

---

# **Frontiers of Biogeography**

---

## ***New Directions in the Geography of Nature***

---

Edited by  
Mark V. Lomolino and Lawrence R. Heaney



Sinuer Associates, Inc. Publishers  
Sunderland, Massachusetts

Published in association with the *International Biogeography Society*

# Contents

*Contributors* viii

*Preface* x

Introduction Reticulations and Reintegration of Modern Biogeography 1  
Mark V. Lomolino and Lawrence R. Heaney

## **PART I: Paleobiogeography 5**

*Introduction by Stephen T. Jackson*

1. Cenozoic and Mesozoic Paleogeography:  
Changing Terrestrial Biogeographic Pathways 9  
Christopher R. Scotese
2. Arid Lands Paleobiogeography: The Rodent Midden Record  
in the Americas 27  
Julio L. Betancourt
3. Quaternary Biogeography: Linking Biotic Responses  
to Environmental Variability across Timescales 47  
Stephen T. Jackson
4. Biogeography on a Dynamic Earth 67  
Christopher J. Humphries and Malte C. Ebach

## **PART II: Phylogeography and Diversification 87**

*Introduction by Brett R. Riddle and Vicki Funk*

5. The Past and Future Roles of Phylogeography  
in Historical Biogeography 93  
Brett R. Riddle and David J. Hafner
6. Range Expansion, Extinction, and Biogeographic Congruence:  
A Deep Time Perspective 111  
Bruce S. Lieberman
7. Reticulations in Historical Biogeography:  
The Triumph of Time over Space in Evolution 125  
Daniel R. Brooks

**PART III: Diversity Gradients 145***Introduction by Dov F. Sax and Robert J. Whittaker*

8. Beyond Species Richness: Biogeographic Patterns and Biodiversity Dynamics Using Other Metrics of Diversity 151  
Kaustuv Roy, David Jablonski, and James W. Valentine
9. The Global Diversity Gradient 171  
John R. G. Turner and Bradford A. Hawkins
10. Diversity Emerging: Toward a Deconstruction of Biodiversity Patterns 191  
Pablo A. Marquet, Miriam Fernández, Sergio A. Navarrete, and Claudio Valdivinos
11. Dynamic Hypotheses of Richness on Islands and Continents 211  
Robert J. Whittaker

**PART IV: Marine Biogeography 233***Introduction by John C. Briggs, Brian W. Bowen, and Michael A. Rex*

12. Island Life: A View from the Sea 239  
Geerat J. Vermeij
13. A Marine Center of Origin: Reality and Conservation 255  
John C. Briggs
14. Pattern and Process in Marine Biogeography: A View from the Poles 271  
J. Alistair Crame

**PART V: Conservation Biogeography 293***Introduction by Mark V. Lomolino*

15. How Do Biological Invasions Alter Diversity Patterns? 297  
Julie L. Lockwood
  16. GIS-Based Predictive Biogeography in the Context of Conservation 311  
Víctor Sánchez-Cordero, Mariana Munguía, and A. Townsend Peterson
  17. Applying Species-Area Relationships to the Conservation of Species Diversity 325  
Michael L. Rosenzweig
  18. Conservation Biogeography in Oceanic Archipelagoes 345  
Lawrence R. Heaney
- Concluding Remarks 361  
James H. Brown
- Literature Cited* 369
- Index* 421