species of bird: the Udzungwa partridge	97
12	Erwin's famous 30 million species of arthropod	102
13	Soil fauna: the other last biotic frontier	103
14	The role of wetlands: global and national ecosystem services	119
15	The Clovis overkill extinctions	128
16	A documented extinction: <i>Partula turgida</i> , a snail	131
17	Red Data categories	137
18	The plight of Asia's vultures	144
19	The fatal lure of the Grey Wolf	145
20	Human impacts: greed and need – the bushmeat crisis	146
21	Human impacts: economic and social forces – the passenger pigeon and American buffalo	149
22	The value of conservation in the United Kingdom	156
23	'Poaching is wiping out Zimbabwe's wildlife': Zimbabwe Conservation Task Force 2004	164
24	A Species Action Plan for Desmoulin's whorl snail	175
25	A costed Habitat Action Plan for the Fens	175
26	Rio Convention caveats	180
27	Reconnecting and restoring	188
28	IUCN protected area management categories	191



Author's preface

April 2004 – and I was marooned in Scotswood Natural Community Garden in the West End of Newcastle upon Tyne, north-east England, the minibus due to give me a lift home having vanished. Newcastle is a top ten global party city according to Condé Nast's *Traveller* magazine with a mile of glittering pubs and clubs along its Quayside but Scotswood, barely ten minutes stroll away, may as well be on another continent as far as the party city revellers are concerned. Yet packed into this tiny garden in the heart of one of the UK's most deprived areas you can find a wealth of crops grown by permaculture used to promote healthy eating, a reed bed system used to filter and clean the streams, burrowing bees dancing across sunny banks of wild flowers, a dragon woven from willow stems through which children can crawl and one of the best ponds for miles around, teeming with plants and minibeasts. The garden has hosted workshops on traditional crafts, celebrated the apple and used an outdoor oven to bring in disparate and sometimes mutually suspicious communities to build bridges. Earth care, people care and fair share as their website puts it. As for me – I wasn't quite as stuck as it seemed because the No. 38 bus into the city centre stops nearby and there was the Garden's homemade apple and walnut cake to keep me going. Food, wildlife, social equity, environmental quality, health, conservation. You do not have to go to the heart of the Amazon rainforest or the Serengeti to find the significance of biodiversity in all our lives.

I hope this second edition continues the mystery, excitement and possibilities that are bound up in the science of biodiversity. As with the first edition this will be little thanks to my expertise in the field (I could tell you about pond life and the strange history of wildlife on TV but that's about it) and again this edition is a pillaging of other people's insights, knowledge and energy. I hope those whose work I have ransacked find some consolation that their names, ideas and publications cited in this book will inspire others in the same way as they have me. Students should use this book as a springboard to dive into the wider literature.

I am very grateful to those who have helped with the production of this book. For permission to use pictures Daphne Christelis (Greenpeace), Dave Clarke (Zoological Society of London), Glenys Dawkins (NERC Centre for Population Biology), Chris Gibbins (Aberdeen University), Annabelle Lea (Durrell Wildlife Conservation Trust), Rob Morley (somewhere in Africa) and Martin Woodcock. To Andrew Mould, Adam Gilbert and especially Zoe Kruze at Routledge for all their patient support; how Zoe put up with the only author not to own a PC or laptop I probably do not want to know.

Michael Jeffries
Newcastle



The Rio Earth Summit

June 1992. Representatives from over 180 governments met in Rio de Janeiro for the Earth Summit, the second United Nations Conference on Environment and Development.

Twenty years earlier the first UN conference on the Human Environment met in Stockholm. Widely pilloried as a dialogue of the deaf, the Stockholm conference fractured as developed countries asked poorer nations to clean up environmentally destructive development whilst the developing countries wished for economic growth, even if pollution and degradation were the price. The 1992 Rio Earth Summit risked a similar schism, with the developed world focusing on climate change, destruction of tropical forests and species loss, the developing world still desperate for economic improvement, but since Stockholm, two themes had emerged encouraging global empathy. First, in 1987 the Brundtland Report provided a defining moment, partly in response to the Stockholm fall out, promoting the concept of **sustainable development**. Second, the word **biodiversity**, scarcely heard of a decade before Rio, had gained a global audience.

The Earth Summit spawned four major agreements: the Rio Declaration on Environment and Development (citing the rights and responsibilities of individual states), the Convention on Climate Change, Agenda 21 (wide-ranging objectives and approaches for sustainable development), and the Convention on Biological Diversity. This convention was signed by 155 states at the Summit between 5 and 14 June 1992. Of the 105 princes, presidents and prime ministers who had come to Rio (despite much touted threats from gangs of muggers and transvestite carnivals) and gave formal speeches, 67 specifically mentioned biodiversity (or biological diversity). Biodiversity had become a dominating theme, most famously immortalised by US President George Bush Senior. Faced with impending presidential elections Bush would not commit himself to attend, unwilling, as he put it, to save squirrels if it cost one American job. He did attend Rio, did not sign the convention whilst there, and did not get re-elected. However, his successful rivals had maintained a strong environmental agenda. The environment was a political issue.

A global convention, having US president and 'biological diversity' a popular buzzword for 67 heads of state – biodiversity had gained a familiarity greater than any other ecological concept and in a remarkably short space of time. This spectacular debut suggests something more than scientific rigour and academic interest. Biodiversity had caught a wider mood.