

The Archaeology of Greater Nicoya

*Two Decades of Research in
Nicaragua and Costa Rica*

EDITED BY

Larry Steinbrenner, Alexander Geurds,
Geoffrey G. McCafferty, and Silvia Salgado

UNIVERSITY PRESS OF COLORADO
Louisville

© 2021 by University Press of Colorado

Published by University Press of Colorado
245 Century Circle, Suite 202
Louisville, Colorado 80027

All rights reserved
Manufactured in the United States of America



The University Press of Colorado is a proud member of
the Association of University Presses.

The University Press of Colorado is a cooperative publishing enterprise supported, in part, by Adams State University, Colorado State University, Fort Lewis College, Metropolitan State University of Denver, Regis University, University of Alaska Fairbanks, University of Colorado, University of Denver, University of Northern Colorado, University of Wyoming, Utah State University, and Western Colorado University.

∞ This paper meets the requirements of the ANSI/NISO Z39.48-1992 (Permanence of Paper).

ISBN: 978-1-64642-150-3 (cloth)
ISBN: 978-1-64642-151-0 (ebook)
<https://doi.org/10.5876/9781646421510>

Library of Congress Cataloging-in-Publication Data

Names: Steinbrenner, Larry, editor. | Geurds, Alexander, 1974– editor. | McCafferty, Geoffrey G., editor. | Salgado González, Silvia, editor.

Title: The archaeology of Greater Nicoya : two decades of research in Nicaragua and Costa Rica / edited by Larry Steinbrenner, Alexander Geurds, Geoffrey G. McCafferty, Silvia Salgado.

Description: Louisville : University Press of Colorado, [2021] | Includes bibliographical references and index.

Identifiers: LCCN 2021015346 (print) | LCCN 2021015347 (ebook) | ISBN 9781646421503 (hardcover) | ISBN 9781646421510 (ebook)

Subjects: LCSH: Indians of Central America—Nicaragua—History. | Indians of Central America—Nicaragua—Antiquities. | Indians of Central America—Costa Rica—Nicoya Peninsula—History. | Indians of Central America—Costa Rica—Nicoya Peninsula—Antiquities.

Classification: LCC F1525 .A725 2021 (print) | LCC F1525 (ebook) | DDC 972.8/01—dc23
LC record available at <https://lcn.loc.gov/2021015346>

LC ebook record available at <https://lcn.loc.gov/2021015347>

Cover illustrations: by Larry Steinbrenner (top); courtesy of Mi Museo, Granada, Nicaragua (bottom and spine).

Contents

Acknowledgments xi

I. Introduction

Larry Steinbrenner 3

PART I: REDEFINING GREATER NICOYA

2. Contact-Era Pacific Nicaragua: Indigenous
Groups and Their Origins

Larry Steinbrenner 23

3. Indigenous Peoples of Pacific Nicaragua
and Nicoya in the Sixteenth Century: A
Historical Approach

Eugenia Ibarra Rojas 47

4. A Critical Reevaluation of Pacific Nicaragua's
Late Period Chronology

*Larry Steinbrenner and
Geoffrey G. McCafferty* 67

PART 2: PROJECTS AND SURVEYS

5. The Managua Metropolitan Project: A
Retrospective

Frederick W. Lange 105

6. Twenty Years of Nicaraguan Archaeology:
Results of the University of Calgary Projects

Geoffrey G. McCafferty 125

7. The Development of Social Complexity in the Rivas Region, Pacific Nicaragua
Karen Niemel Garrard 162
8. Social Practices at La Cascabel, A Village on Culebra Bay, AD 800–1550
Ana Cristina Aguilar Vega 193

PART 3: CERAMICS AND STONE: MATERIAL CULTURE IN PACIFIC NICARAGUA

9. Polychrome Potting Traditions of Pacific Nicaragua, AD 800–1300
Larry Steinbrenner 215
10. Ceramic Economy and Communities of Practice in Granada and Rivas, AD 1–1300
Carrie L. Dennett 261
11. Exploring Technological Modifications: Variation of Non-vessel “Objects” from El Rayo, Nicaragua
Sacha Wilke 312
12. A Century in Stone: One Hundred Years of Lithic Analyses in Nicaragua
Adam K. Benfer 331
13. The Development of Nicaraguan Rock Art Research
Suzanne M. Baker 368

PART 4: MORTUARY PRACTICES IN GREATER NICOYA

14. Raising the Dead: Mortuary Patterns in Pacific Nicaragua
Geoffrey G. McCafferty, Andrea L. Waters-Rist, Sharisse McCafferty, Celise Fricker, and Jessica Manion 395

15. Osteoarchaeological Markers of Health and Identity at the Site of El Rayo, Nicaragua, AD 550–1200

*Andrea L. Waters-Rist and
Geoffrey G. McCafferty* 433

16. Human Bone Artifacts: Ancestor Cults and Human Sacrifice in a Community of Mesoamerican Origin in Culebra Bay, Costa Rica

*Anayensy Herrera Villalobos and
Felipe Solís Del Vecchio* 469

PART 5: CONCLUSION

17. Greater Nicoya through the Looking-Glass: Merging Culture History with Social Theory

Alexander Geurds 505

Index 533

List of Contributors 549

1

Welcome to *The Archaeology of Greater Nicoya*, the first major publication in more than two decades to present new research focusing on one of Lower Central America's most unique and confounding regions. *The Archaeology of Greater Nicoya* is a book that is long overdue. Scholars of Greater Nicoya will doubtlessly already be familiar with the handful of essential previous collections that have incorporated research from this archaeological subarea, a combined literature that is so sparse that it is not uncommon to refer its essential volumes by color: the "orange book" (i.e., *The Archaeology of Lower Central America*, Lange and Stone 1984), the "blue book" (*Wealth and Hierarchy in the Intermediate Area*, Lange 1992), the "green book" (*Archaeology of Pacific Nicaragua*, Lange et al. 1992), and so on. Inasmuch as the most recent of these collections—*Paths to Central American Prehistory* (Lange 1996a)—was published in 1996 and focused only partially on Greater Nicoya, we are confident that even specialists in Greater Nicoya will find more grist than chaff in the present volume, which is based, for the most part, on research carried out in the twenty-first century. For nonspecialists, we hope that *The Archaeology of Greater Nicoya* will serve as a useful introduction to this fascinating region and perhaps inspire you to dive even deeper into the still-murky waters of its culture history.

The uninitiated reader might well ask, "What exactly is Greater Nicoya, and what is exceptional about its archaeology?" As originally defined in the early 1960s

Introduction

LARRY STEINBRENNER

DOI: 10.5876/9781646421510.0001



FIGURE 1.1. Greater Nicoya, indicating key sites discussed in this volume. The existence and potential boundaries of this archaeological subarea continue to be subjects of debate. Map by Larry Steinbrenner.

by archaeologist Albert Norweb (1961, 1964), Greater Nicoya comprised an archaeological subarea incorporating the supposedly “Mesoamericanized” portions of Pacific Nicaragua—effectively, Nicaragua’s entire west coast and its associated lakes—and former Nicaraguan territory in northwestern Costa Rica, including the entire Nicoya Peninsula and most of the rest of the modern province of Guanacaste (figure 1.1). This subarea was associated with a supposedly homogenous material culture characterized especially by stunning “Nicoya Polychrome” pottery (discussed in detail in chapters 9 and 10), distinctive mortuary practices (chapters 14–16), and a unique stone sculpture tradition, among other things. This material culture showed links to the north—especially to El Salvador and Honduras but also to regions even farther afield—and was also supposed to differentiate the subarea from non-Mesoamericanized territories to the east (in the highlands and Caribbean

watersheds of Nicaragua and Costa Rica) and south, which were collectively associated with different, “southern/Circum-Caribbean-oriented” traditions of material culture. Norweb’s characterization was preceded centuries earlier by the first European reports of the country (cf. González Dávila 2002), which had described this area as “another Yucatán,” and reported that it was dominated by several different groups claiming Mesoamerican origin, including speakers of Otomanguan and Nahuatl languages (see chapters 2 and 3). Not surprisingly, this earliest recognition of connections between Greater Nicoya and lands to the north led early archaeological research in the nineteenth century (e.g., Squier 1852, 1853) to uncritically view Greater Nicoya as the southernmost extension of a Mesoamerican culture area—a tendency that continued well into the twentieth century and that still persists, especially in Nicaragua.

Studies that treat Greater Nicoya as a sort of “Mesoamerica Lite” have become increasingly rare as modern scholars have recognized that it is problematic to assume either that the Mesoamericans who migrated to Nicaragua and Costa Rica in prehistory managed to transport their own cultures completely intact and unchanged or that the autochthonous Chibchan-affiliated populations that seemingly inhabited the area before the migrations (and who afterward continued to occupy the surrounding territories to the east and south) simply vanished following the arrival of the Mesoamericans or left no mark on the cultures that supplanted their own. As Fred Lange (e.g., Lange 1971, 1978) and other influential Central Americanists (e.g., Fonseca Zamora 1994; Hoopes 2005; Hoopes and Fonseca Zamora 2003) have long argued, and as the various scholars who have contributed to this volume (e.g., chapter 6) now recognize, the Mesoamerican aspects of Greater Nicoya have likely been greatly overemphasized in past research at the expense of earlier-appearing lifeways. Indeed, models of Greater Nicoya prehistory that are based exclusively on old-fashioned notions emphasizing population replacement and that make no attempt to explore autochthonous cultural development (see, e.g., chapter 3) ought to be finally consigned to one of the shell middens that are so ubiquitous along Greater Nicoya’s Pacific coasts. It is time for a new paradigm in the archaeology of Greater Nicoya.

Even as modern scholars have come to accept that Greater Nicoya’s “Mesoamericanization” was likely not as complete as was once believed—sometimes even going so far as to argue that Greater Nicoya was not part of Mesoamerica at all (e.g., Lange et al. 1992:272)—they have also come to embrace the idea that there was actually substantial material culture variation across the entire extent of Greater Nicoya, which has proven to be a less homogenous

“subarea” than it was once imagined to be. By the 1970s, numerous scholars (e.g., Healy 1974, 1980; Lange 1971, 1978; Sweeney 1975) were already recognizing important differences in the archaeological records of Greater Nicoya’s northern and southern sectors—that is, Pacific Nicaragua and Guanacaste-Nicoya.¹ These differences should surprise no one, given the diversity of cultural groups that are documented as living in the area in ethnohistoric sources (chapters 2 and 3), and the evidence that has accumulated over subsequent decades (much of which is presented in this present volume) has made it even clearer that it is problematic to treat Greater Nicoya as a distinctive, full-fledged “culture area” in the classic anthropological sense. While there may be a loose correlation between “Greater Nicoya” and the broad distribution of “Nicoya polychromes,” it no longer seems prudent to infer a base level of *cultural* homogeneity from this: Greater Nicoya now appears to be yet another region where we need to think twice about equating pots with people. In light of this realization, it is worth noting that cultural homogeneity would *not* necessarily be a prerequisite for the existence of a *constellation of practice* linking individual communities of practice in Greater Nicoya to one another as well as to other communities of practice located beyond the boundaries of Greater Nicoya. A constellation of practice—as proposed for Lower Central America by Rosemary Joyce (2016; following Roddick 2009 and Wenger 1998)—might have comprised groups who were not necessarily closely related culturally but who might have produced similar forms of material culture because they were connected through *other* kinds of interaction, such as trade or competition.

So, if we can no longer treat Greater Nicoya as a homogeneous culture area, is it time to give up the label altogether? While that argument has been made by some scholars in the past (including one of the coeditors of this volume; i.e., Salgado González 1996), and is made here by at least one contributor (cf. chapter 3), perhaps we would be better served by recognizing that it remains useful as a sort of conceptual shorthand denoting a contiguous geographical region—that is, the coastal plains of Nicaragua and Costa Rica west of the Central Highlands—that seems archaeologically “different” from surrounding

1. These differences partially explain why Mesoamerican influence continued to be emphasized in work that was Nicaragua based (e.g., Paul Healy’s 1974 dissertation, which was based on excavations carried out by Gordon Willey and Norweb between 1959 and 1961), while it was also being downplayed in most studies that were based on fieldwork in more distant Costa Rica (e.g., dissertations by Lange 1971; Sweeney 1975; and Creamer 1983), where evidence for the persistence of Chibchan traditions seemed to be more visible.

regions elsewhere in these two countries, even if we have moved beyond trying to explain this difference wholly in terms of Mesoamerican cultural affiliations or material culture homogeneity. If we choose to think of Greater Nicoya in these modified terms, then there can be no more objection to discussing the “archaeology of Greater Nicoya” than there would be to discussing the archaeology of any other well-established geographic locale, such as “Nicaragua,” or “the Ulua Valley” or “Outer Mongolia.”

This volume is divided into four parts. The chapters in Part 1, “Redefining Greater Nicoya,” are foundational in that they provide background information concerning Greater Nicoya’s Indigenous populations and the development of the standard chronological sequence that is used by most archaeologists studying the subarea. My chapter 2, “Contact-Era Pacific Nicaragua: Indigenous Groups and Their Origins,” introduces the diverse Mesoamerican- and Chibchan-affiliated groups that dominated the cultural landscape of Pacific Nicaragua and northwestern Costa Rica at the time of contact and goes on to briefly review the various lines of evidence—ethnohistoric, linguistic, and archaeological—that have contributed to the ongoing debates regarding the nature and timing of the migrations that brought Mesoamericans (or Mesoamerican influences) into Greater Nicoya starting more than a millennium ago. Chapter 3, “Indigenous Peoples of Pacific Nicaragua and Nicoya in the Sixteenth Century: A Historical Approach,” by prominent Costa Rican ethnohistorian Eugenia Ibarra Rojas, argues that conceptualizing Greater Nicoya as a well-delimited “culture area” impairs our ability to truly understand the dynamic social relationships that bound Chibchan and Mesoamerican-originating populations together. In Ibarra’s view, precontact Pacific Nicaragua and northwestern Costa Rica represented a pluricultural confluence space, a crossroads for many different cultural groups that varied substantially through time and that were often intimately connected to other groups beyond the traditional boundaries of Greater Nicoya. Ibarra draws on colonial documents as well as archaeological evidence to explore not only how Chibchan practices and traditions might have endured following the arrival of Mesoamericans, but also how precontact sociopolitical structures could also have merged with and endured in later colonial institutions, such as *cofradías*.

The final chapter in Part 1, chapter 4, “A Critical Reevaluation of Pacific Nicaragua’s Late Period Chronology,” is a key chapter that follows up on an earlier-published paper by two of the coeditors of this volume (i.e., McCafferty

and Steinbrenner 2005), which reported a dozen new radiocarbon dates for the site of Santa Isabel in Rivas, by far the largest collection of ^{14}C dates ever reported for a single archaeological site in Nicaragua. On the basis of this evidence and a reexamination of the preexisting radiocarbon database, that paper made the provocative and paradigm-shifting argument that the long-established and widely accepted standard chronological sequence (see tables 4.1 and 4.3, this volume) for Greater Nicoya was seriously flawed. In particular, the cumulative ^{14}C evidence indicated that virtually *all* archaeological sites in Greater Nicoya that had been previously attributed—based on the presence of misdated diagnostic ceramics—to the Ometepe period (conventionally dated AD 1350–1550) were actually *centuries* older and more likely dated to the earlier Sapoa period (conventionally dated AD 800–1350). Needless to say, the implications of this claim—which, while accepted by many modern scholars and strongly endorsed in most chapters in this volume—remain controversial but are far reaching. We examine some of these implications in this new chapter, which begins with a historical review of the development of the Greater Nicoya chronological sequence (in an attempt to understand how the current version of this sequence came to be out of sync with the actual ^{14}C database upon which it is ostensibly based) and then revisits and reinforces the argument of the earlier paper with additional radiocarbon dates from more recent archaeological work in the Nicaraguan departments of Rivas and Granada.

The chapters in Part 2, “Projects and Surveys,” provide summary overviews of major international archaeological projects in Pacific Nicaragua (several of which were directed by one of the coeditors of this volume), a major survey of archaeological sites in the department of Rivas, and a village site located on Costa Rica’s Bay of Culebra. Chapter 5, “The Managua Metropolitan Project: A Retrospective,” by Fred W. Lange, presents the first published summary in English of an important three-year project directed by Lange that ran from 1995 to 1997 and that centered on Nicaragua’s capital of Managua and its environs. This project involved both North American and Nicaraguan archaeologists and—unlike many earlier projects in Nicaragua in the mid-twentieth century—was guided by a specific interest in exploring local cultural evolution rather than Mesoamerican influence. While reports on the project’s first two seasons were originally published locally in Spanish (Lange 1995, 1996b) and later posted online on a now-defunct website, the third season report was never released after funds earmarked for its publication were redirected to provide relief for Hurricane Mitch in 1998. As a result, information on the Managua Project has generally remained difficult to access, especially for

scholars outside of Nicaragua.² Lange's retrospective succinctly summarizes key sites and findings of this pioneering project.

Chapter 6, Geoffrey G. McCafferty's "Twenty Years of Nicaraguan Archaeology: Results of the University of Calgary Projects" provides an overview of the various archaeological projects that McCafferty has directed in Pacific Nicaragua since 2000. Originally interested in the Mesoamerican migration question, McCafferty's earliest University of Calgary-based work in Nicaragua from 2000 to 2005 focused on domestic contexts at the long-occupied Rivas-area site of Santa Isabel, first excavated in 1959 by Gordon Willey and Norweb (Healy 1974, 1980; Norweb 1961, 1964) and later identified by Karen Niemel (2003) as being the largest archaeological site in Rivas. Finding little compelling evidence for distinctively Mesoamerican lifeways at this site (which, contrary to the expectation that it was a contact-period site, was apparently abandoned near the end of the Sapoa period), McCafferty relocated north to the department of Granada for a second project between 2008 and 2010. This latter project, which also focused on domestic contexts and similarly found only limited evidence for Mesoamerican migration, explored sites previously identified and visited by Silvia Salgado González (1996) during her dissertation survey of the department, including Tepetate, the dominant center in the area from the Sapoa period until contact (largely destroyed by urban development in the modern city of Granada), and El Rayo, a minor though better-preserved site on Lake Nicaragua's Asese Peninsula, which provided evidence of the transition to the Sapoa period from the earlier Bagaces period (AD 300–800). McCafferty's subsequent work in the Granada area has included not only additional field seasons at El Rayo but also an investigation of the much-debated ceremonial site of Sonzapote on Zapatera Island in Lake Nicaragua, long renowned for its monumental sculptures. As discussed in this chapter, McCafferty's projects have both helped to redefine the standard chronological sequence for Pacific Nicaragua by greatly expanding the radiocarbon database (see chapter 4) and have produced unique insights into many aspects of life in precontact Greater Nicoya, ranging from foodways to architectural traditions to mortuary patterns to personal adornment to craft specialization. Chapters 9, 10, 11, 14, and 15 in the present volume are all based on research linked to McCafferty's projects.

2. Additional information about the Managua Project can also be found in master's theses by Dickau (1999), Finlayson (1998), and Aggen (2007). The former study focused on ethnobotany, while the latter two were lithic oriented. Note that much of lithic analysis associated with this project (including work by Finlayson and Aggen) is also summarized in chapter 12, this volume.

Chapter 7, “The Development of Social Complexity in the Rivas Region, Pacific Nicaragua,” by Karen Niemel Garrard, provides a summary of Garrard’s yearlong survey of the lacustrine coast of the department of Rivas in the late 1990s, the foundation for her subsequent doctoral dissertation (Niemel 2003). Modeled after the survey methodology used by Salgado González (1996) in her own dissertation survey of the adjacent department of Granada as part of an effort to formulate a comparative settlement database incorporating multiple regions,³ Garrard identified four dozen sites in a 270 km² area delimited by the Ochromogo River in the north, the modern city of Rivas in the south, and the Pan-American Highway and coast of Lake Nicaragua to the west and east, respectively. The development of these sites over more than two millennia, from the earliest Orosí period to the most recent Ometepe period (as defined in the standard Greater Nicoya chronological sequence), is traced, and the emergence of certain key settlements—most notably the eventual regional center of Santa Isabel—is chronicled. The chapter concludes with a discussion of the challenges inherent in comparing the results of the Rivas survey with those obtained via other survey projects carried out in Nicaragua and northwestern Costa Rica since the 1970s, owing to varying research interests, differences in survey methodologies, and a general lack of fieldwork supporting survey work—a lack that work in the twenty-first century is only now beginning to address.

Chapter 8, “Social Practices at La Cascabel, A Village on Culebra Bay, AD 800–1550,” by Ana Cristina Aguilar Vega, presents the results of a smaller-scale research project at a nucleated village site on the Papagayo Peninsula, located on the north side of the Bay of Culebra in Costa Rica’s Guanacaste Province. Research focusing on the Bay of Culebra (also the focus of Herrera Villalobos and Solís Del Vecchio’s chapter 16) has contributed enormously to our general understanding of Greater Nicoyan prehistory since the 1960s, with important projects being carried out at the sites of Papagayo, Nacascolo, and Vidor (e.g., Abel-Vidor 1980; Baudez et al. 1992; Gutiérrez González 1993, 1998; Hardy 1983, 1992; Lange, Ryder, and Accola 1986; Moreau 1980, 1983, 1984; Norr 1991; Obando 1995; Solís Del Vecchio 1998, 2002; Solís Del Vecchio and Herrera

3. Salgado’s model was also emulated in a third doctoral dissertation settlement pattern survey carried out by Nicaraguan archaeologist Román Lacayo (2013) at roughly the same time. Román’s project focused on several municipalities in the department of Masaya, adjacent to both Rivas and Granada. Although a summary of this work is not provided in the present volume, the complete settlement dataset and dissertation can be accessed via the University of Pittsburgh Comparative Archaeology Database (<http://www.cadb.pitt.edu/>).

Villalobos 2009; Wallace and Accola 1980). La Cascabel was one of several similar contemporary villages around the bay that appear to have been occupied by Chorotega migrants from Mesoamerica from the Sapóá period (ca. AD 800) until contact. Aguilar reports on the remains of shell deposits, craft production, architecture, sculptures, and funeral contexts and explores how all of these things played roles in maintaining a complex social hierarchy in the region.

Part 3, “Ceramics and Stone: Material Culture in Pacific Nicaragua,” is the longest section in this volume and focuses almost exclusively on research carried out in Greater Nicoya’s northern sector (i.e., in Pacific Nicaragua or other parts of Nicaragua). The first two chapters deal with the distinctive archaeological ceramics that have long been recognized (as previously noted) as a hallmark of the Greater Nicoya archaeological subarea. My own chapter in this section, chapter 9, “Polychrome Potting Traditions of Pacific Nicaragua, AD 800–1300,” summarizes some of the most essential findings of my doctoral dissertation research (Steinbrenner 2010). This research focused primarily on ceramics from the Santa Isabel site, which had previously provided much of the dataset used in Paul Healy’s influential *Archaeology of the Rivas Region* (1980). Healy’s book, which has served for many years as the de facto “handbook” for ceramics studies in Pacific Nicaragua, employed a type-variety-based typology to classify Rivas ceramics. My own Santa Isabel database (which included monochrome as well as polychrome ceramics, though only the latter are discussed in chapter 9) was also supplemented with a secondary database of polychromes from the Managua-area San Cristóbal site (previously excavated by Wyss 1983) and a tertiary database of nearly 1,600 complete vessels derived from museum and private collections. My study of this material, which incorporated analyses of aspects of variation in vessel shape and form (such as orifice size and wall thickness) as well as decorative variation, and which was also informed by the modified chronological sequence discussed in chapter 4, allowed me to refine and critique Healy’s original typology while maintaining a type-variety-based approach. It allowed me as well to argue for a significant degree of similarity and continuity between supposedly unrelated Nicoya Polychrome ceramic types that have usually been treated, in previous research, as products of rival cultural entities, such as the aforementioned Otomanguan Chorotega and the Nicarao, the most prominent of Greater Nicoya’s ethnohistorically documented Nahua groups.

Chapter 10, “Ceramic Economy and Communities of Practice in Granada and Rivas, AD 1–1300,” based on Carrie L. Dennett’s recently completed doctoral dissertation at the University of Calgary (Dennett 2016), approaches the

study of Nicaraguan ceramics from a very different yet complementary perspective. Departing from the more traditional focus on vessel form and decoration that has characterized most previous ceramics-oriented studies in Greater Nicoya (including my own work), Dennett's work focuses instead on the sourcing and production/manufacture of ceramics. This approach (long overdue in this part of Central America) employs both petrographic analysis and instrumental neutron activation analysis (INAA) that builds on pioneering INAA-based studies of Ronald Bishop and Fred Lange (Bishop, Lange, and Lange 1988; Bishop et al. 1992; Bishop and Lange 2013) in the 1980s. Dennett's robust dataset (which derived from McCafferty's University of Calgary projects at El Rayo, Tepetate, and Santa Isabel) included 150 ceramic samples that were submitted for INAA compositional testing and nearly 200 thin sections from sherds that were subjected to petrographic analysis. Her findings challenge many long-standing preconceptions concerning relationships between different key ceramic types, where and when these types were actually made, and who might have made them, and they also provide sophisticated new insights into the configuration of consumer distribution networks and communities of practice in Pacific Nicaragua over a span of more than a thousand years.

Chapter 11, "Exploring Technological Modifications: Variation of Nonvessel 'Objects' from El Rayo, Nicaragua," by Sacha Wilke, takes an interesting look at some of the less-glamorous and least-often-studied artifacts that are commonly found in the archaeological record of Greater Nicoya and considers the implications of differing frequencies of these objects in different contexts, both spatial and temporal. Among the more utilitarian objects examined in this study are net sinkers (fairly ubiquitous at sites on the shores of Lake Nicaragua, such as El Rayo); ceramic balls (possibly rattles from hollow vessels or projectile pellets); various types of reworked sherds; and an assortment of other tools that were likely employed in textile production, including spindle whorls, weaving picks, needles, and awls. Other artifacts less likely to represent tools, such as figurines and items of personal adornment (including pendants, earspools, and beads), are also discussed.

The final two chapters in this part both provide historical perspectives on two very different archaeological categories based on stone. Chapter 12, "A Century in Stone: One Hundred Years of Lithic Analyses in Nicaragua," by Adam K. Benfer, reviews the literature focusing on Nicaraguan chipped and ground stone tools from the nineteenth century—when collectors competed to supply "primitive" tools to American and European museums but made little attempt to understand these tools—to the twenty-first century, when processualist-oriented analyses have become much more commonplace and

many Nicaraguan archaeologists have adopted a standardized methodology inspired by the work of Georges Laplace (1974). Following this review, Benfer outlines research priorities for future lithic-oriented work, such as the need to identify sources of raw materials, better understand operational sequences, conduct more usewear analyses, and develop a comparative database for identifying microbotanical residues. Chapter 13, “The Development of Nicaraguan Rock Art Research” by Suzanne M. Baker, provides an overview of work in a field that has often been marginalized in Greater Nicoya studies, in spite of the ubiquity of petroglyphs and pictographs in archaeological contexts distributed throughout Nicaragua. Baker provides detailed summaries of important work in this field by international scholars Wolfgang Haberland, Dominique Rigat and Franck Gorin, Laura Laurencich Minelli and Patrizia Di Cosimo, and others, as well as Nicaraguan scholars Joaquín Matilló Vila (the avocational pioneer of modern rock art studies in the mid-twentieth century) and others and archaeologists associated with Nicaragua’s National Museum, including Jorge Zambrana Fernández and Rigoberto Navarro Genie. Baker, who has studied Nicaragua rock art since the 1980s, also summarizes her own work directing the Ometepe Archaeological Project, which has surveyed and identified more than 100 rock art sites on Ometepe Island in Lake Nicaragua (see Baker 2010 for an even more detailed account). Her chapter concludes with a call for the development of a common methodology for studying rock art in Nicaragua to facilitate future research.

The final section of this volume, Part 4, “Mortuary Practices in Greater Nicoya,” begins with a comparison of mortuary practices at three sites on the shores of Lake Nicaragua in Pacific Nicaragua and then moves on to more specific studies of human remains from one of these lacustrine sites and at a Pacific Coast site in Costa Rica. Chapter 14, “Raising the Dead: Mortuary Patterns in Pacific Nicaragua”—by Geoffrey G. and Sharisse McCafferty, Andrea L. Waters-Rist, Celise Fricker, and Jessica Manion—examines evidence from the three key sites excavated by the University of Calgary’s Santa Isabel and Granada projects: Santa Isabel, Tepetate, and El Rayo. Burial practices and offerings for all three sites are summarized, including primary extended burials in simple earthen and stone-lined graves and secondary burials of partial remains in large ceramic vessels. The results of osteological analysis vis-à-vis age-at-death, sex, demography, dentition, and pathology from Santa Isabel and El Rayo—the two sites where human remains were well preserved—are also presented and compared. Chapter 15, “Osteoarchaeological Markers of Health and Identity at the Site of El Rayo, Nicaragua, AD 550–1200,” by Andrea L. Waters-Rist (Western University) and Geoffrey G. McCafferty,

looks more closely at skeletal and dental data from this habitation and mortuary site, which provided a notably larger sample of human remains for study than Santa Isabel. As a site spanning the transitional period when historically documented groups of Mesoamerican origin appear to have first arrived in Greater Nicoya, El Rayo provides unique insights into the health and dietary practices of the peoples who lived on the lakeshore both prior to and following the transition.

The last chapter in this section, “Human Bone Artifacts: Ancestor Cults and Human Sacrifice in a Community of Mesoamerican Origin in Culebra Bay, Costa Rica,” by veteran Costa Rican archaeologists Anayensy Herrera Villalobos and Felipe Solís Del Vecchio, provides a fascinating and detail-rich study of how the bones of ancestors (as well as possible enemies) recovered from the Jícaro site were transformed into wearable artifacts. Jícaro, like chapter 8’s La Cascabel site, is located on the much-studied Papagayo Peninsula and has been identified by its excavators as being a Chorotega site during the Sapoá period. Herrera and Solís discuss burial practices and artifacts that range from beads made from human teeth to jaw and maxillary bones worn as pendants and bracelets. Evidence for manufacturing techniques is also covered. The chapter concludes with a discussion of how these artifacts mirror Mesoamerican practices related to ancestor cults and human sacrifice and how they might have been ritually used by male warrior-leaders to emphasize their roles in the new social context created by the arrival of migrant populations in Greater Nicoya.

Wrapping up *The Archaeology of Greater Nicoya* is chapter 17, “Greater Nicoya through the Looking-Glass: Merging Culture History with Social Theory” by Alexander Geurds, one of the coeditors of the present volume. Geurds, who has been directing archaeological research in Central Nicaragua on the eastern flanks of Greater Nicoya since the mid-2000s, reflects upon several common threads running throughout the book from a useful etic perspective, and, looking forward, proposes some new avenues of investigation for archaeologists working in Greater Nicoya, such as the roles of land- and waterscapes and the sorely neglected transition to the colonial period. In closing, Geurds anticipates a future when archaeological research in Pacific Nicaragua and Nicoya will be rooted in empirical research and informed by social theory in equal measure.

As even a cursory reading of the various chapters in this volume will make clear, our knowledge of the prehistory of Pacific Nicaragua and northwestern Costa Rica is growing rapidly, and many of the simplest facts that were taken

for granted in the last century are now being challenged and replaced with a deeper, more sophisticated understanding of the region that we call Greater Nicoya. With an ever-increasing number of investigators taking an interest in the archaeology of this region (not to mention the rest of Nicaragua and Costa Rica, areas that are also experiencing a boom in research), the twenty-first century promises to be an exciting time for Greater Nicoya scholarship, but there are challenges ahead. Nicaragua's current political turmoil (which began with protests against the government in the spring of 2018 and is ongoing as of this writing) and the much-heralded yet perpetually delayed construction of a massive transoceanic canal across southern Nicaragua (first announced in 2013) are not the least of these. While an exploration of the potential environmental and economic consequences of the canal project in particular would take us beyond the scope of traditional archaeology, we cannot help but recognize that such an enormous undertaking, though potentially offering opportunities for extensive archaeological exploration via mitigation work, would almost assuredly result in the destruction of dozens or even hundreds of archaeological sites (many of which have yet to be identified) as well as the loss of everything that they might reveal. It is our fervent hope that such a worst-case scenario will never play out, that the archaeological record of Nicaragua and Costa Rica will receive the attention that it so richly deserves, and that *The Archaeology of Greater Nicoya* will not prove to be the last major publication to focus on this exciting region, but the first of many.

REFERENCES

- Abel-Vidor, Suzanne. 1980. "Dos hornos precolombinos en el Sitio Vidor Bahía Culebra, Guanacaste." *Vínculos: Revista de Antropología del Museo Nacional de Costa Rica* 6(1-2):43-50.
- Aggen, Kerry L. 2007. "Provenance Sourcing of Obsidian Artifacts from Managua, Nicaragua, Using Trace Element Geochemistry." MA thesis, Colorado School of Mines, Golden.
- Baker, Suzanne M. 2010. *The Rock Art of Ometepe Island, Nicaragua: Motif Classification, Quantification, and Regional Comparisons*. Paris Monographs in American Archaeology 25. BAR International Series 2084. Oxford: Archaeopress and British Archaeological Reports.
- Baudez, Claude F., Nathalie Borgnino, Sophie Laligant, and Valerie Lauthelin. 1992. *Papagayo: Un hameau précolombien du Costa Rica*. Edited by Claude F. Baudez and Michael D. Coe. Paris: Centre d'études mexicaines et centraméricaines, Editions Recherches sur les Civilisations.

- Bishop, Ronald L., and Frederick W. Lange. 2013. "Frederick R. Mayer's Legacy of Research Support: The Prehispanic Ceramic Schools of Greater Nicoya." In *Pre-Columbian Art and Archaeology: Essays in Honor of Frederick R. Mayer*, edited by Margaret Young-Sánchez, 27–46. Denver: Mayer Center for Pre-Columbian and Spanish Colonial Art, Denver Art Museum.
- Bishop, Ronald L., Frederick W. Lange, Suzanne Abel-Vidor, and Peter C. Lange. 1992. "Compositional Characterization of the Nicaraguan Ceramic Sample." In *The Archaeology of Pacific Nicaragua*, edited by Frederick W. Lange, Payson D. Sheets, Anibal Martínez, and Suzanne Abel-Vidor, 135–162. Albuquerque: University of New Mexico Press.
- Bishop, Ronald L., Frederick W. Lange, and Peter C. Lange. 1988. "Ceramic Paste Compositional Patterns in Greater Nicoya Pottery." In *Costa Rican Art and Archaeology: Essays in Honor of Frederick R. Mayer*, edited by Frederick W. Lange, 11–44. Boulder: University of Colorado.
- Creamer, Winifred. 1983. "Production and Exchange on Two Islands in the Gulf of Nicoya, Costa Rica, A.D. 1200–1550." PhD diss., Tulane University, New Orleans.
- Dennett, Carrie L. 2016. "The Ceramic Economy of Pre-Columbian Pacific Nicaragua (AD 1–1250)." PhD diss., University of Calgary.
- Dickau, Ruth E. 1999. "Paleoethnobotany of the Lake Managua Region, Nicaragua." MA thesis, University of Calgary.
- Finlayson, Kerri. 1998. "Stone Tool Industries of Managua, Nicaragua and Their Evolution through Time." MA thesis, University of Illinois, Urbana-Champaign.
- Fonseca Zamora, Oscar M. 1994. "El concepto de Area de Tradición Chibchoide y su pertinencia para entender Gran Nicoya." *Vínculos: Revista de Antropología del Museo Nacional de Costa Rica* 18–19(1–2):209–227.
- González Dávila, Gil. 2002. "Carta del Capitán Gil González Dávila al Rey de España dándole cuenta del descubrimiento de los territorios de Costa Rica y Nicaragua." In *Descubrimiento, conquista y exploración de Nicaragua: Crónicas de fuentes originales seleccionadas y comentadas por Jaime Incer Barquero*, edited by Jaime Incer Barquero, 79–99. Colección Cultural de Centro América, Serie Cronistas 6. Managua: Fundación Vida.
- Gutiérrez González, Maritza. 1993. "El aprovechamiento de la fauna en el sitio arqueológico Nacascolo, Guanacaste." Licentiate's thesis, Universidad de Costa Rica, San José.
- Gutiérrez González, Maritza. 1998. "La ictiofauna del sitio arqueológico Nacascolo, Bahía Culebra, Guanacaste." *Vínculos: Revista de Antropología del Museo Nacional de Costa Rica* 22(1–2):157–187.
- Hardy, Ellen Teresa. 1983. "Burials and Possible Status Distinctions at Nacascolo, Costa Rica." MA thesis, University of California, Los Angeles.

- Hardy, Ellen Teresa. 1992. "The Mortuary Behavior of Guanacaste/Nicoya: An Analysis of Precolumbian Social Structure." PhD diss., University of California, Los Angeles.
- Healy, Paul F. 1974. "Archaeological Survey of the Rivas Region, Nicaragua." PhD diss., Harvard University, Cambridge, MA.
- Healy, Paul F. 1980. *Archaeology of the Rivas Region, Nicaragua*. Waterloo, ON: Wilfrid Laurier University Press.
- Hoopes, John W. 2005. "The Emergence of Social Complexity in the Chibchan World of Southern Central America and Northern Colombia, AD 300–600." *Journal of Archaeological Research* 13(1):1–47.
- Hoopes, John W., and Oscar Manuel Fonseca Zamora. 2003. "Goldwork and Chibchan Identity: Endogenous Change and Diffuse Unity in the Isthmo-Colombian Area." In *Gold and Power in Ancient Costa Rica, Panama, and Colombia: A Symposium at Dumbarton Oaks, 9 and 10 October 1999*, edited by Jeffrey Quilter and John W. Hoopes, 49–89. Washington, DC: Dumbarton Oaks Research Library and Collections.
- Joyce, Rosemary A. 2016. "Rethinking Ceramics as Evidence of Regional Interaction." Paper presented at the 81st Annual Meeting of the Society for American Archaeology, Orlando, Florida, April 6–10.
- Lange, Frederick W. 1971. "Culture History of the Sapoá River Valley, Costa Rica." PhD diss., University of Wisconsin, Madison.
- Lange, Frederick W. 1978. "Coastal Settlement in Northwestern Costa Rica." In *Prehistoric Coastal Adaptations: The Economy of Maritime Middle America*, edited by Barbara L. Stark and Barbara Voorhies, 101–119. New York: Academic Press.
- Lange, Frederick W., ed. 1992. *Wealth and Hierarchy in the Intermediate Area: A Symposium at Dumbarton Oaks, 10th and 11th October 1987*. Washington, DC: Dumbarton Oaks Research Library and Collection.
- Lange, Frederick W., ed. 1995. *Descubriendo las huellas de nuestros antepasados: El proyecto "Arqueología de la Zona Metropolitana de Managua"*. Managua: Alcaldía de Managua.
- Lange, Frederick W., ed. 1996a. *Abundante cooperación vecinal: La segunda temporada del proyecto "Arqueología de la Zona Metropolitana de Managua"*. Managua: Alcaldía de Managua.
- Lange, Frederick W., ed. 1996b. *Paths to Central American Prehistory*. Niwot: University Press of Colorado.
- Lange, Frederick W., Peter Ryder, and Richard M. Accola. 1986. "Bay of Culebra Survey." In *Prehistoric Settlement Patterns in Costa Rica*, edited by Frederick W. Lange and Lynette C. Norr, 25–36. *Journal of the Steward Anthropological Society* 14(1–2):1982–1983. Urbana: University of Illinois.

- Lange, Frederick W., Payson D. Sheets, Aníbal Martínez, and Suzanne Abel-Vidor. 1992. *The Archaeology of Pacific Nicaragua*. Albuquerque: University of New Mexico Press.
- Lange, Frederick W., and Doris Z. Stone, eds. 1984. *The Archaeology of Lower Central America*. School of American Research Advanced Seminar Series. Albuquerque: University of New Mexico Press.
- Laplace, Georges. 1974. "De la dynamique de l'analyse structurale ou la typologie analytique." *Rivista de Scienze Preistoriche* 29(1):3–71.
- McCafferty, Geoffrey G., and Larry Steinbrenner. 2005. "Chronological Implications for Greater Nicoya from the Santa Isabel Project, Nicaragua." *Ancient Mesoamerica* 16(1):131–146.
- Moreau, Jean-François. 1980. "A Report on the Hunter-Robinson and Sardinial Sites." *Vínculos: Revista de Antropología del Museo Nacional de Costa Rica* 6(1–2):107–124.
- Moreau, Jean-François. 1983. "L'adaptation maritime préhistorique au site Vidor, Costa Rica." PhD diss., Université de Montréal.
- Moreau, Jean-François. 1984. "Subsistence [*sic*] Changes on the Coast of the Greater Nicoya Region." In *Inter-regional Ties in Costa Rican Prehistory: Papers Presented at a Symposium at Carnegie Museum of Natural History, Pittsburgh, April 27, 1983*, edited by Esther R. Skirboll and Winifred Creamer, 129–141. BAR International Series 226. Oxford: British Archaeological Reports.
- Niemel, Karen S. 2003. "Social Change and Migration in the Rivas Region, Pacific Nicaragua (1000 BC–AD 1522)." PhD diss., State University of New York, Buffalo.
- Norr, Lynette C. 1991. "Nutritional Consequences of Prehistoric Subsistence Strategies in Lower Central America." PhD diss., University of Illinois, Urbana-Champaign.
- Norweb, Albert H. 1961. "The Archaeology of the Greater Nicoya Subarea." Manuscript on file, Peabody Museum Archives, Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, MA.
- Norweb, Albert Holden. 1964. "Ceramic Stratigraphy in Southwestern Nicaragua." *Proceedings of the 35th International Congress of Americanists* 1, 551–561, Mexico City, August 19–25, 1962.
- Obando, Carmen Patricia. 1995. "Childhood Stress and Bone Maintenance in Prehistoric Northwestern Costa Rica: An Analysis of Two Coastal Populations, Nacascolo and Vidor." PhD diss., University of Colorado, Boulder.
- Roddick, Andrew P. 2009. "Communities of Pottery Production and Consumption on the Taraco Peninsula, Bolivia, 200 BC–300 AD." PhD diss., University of California, Berkeley.

- Román Lacayo, Manuel A. 2013. "Social and Environmental Risk and the Development of Social Complexity in Precolumbian Masaya, Nicaragua." PhD diss., University of Pittsburgh.
- Salgado González, Silvia. 1996. "Social Change in a Region of Granada, Pacific Nicaragua (1000 B.C.–1522 A.D.)." PhD diss., State University of New York, Albany.
- Solís Del Vecchio, Luis Felipe. 1998. "Nuevos datos en la arqueología de Bahía Culebra, Guanacaste, noroeste de Costa Rica." *Vínculos: Revista de Antropología del Museo Nacional de Costa Rica* 22(1–2):1–44.
- Solís Del Vecchio, Luis Felipe. 2002. "El criterio 'facilidad de obtención' para explicar las frecuencias relativas de moluscos de los depósitos de conchas precolombinos de la Península de Nacascolo." *Vínculos: Revista de Antropología del Museo Nacional de Costa Rica* 27(1–2):63–80.
- Solís Del Vecchio, Luis Felipe, and Anayensy Herrera Villalobos. 2009. "Proyecto Arqueológico Jícaro. Informe de Laboratorio. Temporadas II (2006–2007) y III (2007–2008)." Manuscript on file, Museo Nacional de Costa Rica, San José.
- Squier, Ephraim G. 1852. *Nicaragua: Its People, Scenery, Monuments, and the Proposed Inter-oceanic Canal*. 2 vols. New York: D. Appleton and Co.
- Squier, Ephraim G. 1853. "Observations on the Archaeology and Ethnology of Nicaragua." *Transactions of the American Ethnological Society* 3(1):85–158.
- Steinbrenner, Larry. 2010. "Potting Traditions and Cultural Continuity in Pacific Nicaragua, AD 800–1350." PhD diss., University of Calgary.
- Sweeney, Jeanne W. 1975. "Guanacaste, Costa Rica: An Analysis of Precolumbian Ceramics from the Northwest Coast." PhD diss., University of Pennsylvania, Philadelphia.
- Wallace, Henry, and Richard M. Accola. 1980. "Investigaciones arqueológicas preliminares de Nacascolo, Bahía Culebra, Costa Rica." *Vínculos: Revista de Antropología del Museo Nacional de Costa Rica* 6(1–2):51–66.
- Wenger, Étienne C. 1998. *Communities of Practice: Learning, Meaning and Identity*. Learning in Doing: Social, Cognitive and Computational Perspectives. Cambridge: Cambridge University Press.
- Wyss, Sue Bursey. 1983. "San Cristobal Archaeological Site, Managua, Nicaragua: Site Report and Preliminary Ceramic Analysis." MA thesis, Texas A&M University, College Station.