

African Paleoecology and Human Evolution

Edited by

Sally C. Reynolds

Bournemouth University

René Bobe

University of Oxford



CAMBRIDGE
UNIVERSITY PRESS

Contents

List of Contributors ix

Acknowledgments xiii

Part I Modern Africa and Overview of Late Cenozoic Paleoenvironments

- 1 **Introduction: African Paleoecology and Human Evolution** 1
René Bobe and Sally C. Reynolds
- 2 **Approaches to the Study of Past Environments** 7
Peter Andrews, Sally C. Reynolds, and René Bobe
- 3 **Environmental and Stratigraphic Bias in the Hominin Fossil Record: Implications for Theories of the Climatic Forcing of Human Evolution** 15
Philip J. Hopley and Simon J. Maxwell
- 4 **Late Miocene and Earliest Pliocene Paleoecology of Africa: A Synthesis** 24
Jessamy H. Doman and Emily Goble Early
- 5 **The Middle Pleistocene Through the Holocene of Africa: A Synthesis** 33
J. Tyler Faith

Part II Southern Africa

- 6 **The Southern African Sites: Paleoenvironmental Syntheses and Future Research Prospects** 49
Sally C. Reynolds
- 7 **Geology, Fauna, and Paleoenvironmental Reconstructions of the Makapansgat Limeworks *Australopithecus africanus*-Bearing Paleo-Cave** 66
Kaye E. Reed, Kevin L. Kuykendall, Andy I.R. Herries, Philip J. Hopley, Matt Sponheimer, and Lars Werdelin
- 8 **Paleoenvironments and the Context of Plio-Pleistocene Hominins at Kromdraai, South Africa** 82
Jean-Baptiste Fourvel and J. Francis Thackeray
- 9 **Using the Faunal Community to Determine the Local Ecology for Early Hominins at Cooper's Cave at 1.5 Ma** 86
Darryl de Ruiter

- 10 **The Paleoenvironments of Sterkfontein: Old Questions, New Approaches** 92
Lauren C. Sewell, Job M. Kibii, and Sally C. Reynolds
- 11 **Swartkrans: A Record of Paleoenvironmental Change in the Cradle of Humankind** 102
Darryl de Ruiter
- 12 **Cornelia-Uitzoek: Paleoecology, Archeology and Geochronology** 120
James S. Brink†, John A.J. Gowlett, Andy I.R. Herries, John Hancox, Jacopo Moggi-Cecchi, Daryl Codron, Lloyd Rossouw, Gary Trower, Olivia M.L. Stone, Britt Bousman, Rainer Grün, and Antoine Souron
- 13 **The Paleoecology of the *Australopithecus africanus* Type Site at Taung, South Africa** 135
Philip J. Hopley and Brian F. Kuhn
- 14 **Wonderwerk Cave, Northern Cape Province: An Early-Middle Pleistocene Paleoenvironmental Sequence for the Interior of South Africa** 142
Liora Kolska Horwitz, Margaret D. Avery, Marion K. Bamford, Francesco Berna, James S. Brink†, Michaela Ecker, Yolanda Fernandez-Jalvo, Paul Goldberg, Sharon Holt, Julia Lee-Thorp, Ari Matmon, Robyn Pickering, Naomi Porat, Lloyd Rossouw, Louis Scott, Ron Shaar, and Michael Chazan

Part III Eastern and Central Africa

- 15 **Hominid Paleoenvironments in Tropical Africa from the Late Miocene to the Early Pleistocene** 161
René Bobe and Sally C. Reynolds
- 16 **Mammal Paleoecology from the Late Early Pleistocene Sites of the Dandiero Basin (Eritrea), With Emphasis on the Suid Record** 187
Tsegai Medin, Bienvenido Martínez-Navarro, Marco P. Ferretti, Massimiliano Ghinassi, Mauro Papini, Yosief Libsekal, and Lorenzo Rook
- 17 **The 6-Million-Year Record of Ecological and Environmental Change at Gona, Afar Region, Ethiopia** 197
Naomi E. Levin, Scott W. Simpson, Jay Quade, Melanie A. Everett, Stephen R. Frost, Michael J. Rogers, and Sileshi Semaw

- 18 **The Hadar Formation, Afar Regional State, Ethiopia: Geology, Fauna, and Paleoenvironmental Reconstructions** 214
Christopher J. Campisano, John Rowan, and Kaye E. Reed
- 19 **Fossil Vertebrates and Paleoenvironments of the Pliocene Hadar Formation at Dikika, Ethiopia** 229
René Bobe, Denis Geraads, Jonathan G. Wynn, Denné Reed, W. Andrew Barr, and Zeresenay Alemseged
- 20 **Miocene to Pliocene Stratigraphy and Paleoecology of Galili, Ethiopia** 242
Ottmar Kullmer, Oliver Sandrock, Thomas Bence Viola, Wolfgang Hujer, Zelalem Bedaso, Doris Nagel, Andrea Stadlmayr, Fritz Popp, Robert Scholger, Gerhard W. Weber, and Horst Seidler
- 21 **Melka Kunture, Ethiopia: Early Pleistocene Faunas of the Ethiopian Highlands** 256
Denis Geraads, Rosalia Gallotti, Jean-Paul Raynal, Raymonde Bonnefille, and Margherita Mussi
- 22 **Early Pleistocene Fauna and Paleoenvironments at Konso, Ethiopia** 269
Gen Suwa, Berhane Asfaw, Hideo Nakaya, Shigehiro Katoh, and Yonas Beyene
- 23 **Paleontology and Geology of the Mursi Formation** 278
Michelle S.M. Drapeau, Jonathan G. Wynn, Denis Geraads, Laurence Dumouchel, Christopher J. Campisano, and René Bobe
- 24 **Mammalian Diversity Patterns and Paleoecology in the Lower Omo Valley, Ethiopia** 289
Enquye W. Negash, René Bobe, Zeresenay Alemseged, and Jonathan Wynn
- 25 **Paleoecology and Paleoenvironments of Early Quaternary Faunal Assemblages from the Nachukui Formation in Kenya: Insights from the West Turkana Archeological Project** 298
Jean-Philip Brugal and Hélène Roche
- 26 **Early Hominins and Paleoecology of the Koobi Fora Formation, Lake Turkana Basin, Kenya** 311
René Bobe, João d’Oliveira Coelho, Susana Carvalho, and Meave Leakey
- 27 **Early Pliocene Faunal Assemblages from the Tugen Hills, Kenya: A Comparison of Field Collection Methods and Some Implications for Paleoenvironmental Reconstruction** 332
Katie M. Binetti, Andrew Hill†, and Joseph V. Ferarro
- 28 **The Southern Chemeron Formation, Tugen Hills, Kenya: A Review and a Paleoecological Analysis of the Bovid Fauna** 343
Emily Goble Early
- 29 **Fauna and Paleoenvironments of the Homa Peninsula, Western Kenya** 360
Laura C. Bishop, Thomas W. Plummer, David R. Braun, Peter W. Ditchfield, Emily Goble Early, Fritz Hertel, Cristina Lemorini, James S. Oliver, Richard Potts, Thomas Vincent, Elizabeth Whitfield, and Rahab N. Kinyanjui
- 30 **Mammalian Fauna of the Olorgesailie Basin and Southern Kenya Rift** 376
Richard Potts and J. Tyler Faith
- 31 **Context and Environments of the Lower Pleistocene Hominins of Peninj, Tanzania** 384
Denis Geraads, Ignacio de la Torre, and Christiane Denys
- 32 **Paleoecology and Vertebrate Taphonomy of DK Site (Bed I), Olduvai Gorge, Tanzania** 394
Paul Farrugia and Jackson K. Njau
- 33 **Lower Bed II Olduvai Basin, Tanzania: Wetland Sedge Taphonomy, Seasonal Pasture, and Implications for Hominin Scavenging** 413
Charles R. Peters, Marion K. Bamford, and John P. Shields
- 34 **Paleoecology of Laetoli, Tanzania** 435
Terry Harrison, Amandus Kwekason, and Denise F. Su
- 35 **The Paleoenvironment of the Plio-Pleistocene Chiwondo Beds of Northern Malawi** 453
Ottmar Kullmer, Oliver Sandrock, Harrison Simfukwe, Timothy G. Bromage, and Friedemann Schrenk

Part IV Northern Africa

- 36 **The Northern African Sites: Paleoenvironmental Syntheses** 461
Denis Geraads
- 37 **Ahl al Oughlam, Morocco: The Richest Fossil Site in North Africa at the Pliocene/Pleistocene Boundary** 468
Denis Geraads, David Lefèvre, and Jean-Paul Raynal
- 38 **Tighennif (Ternifine), Algeria: Environments of the Earliest Human Fossils of North Africa in the late Early Pleistocene** 475
Denis Geraads
- 39 **Early *Homo* on the Atlantic Shore: The Thomas I and Oulad Hamida 1 Quarries, Morocco** 481
Denis Geraads, Camille Daujeard, David Lefèvre, Rosalia Gallotti, Abderrahim Mohib, and Jean-Paul Raynal

Volume References 492

Index 576

Color plates can be found between pages 306 and 307