

Contents

Series Preface.....	xi
Acknowledgements	xiii
Author	xv
 Chapter 1 Introduction	 1
 Chapter 2 General Concepts	 7
 Chapter 3 Everyone Uses Species	 11
The Advantages of Understanding Species.....	11
Putting Names to Faces	12
Identity Politics: When Species Matter to Us.....	13
How to Identify Differentness.....	18
Differences of Opinion with Consequences.....	20
How to Separate Species	22
Species Criteria	24
Everyone Uses Species.....	25
References	26
 Chapter 4 Why Do the Names Keep Changing?	 31
To Improve Is to Change	31
Colonialism, Revision, and the Type Concept	31
Taxonomic Surrogacy.....	34
Names Carry Important Information	35
How Do Names Change and How Can You Tell What Happened?...37	
Species Novelty and Reclassification	40
The Type Concept Revisited	44
Revision End Game.....	46
References	50
 Chapter 5 Species Are Units of Evolution	 53
Variation.....	53
Plasticity and Adaptation	56
Selection and Sufficiency in the Moment.....	59
Microevolution and Macroevolution	64
Experimental Approaches.....	66
Macroevolution and Species Identity	68
References	70

Chapter 6	Natural Patterns in Classification.....	75
	Frames of Reference.....	75
	Taxonomy and Systematics	77
	The Linnaean System.....	79
	Relativism and Regulation	83
	Tree Thinking.....	86
	The Problem with Paraphyly (Part 1: Genera)	88
	The Application of Ranks	93
	The Problem with Paraphyly (Part 2: A higher problem)	94
	Ranks and Communication	96
	References	97
Chapter 7	Are Species Real?.....	101
	Background	101
	Species Metaphysics.....	101
	From Aristotle to the Origin	104
	The Modern Synthesis and Beyond	107
	Species 'Concepts' Are Lines of Evidence	109
	Species in Time	110
	Total Evidence and the New Pluralism	113
	The Species Category.....	115
	Species Are Real; Species Descriptions Are Hypotheses.....	116
	References	118
Chapter 8	How to Name a Species.....	123
	Who Are the Makers of Names?	123
	Pronunciation.....	125
	Writing and Syntax.....	126
	Endings and Name Changes.....	128
	Plural and Singular	128
	Integrity and Humility.....	129
	History and the Role of Collections	129
	A Step-by-Step Guide	132
	References	143
Chapter 9	Biodiversity and Extinction through Time.....	147
	Extinction Is a Natural Part of Evolution	147
	Living 'Fossils' Are Still Evolving.....	151
	Extinct Species Outnumber Living Species.....	155
	Fossils Fill the Gaps	159
	Is Diversity on Earth Decreasing?.....	161
	References	166

Chapter 10	How Many Species Are There?	171
	The Great Global Census	171
	Under-Studied Taxa	172
	Approaches to Estimating Global Species Richness	174
	Why Is this Problem so Hard?	175
	The Importance of Higher Ranks	179
	If It Doesn't Have a Name, It Doesn't Exist	180
	How Many Species Are Still Undiscovered?	182
	References	183
Chapter 11	Dynamic Patterns in Biodiversity	187
	What Determines Biodiversity Patterns?	187
	Impacts of the Very Recent Past	188
	Impacts of Invasive Species	191
	The Latitudinal Diversity Gradient	193
	Biogeographic Patterns and 'Rules'	198
	Life Is Resilient	201
	References	203
Chapter 12	Translating Biodiversity across Cultural Barriers	209
	Makers and Users of Species Names	209
	Misconception: Taxonomy is done by 'someone else'	210
	Misconception: Taxonomy is easy now, because you can just sequence things	210
	Misconception: Taxonomic papers never get cited	211
	Misconception: Biodiversity is well-known	212
	Geographic and Cultural Divides	213
	Quantifying Species Richness	215
	Taxonomy Is Scientific Infrastructure	216
	International Law, Biodiversity, and Benefit Sharing	220
	International Law and the Movement of Specimens	223
	The Fallacy of Economics	225
	Cultural Ownership of Biodiversity	226
	References	228
	Species and Systematics	233
	Index	235