

Contents

<i>Preface</i>	page ix
<i>Acknowledgements</i>	xii
1 The spatial component of evolution	1
Models of spatial evolution in biogeography	2
Case-studies in and around Australasia	13
Biogeography and dispersal	21
Biogeography and genetics	26
Biogeography and ecology	30
2 Evolution in time	32
Equating the age of a node with the age of the oldest known fossil	32
Using the age of islands or strata to date their endemic clades	44
Using tectonics to date clades	53
Mode of evolution: is evolution more or less clock-like?	57
Case-studies in evolutionary chronology	62
3 Global affinities of Australasian groups	71
Widespread Australasian groups with global sisters	71
Australasian groups basal in panaustral complexes	72
Australasia–Indian Ocean groups	73
Australasia–Tethys affinities	81
Australasia–Pacific groups	83
Pacific + Tethys groups in Australasia	101
Australasia–central Pacific groups	104
Trans-tropical Pacific connections	106
Distribution in a Pacific triangle: Australasia–western North America–southern South America	115
Indian + Pacific Ocean groups	118
Pacific + Atlantic groups	130
Pacific + Indian + Atlantic groups	130
Intercontinental affinities of Australasia: a summary	132

4	Biogeography of Australia	133
	Distribution in and around Australia	133
	Distribution within Australia: affinities between the coasts and the central deserts	135
	The south-western Australian biota	143
	North-western Australia	151
	The Great Dividing Range	163
	Tasmania	165
	McPherson–Macleay Overlap	167
	The Cairns region in north-eastern Queensland	176
	Breaks around Torres Strait and the Coral Sea	177
5	The Tasman–Coral Sea region: a centre of high biodiversity	181
	The Tasman–Coral sea region as a centre of biodiversity	182
	Globally basal endemics in the Tasman–Coral sea region	188
	Interpretation of the Tasman–Coral centre	195
	The ecological context of the basal Tasman groups: arapod forests	200
6	Distribution in and around the Tasman region	204
	Tectonic context of the Tasman region and the evolution of island biotas there	204
	Distribution within the Tasman region	211
	Australia–New Zealand connections	212
	New Zealand–New Guinea connections	218
	Groups centred on the Tasman and Coral seas	230
	Phylogenetic breaks around New Caledonia	235
	A case-study: Ericaceae in the Tasman region	238
7	Biogeography of New Zealand	246
	New Zealand geology	246
	North-eastern New Zealand	247
	Southern New Zealand: Campbell Plateau and the New Zealand subantarctic islands	253
	The Alpine fault: disjunctions and other breaks at a plate boundary	255
8	Biogeography of New Caledonia	261
	Absences in the New Caledonian biota	262
	Biogeographic affinities of the New Caledonian biota	263
	A case-study: the New Caledonian palms and their relatives	275
	New Caledonian terranes and tectonic history	282
	Areas of endemism in New Caledonia	292

	Terrane tectonics and biogeography in New Caledonia	305
	Towards a new model of New Caledonian biogeography	310
9	Biogeography of New Guinea and neighbouring islands	313
	Biogeography of the New Guinea region	313
	New Guinea as a global centre of differentiation in several bird groups	317
	Biogeographic differentiation in mainland New Guinea	327
	The Bismarck Archipelago and the Solomon Islands	342
	Vanuatu and Fiji	346
	West of New Guinea: the Maluku Islands (the Moluccas) and Sulawesi	350
10	Biogeography of the Philippines	356
	The traditional model of Philippines biogeography	358
	Geology of the Philippines	360
	The accreted arc/metapopulation model of Philippines biogeography	363
	Philippines groups with widespread sister-groups	364
	Philippines connections with areas further east	377
	Distribution within the Philippines	389
	Appendix: eastern and western Philippines tracks	399
11	Conclusions	402
	Evolution and space	402
	Evolution and time	403
	Panbiogeography, tectonics and evolution	404
	Darwinian and neo-darwinian models of evolution and ecology	404
	Beyond the CODA model of evolution and ecology	406
	<i>Abbreviations and terms</i>	408
	<i>Glossary</i>	409
	<i>References</i>	411
	<i>Index</i>	484