

Zooarchaeology in Practice

Christina M. Giovas • Michelle J. LeFebvre
Editors

Zooarchaeology in Practice

Case Studies in Methodology and
Interpretation in Archaeofaunal Analysis

 Springer

Editors

Christina M. Giovas
Department of Archaeology
Simon Fraser University
Burnaby, BC, Canada

Michelle J. LeFebvre
Florida Museum of Natural History
University of Florida
Gainesville, FL, USA

ISBN 978-3-319-64761-6 ISBN 978-3-319-64763-0 (eBook)
<https://doi.org/10.1007/978-3-319-64763-0>

Library of Congress Control Number: 2017955225

© Springer International Publishing AG 2018

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer International Publishing AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

*For DKG, SDD, and the others who inspire
us to peer through the looking glass.*

Acknowledgments

Zooarchaeology in Practice was born from a symposium on zooarchaeological sampling and methodological issues held at the 79th Annual Society for American Archaeology meeting in Austin, Texas, organized by one of us (CMG) and Aaron Poteate (University of Oregon). Its purpose was to foster a comparative perspective on key methodological debates in the field by drawing together practitioners with diverse perspectives and approaches. Many of those original symposium participants are contributors to this volume. Others joined as the book evolved. Aaron Poteate was instrumental in the early development of the volume, and while he was unable to shepherd this through to final publication, the pages here reflect his insights and efforts as much as our own. We are indebted to him for his contribution and thank also those who participated in the SAA session for the foundation of ideas they provided.

As Editors, we sought to unite depth of treatment with broad topical coverage into a single, integrated volume. Despite our best efforts, not all aspects of zooarchaeological practice could be covered, and the reader will note the absence of certain taxonomic and geographic areas (e.g., birds, East Asia). Notwithstanding, we saw an all-inclusive approach as neither feasible nor desirable. Rather, our objective for *Zooarchaeology in Practice* was to provide focused case studies and historical reference points that might serve as metaphorical lamps to light our way. We conceived of a volume that would (1) be of utility and significance to both beginners and seasoned professionals; (2) link methods to interpretive outcomes, offering a framework for methodological planning prior to research implementation; and (3) furnish scholars with a set of instructive approaches for addressing methodological challenges in their own research. If these objectives have been realized, it is due to the efforts of our authors. We are grateful to them for their innovative approaches to questions old and new, diligence through rounds of chapter peer review, and their patience. We also thank the many anonymous individuals who shared their expertise and valuable time as peer reviewers. Lastly, we wish to thank our editorial team at Springer, Teresa Krauss and Hana Nagdimov. They have provided invaluable assistance and support in the completion of this volume.

Contents

1	Methods, Methodology, and Zooarchaeology in Practice	1
	Christina M. Giovas and Michelle J. LeFebvre	
Part I Identification and Quantification		
2	The History of MNI in North American Zooarchaeology	13
	R. Lee Lyman	
3	Contemporary Challenges in Zooarchaeological Specimen Identification	35
	Michelle J. LeFebvre and Ashley E. Sharpe	
4	Impact of Analytic Protocols on Archaeofish Abundance, Richness, and Similarity: A Caribbean-Pacific Crossover Study. . . .	59
	Christina M. Giovas	
Part II Beyond Quantification: Taphonomy, Fragmentation, and Assemblage Size		
5	Bone Taphonomy in Deep Urban Stratigraphy: Case Studies from York, United Kingdom	93
	Clare Rainsford and Terry O'Connor	
6	Low-Survival Skeletal Elements Track Attrition, Not Carcass Transport Behavior in Quaternary Large Mammal Assemblages	109
	J. Tyler Faith and Jessica C. Thompson	
7	Influence of Bone Survivorship on Taxonomic Abundance Measures	127
	Jacob L. Fisher	

8	Shell Fragmentation Beyond Screen-Size and the Reconstruction of Intra-Site Settlement Patterns: A Case Study from the West Coast of South Africa	151
	Antonietta Jerardino	
9	The Value in Studying Large Faunal Collections Using Traditional Zooarchaeological Methods: A Case Study from Anglo-Saxon England	173
	Pam J. Crabtree	
Part III Isotopic and Biomolecular Techniques		
10	Molluscs and Paleoenvironmental Reconstruction in Island and Coastal Settings: Variability, Seasonality, and Sampling	191
	Catherine F. West, Meghan Burchell, and C. Fred T. Andrus	
11	Ancient DNA in Zooarchaeology: New Methods, New Questions and Settling Old Debates in Pacific Commensal Studies	209
	Elizabeth Matisoo-Smith	
12	Zooarchaeology by Mass Spectrometry (ZooMS) Collagen Fingerprinting for the Species Identification of Archaeological Bone Fragments	227
	Michael Buckley	
Part IV Toward Practical Applications and Broader Syntheses		
13	Coming to Terms with Imperfection: Comparative Studies and the Search for Grazing Impacts in Seventeenth Century New Mexico	251
	Emily Lena Jones	
14	Zooarchaeology Method and Practice in Classical Archaeology: Interdisciplinary Pathways Forward	269
	Michael MacKinnon	
15	Assessing California Mussel (<i>Mytilus californianus</i>) Size Changes Through Deep Time: A Methodological Case Study from San Miguel Island, California	291
	Todd J. Braje, Breana Campbell, and Hannah Haas	
16	Concluding Remarks	309
	Umberto Albarella	
	Index	321

Contributors

Umberto Albarella Department of Archaeology, University of Sheffield, Sheffield, UK

C. Fred T. Andrus Department of Geological Sciences, University of Alabama, Tuscaloosa, AL, USA

Todd J. Braje Department of Anthropology, San Diego State University, San Diego, CA, USA

Michael Buckley Manchester Institute of Biotechnology, University of Manchester, Manchester, UK

Meghan Burchell Department of Archaeology, Memorial University of Newfoundland, St John's, NL, Canada

Breana Campbell Rincon Consultants, Inc., Carlsbad, CA, USA

Pam J. Crabtree Department of Anthropology, Center for the Study of Human Origins, New York University, New York, NY, USA

Jacob L. Fisher Department of Anthropology, California State University, Sacramento, CA, USA

Christina M. Giovas Department of Archaeology, Simon Fraser University, Burnaby, BC, Canada

Hannah Haas Rincon Consultants, Inc., Carlsbad, CA, USA

Antonieta Jerardino Department of Anthropology and Archaeology, School of Humanities, University of South Africa, Pretoria, South Africa

Department of Archaeology, Faculty of Arts and Social Sciences, School of Philosophical and Historical Inquiry, University of Sydney, Sydney, NSW, Australia

Emily Lena Jones Department of Anthropology, University of New Mexico, Albuquerque, NM, USA

R. Lee Lyman Department of Anthropology, University of Missouri, Columbia, MO, USA

Michelle J. LeFebvre Florida Museum of Natural History, University of Florida, Gainesville, FL, USA

Michael MacKinnon Department of Classics, University of Winnipeg, Winnipeg, MB, Canada

Elizabeth Matisoo-Smith Department of Anatomy, University of Otago, Dunedin, New Zealand

Terry O'Connor Department of Archaeology, University of York, York, UK

Clare Rainsford Archaeological Sciences, University of Bradford, Bradford, UK

Ashley E. Sharpe Center for Tropical Paleoecology and Archaeology, Smithsonian Tropical Research Institute, Balboa-Ancón, Panama

Jessica C. Thompson Department of Anthropology, Emory University, Atlanta, GA, USA

J. Tyler Faith Natural History Museum of Utah and Department of Anthropology, University of Utah, Salt Lake City, UT, USA

Catherine F. West Department of Archaeology, Boston University, Boston, MA, USA

About the Editors

Christina M. Giovias (Ph.D., University of Washington) is a Lecturer in Archaeology at the University of Queensland. Her research focuses on prehistoric fisheries, animal translocations, and the human paleoecology of island and coastal settings, particularly the Caribbean and Oceania. She has conducted fieldwork in the Lesser Antilles, Polynesia, France, and the Great Lakes and the Pacific Northwest regions of North America. Dr. Giovias is Associate Editor for the *Journal of Island and Coastal Archaeology* and serves on the Board of the International Association for Caribbean Archaeology. She joins the faculty of the Department of Archaeology at Simon Fraser University in 2018.

Michelle J. LeFebvre (Ph.D., University of Florida) is a Postdoctoral Research Associate in Biodiversity Informatics at the Florida Museum of Natural History (FLMNH), Gainesville. With a focus in Caribbean and Southeastern U.S. archaeology, she uses zooarchaeological, biochemical, and archaeological datasets to investigate how animal exploitation, manipulation (e.g., translocation, management), and consumption articulate with patterns of human interaction, village aggregation, and social hierarchy. She is also focused on the mechanics and facilitation of open-access zooarchaeological data and its integration within open biodiversity networks.