

# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Abbreviations and Conventions	3
1.1.1	Abbreviations	3
1.1.2	Dental Nomenclature	5
1.1.3	Chronology	6
1.1.4	Classification	6
1.2	Metatheria and Marsupialia	6
1.2.1	Fossils and Radiations	6
1.2.2	Definitions and Characteristic Features	9
1.3	South American Metatherians, Living and Extinct	11
1.4	A Historical Perspective	15
1.4.1	First Period (1878–1930)	17
1.4.2	Second Period (1930–1977)	19
1.4.3	Third Period (1977–Present)	21
1.5	The Incompleteness of the Fossil Record	23
	References	25
<b>2</b>	<b>South American Living Metatherians: Physiological Ecology and Constraints</b>	<b>37</b>
2.1	Introduction	38
2.2	Thermal Constraints	41
2.3	Feeding Constraints	47
2.4	Reproductive Constraints	49
2.5	Size and Anatomical Constraints, Locomotion and Habitat Use	57
2.6	Integrating Physiological and Ecological Constraints	62
	References	66

<b>3</b>	<b>Dispersal of Vertebrates from Between the Americas, Antarctica, and Australia in the Late Cretaceous and Early Cenozoic . . . . .</b>	<b>77</b>
3.1	Introduction . . . . .	78
3.1.1	Definitions and Abbreviations . . . . .	78
3.2	Dispersals Between North and South America . . . . .	79
3.2.1	Cretaceous Background . . . . .	79
3.2.2	Alamitan SALMA . . . . .	83
3.2.3	Mammalian Immigrations . . . . .	90
3.2.4	Xenarthran Problem . . . . .	96
3.2.5	Summary . . . . .	97
3.3	Dispersal Between South America, Antarctica, and Australia . . . . .	98
3.3.1	Geological Overview . . . . .	98
3.3.2	Tingamarra Local Fauna . . . . .	106
3.4	Antarctic Dispersals to and from South America . . . . .	109
3.5	Antarctic Climate . . . . .	112
3.6	Summary . . . . .	115
3.7	Conclusions . . . . .	116
	References . . . . .	117
<b>4</b>	<b>Evolutionary Contexts . . . . .</b>	<b>125</b>
4.1	Climate . . . . .	126
4.2	Ecosystem Evolution . . . . .	129
4.3	Biogeography . . . . .	132
4.3.1	Development of South America's Arid Diagonal . . . . .	135
4.3.2	Late Maastrichtian–Danian Paleogeography of Southern-South America . . . . .	138
4.4	Phases in South American Mammalian Evolution . . . . .	140
4.4.1	Early Gondwanian Phase . . . . .	140
4.4.2	Late Gondwanian Phase . . . . .	140
4.4.3	Early South American Phase . . . . .	141
4.4.4	Late South American Phase . . . . .	143
4.4.5	Interamerican Phase . . . . .	143
4.4.6	Hypoamerican Phase . . . . .	144
4.5	Faunal Interactions . . . . .	146
	References . . . . .	150
<b>5</b>	<b>Phylogeny and Diversity of South American Metatherians . . . . .</b>	<b>155</b>
5.1	Metatherian Phylogenetic Analyses . . . . .	155
5.1.1	Relationships Among South American Metatherians . . . . .	156
5.2	Diversity of South American, Cenozoic Metatherians . . . . .	165
5.2.1	"Ameridelphia" Incertae Sedis . . . . .	165
5.2.2	Sparassodonta . . . . .	166
5.2.3	Didelphimorphia . . . . .	169

5.2.4	Paucituberculata . . . . .	171
5.2.5	Microbiotheria . . . . .	172
5.2.6	Polydolopimorphia . . . . .	174
	References . . . . .	178
<b>6</b>	<b>Paleobiology and Adaptations of Paleogene Metatherians . . . . .</b>	<b>185</b>
6.1	Introduction . . . . .	186
6.2	Metatherian Diversity and Climates During the Paleogene in South America . . . . .	187
6.3	Feeding Ecology . . . . .	191
6.3.1	Insectivory . . . . .	191
6.3.2	Carnivory . . . . .	193
6.3.3	Frugivory . . . . .	194
6.3.4	Granivory . . . . .	195
6.3.5	Folivory . . . . .	196
6.4	Trophic Index and Paleogene Climates . . . . .	196
6.5	Body Mass . . . . .	197
6.6	Paleogene Macroevolutionary Events . . . . .	200
6.7	Thermal Biology: Key for the Understanding of Metatherian Evolution . . . . .	203
	References . . . . .	204
<b>7</b>	<b>Summary: Milestones in the Evolution of South American Metatherians . . . . .</b>	<b>209</b>
7.1	The Paleogeographic Context . . . . .	210
7.2	Origins of South American Metatherians . . . . .	210
7.3	Initial Radiations of Native “Ameridelphians” . . . . .	213
7.4	Origins of the Australidelphia . . . . .	215
7.5	Successive Phases in the Evolution of South American Metatherians . . . . .	218
7.5.1	Early South American Phase . . . . .	218
7.5.2	Late South American Phase . . . . .	219
7.5.3	Interamerican Phase . . . . .	220
7.5.4	Hypoamerican Phase . . . . .	220
	References . . . . .	222
	<b>Index . . . . .</b>	<b>227</b>

A Brief History of South American Metatherians  
Evolutionary Contexts and Intercontinental Dispersals  
Goin, F.J.; Woodburne, M.O.; Zimicz, A.N.; Martin, G.M.;  
Chornogubsky, L.  
2016, XI, 237 p., Hardcover  
ISBN: 978-94-017-7418-5