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ARCHAEOLOGY OF THE MAYA

Settlement Change, Urbanism, and Human and Environment Interaction at Lamanai and Ka'kabish

Two Precolumbian Maya sites in Northern Belize

ALEC McLELLAN



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Contents

List of Figures	xiii
List of Tables	xix
Glossary of Terms	xxi
Abstract	xxiii
Introduction	1
Research Questions.....	2
Review of Chapters.....	2
1. Maya History and the sites of Lamanai and Ka'kabish	5
1.1 Overview of Maya History.....	5
1.1.1 Paleoindian Period (12,000 BC to 7000 BC).....	5
1.1.2 Archaic Period (7000 BC to 2000 BC)	5
1.1.3 Preclassic Period (2000 BC to AD 250).....	6
1.1.4 Classic Period (AD 250 to 900).....	7
1.1.5 Postclassic Period (AD 900 to 1521).....	8
1.1.6 Spanish Colonial Period (AD 1521 to 1708).....	8
1.2 The Precolumbian Maya at Lamanai	9
1.2.1 Archaeological History.....	9
1.2.2 Location and Composition	11
1.3 The Precolumbian Maya at Ka'kabish.....	15
1.3.1 Archaeological History.....	15
1.3.2 Location and Composition	17
1.4 Summary	20
2. Settlement Patterns and Maya Urbanism	21
2.1 Settlement Patterns.....	21
2.1.1 A Definition of Settlement Patterns.....	21
2.1.2 Settlement Patterns and the Colonial Past.....	21
2.1.3 The Advent of Archaeology in the New World.....	22
2.1.4 Towards a Systematic Approach	22
2.1.5 Post-1960s and Settlement Systems.....	23
2.1.6 Settlement Patterns and Contemporary Studies	23
2.2 Maya Urbanism.....	24
2.2.1 Definitions of Urbanism	24
2.2.2 Population, Density, and Urbanism.....	24
2.2.3 Low-Density and Peri-urban Settlements in the Past	25
2.2.4 The Sustainable and Resilient City	25
2.2.5 Current Theories and the Archaeological Record	26
2.3 Summary	26
3. Human and Environment Interaction, Landscape Modification, and Spatial Organisation of the Precolumbian Maya	27
3.1 The Built Environment.....	27
3.1.1 A Comparison of the Size and Scale of Two Ancient Cities	27
3.1.2 Spatial Organization and the "Mayacene"	27
3.1.3 Urban Heat Islands, Lime Production, and Green Cities.....	28
3.2 Landscape Modifications and the Precolumbian Maya	29
3.2.1 Water Retention Systems and Landscape Transformation	29
3.2.2 Terraces and Agricultural Intensification	29
3.2.3 Land Clearance, Deforestation, and Soil Erosion	30
3.3 The Precolumbian Maya and the Contemporary World.....	30
3.3.1 Deforestation and Soil Erosion in the Current Era.....	30
3.3.2 Human Niche Construction.....	31
3.4 Summary	31



4. Methods: Analysing and Recording Precolumbian Maya Settlement	33
4.1 Lamanai and Ka'kabish: Re-analysis of Existing Data.....	33
4.1.1 Interpreting Temporal Dynamics at Lamanai.....	33
4.1.2 Interpreting Temporal Dynamics at Ka'Kabish	33
4.2 The Inter-site Settlement Zone: Surface Survey	35
4.2.1 Archaeological History of the Settlement Zone	35
4.2.1.1 The Maya Research Project Survey	35
4.2.1.2 The Spring Mapping Project Survey.....	35
4.2.2 Survey and Mapping Techniques	37
4.2.3 Field Conditions	38
4.2.4 Ceramic Assemblages	40
4.2.5 Lithic Assemblages	42
4.3 Geomorphology and Landscape Ecology	42
4.4 Presentation and Arrangement of Data	42
4.4.1 Designation of the Settlement Zone.....	42
4.4.2 A Heuristic Device	42
4.4.3 Sherd Density	43
4.4.4 Relative-Risk Surfaces	43
4.5 Methodological Justification and Limitations.....	43
4.5.1 Methodological Justification	43
4.5.2 Methodological Limitations.....	43
4.6 Summary	44
5. The Civic-Ceremonial Centres of Lamanai and Ka'kabish.....	45
5.1 The Chronology at Lamanai.....	45
5.1.1 Evidence from the Middle Preclassic to Early Classic periods.....	45
5.1.2 Evidence from the Late Classic to Late Postclassic periods	47
5.2 The Temporal Dynamics at Lamanai	49
5.3 The Chronology at Ka'kabish	55
5.3.1 Evidence from the Middle Preclassic to Late Postclassic Periods.....	55
5.4 The Temporal Dynamics at Ka'kabish.....	62
5.5 Summary	63
6. The Inter-site Settlement Zone and its Artefacts	65
6.1 Spacial Distribution of the Structures	65
6.1.1 Settlement Zone A.....	65
6.1.2 Settlement Zone B.....	65
6.1.3 Settlement Zone C.....	67
6.1.4 Settlement Zone D.....	70
6.1.5 Settlement Zone E.....	70
6.1.6 Settlement Zone F	70
6.2 Ceramic Assemblage.....	72
6.2.1 Type:Variety	72
6.2.2 Density and Distribution of Sherds.....	79
6.2.2.1 Settlement Zone A.....	79
6.2.2.2 Settlement Zone B.....	81
6.2.2.3 Settlement Zone C.....	82
6.2.2.4 Settlement Zone D	84
6.2.2.5 Settlement Zone E.....	84
6.2.2.6 Settlement Zone F	87
6.3 Lithic Assemblage.....	89
6.4 Temporal Dynamics of the Settlement Zone.....	93
6.4.1 Settlement Zone A.....	93
6.4.2 Settlement Zone B.....	94
6.4.3 Settlement Zone C.....	95
6.4.4 Settlement Zone D.....	97
6.4.5 Settlement Zone E.....	98
6.4.6 Settlement Zone F	98
6.5 Summary	103



7. Human and Environmental Dynamics in the Region.....	105
7.1 Environmental Setting of the Study	105
7.2 Evidence of Environmental Change.....	107
7.2.1 Environmental Change and the New River Lagoon	107
7.2.2 History of Vegetation Change	108
7.2.3 Agroforestry and the Exploitation of Pine	108
7.3 Settlement Dynamics and the Changing Environment	109
7.3.1 Settlement Dynamics in the Study Zone	109
7.3.2 Human/Environment Interaction at Ka'kabish, Lamanai, and the Inter-Site Settlement Zone	110
7.3.3 The Environment and the Maya.....	111
7.4 Summary	111
8. Lamanai, Ka'kabish, the Inter-site Settlement Zone, and the Greater Region of Northern Belize.....	113
8.1 Major Sites within 25 km of Lamanai.....	113
8.1.1 Greater Lamanai Region	113
8.1.1.1 Chau Hiix	113
8.1.1.2 El Pozito.....	115
8.1.2 Dynamics of Sites within 25 km	116
8.2 Major Sites Between 25-50 km from Lamanai	116
8.2.1 Three Rivers Region	116
8.2.1.1 La Milpa.....	116
8.2.1.2 Blue Creek	117
8.2.1.3 Dos Hombres	118
8.2.2 Northern Belize Region.....	118
8.2.2.1 Nohmul	118
8.2.2.2 San Estevan.....	119
8.2.2.3 Cuello.....	120
8.2.3 Eastern Coastal Region	120
8.2.3.1 Altun Ha	120
8.2.3.2 Colha	121
8.2.4 Southern Hondo-Nuevo Region	121
8.2.4.1 San Jose.....	121
8.2.5 Dynamics of Sites within 50 km	122
8.3 Comparison with the Wider Maya World	123
8.4 Summary	124
9. The Invisible Maya, Low-density Urbanism, Sustainability, and Settlement	125
9.1 The Invisible Maya, Low-density Urbanism, and Urban Scaling	125
9.2 Urban Traditions, Sustainability, Caracol, and Chunchucmil	129
9.3 Political Disintegration, Market Forces, and Managed Cities	130
9.4 Migration, Developmental History, and Settlement	130
9.5 Summary	132
10. Conclusion	133
10.1 Research Questions	133
10.1.1 What is the character of the settled landscape between Ka'kabish and Lamanai (number of structures; patterns and distribution of settlement; modifications to the natural environment) and how does this compare to other sites in Northern Belize?.....	133
10.1.2 How does the chronology of the inter-site settlement zone compare to the chronology of the two civic-ceremonial centres – Lamanai and Ka'kabish – as well as the core-periphery dynamics at other sites in Northern Belize?.....	135
10.1.3 How does the distribution and density of occupation (as defined by the location and date of each structure) in the inter-site settlement zone change over time, and how does this compare to occupation of the centres, as well as other sites in Northern Belize?	136
10.1.4 To what extent is there consistency or variation in material culture found at structures in the region within and between these two major centres?.....	136
10.1.5 What does the environmental evidence from pollen cores collected adjacent to Lamanai suggest about the settlement patterns at Lamanai, Ka'kabish, and the inter-site settlement zone?	137



Settlement Change, Urbanism, and the Environment at Lamanai and Ka'kabish

10.2 Implications for Future Study	137
10.3 Concluding Remarks	138
References	139
Appendix A: Chronology of Structures at Lamanai.....	173
Appendix B: Designation, Size, Location, Spatial Distribution, and Chronology, of the Inter-site Settlement Zone	177
Appendix C: Lithic Data from the Inter-site Settlement Zone	201



Introduction

“A wonderful fact to reflect upon, that every human creature is constituted to be that profound secret and mystery to every other. A solemn consideration, when I enter a great city by night, that every one of those darkly clustered houses encloses its own secret...”

— Charles Dickens, *A Tale of Two Cities*

Lamanai and Ka'kabish, two Precolumbian Maya centres in north-western Belize, have been sites of archaeological investigation and interpretative progress for several decades, with archaeologists exploring many facets of their developmental history. A large amount of research has focused on the long stratigraphic sequences at Lamanai and Ka'kabish, which date from the Middle Preclassic (1000–400 BC) to Late Postclassic (AD 1250–1521), and Colonial periods (AD 1521–1708) of Maya history (Aimers 2007a; Graham 2004, 2011; Haines 2013; Howie 2012; Pendergast 1986a, Powis 2002). Existing studies have identified relatively long culture-histories for each site, but they have yet to embark on a structure-by-structure temporal reconstruction of the settlement dynamics of the civic-ceremonial centres and the structures surrounding them. Archaeologists have excavated many of the structures at Ka'kabish and Lamanai, but most of the relevant information has remained in note form or as site reports, without it being used for broad space-time reconstructions. This is the major goal of this project – to create a fine-grained model of the settlement dynamics, or changes in the density and distribution of structures through time and across space at Lamanai, Ka'kabish, and the inter-site settlement zone – an area inbetween the two centres – and compare the model to environmental evidence from pollen cores in the New River Lagoon, a body of water adjacent to Lamanai. By analysing the spatio-temporal distribution of settlement and comparing it to evidence from pollen cores, this study aims to understand the human and environmental dynamics at Ka'kabish, Lamanai, and the inter-site settlement zone. This relationship is later compared to the human and environmental dynamics at other sites in the region and across the greater Precolumbian Maya world.

At Lamanai, archaeologists have studied the material evidence of occupation from many periods of Maya history, with projects focusing on the ceramics of the Preclassic (Powis 2002, 2004) and Terminal Classic–Early Postclassic periods (Howie 2012), as well as changes in the paleoenvironment from the beginning of the Holocene to the present (Metcalf *et al.* 2009; Rushton *et al.* 2013). The site of Lamanai was visited by archaeologists in the mid-1920s and returned to in the late-1930s and mid-1960s, however, the first excavation and systematic survey of the site was conducted in the 1970s. Excavations in

the civic-ceremonial centre and evidence from pollen collected adjacent to Lamanai suggest that the site was occupied as early as 1600 BC (Hanna *et al.* 2016), spanned the period of the Maya collapse, and continued to be a focus of settlement after the arrival of the Spanish (Graham 2004, 2011; Metcalfe *et al.* 2009; Pendergast 1982a; Rushton *et al.* 2013). These studies uncovered the length of occupation at Lamanai, but there has yet to be an analysis of settlement dynamics and changes in settlement over time. Archaeologists have speculated that the peak periods of population at Lamanai were in several different time periods, however, these speculations are based on data that is limited to the core of the site.

At Ka'kabish, a Precolumbian Maya centre 10 km northwest of Lamanai, archaeologists have only recently begun to understand the historical trajectory of the site (Haines 2008, 2010, 2013; McLellan and Haines 2013, Tremain 2011). In the early 1980s, archaeologists surveyed several domestic structures in cleared milpa, or corn fields next to the core of the site, using ceramic materials collected from the surface to identify Early Postclassic period occupation (Haines 2008: 4). Several years later, archaeologists from the Maya Research Program mapped the civic-ceremonial centre (Guderjan 1996). These archaeologists compared ceramics at the site to existing type-variety sequences, which suggest a long history of occupation, beginning as early as the Late Preclassic (400 BC–AD 300) period and continuing until the end of the Late Classic period (AD 600–900). More recently, archaeologists have identified evidence of occupation during the Middle Preclassic (1000–400 BC) and Postclassic periods (AD 900–1521) (Haines 2013; McLellan 2013). The history of archaeological study at Ka'kabish is shorter than Lamanai, however, several lines of evidence can be used to reconstruct a structure-by-structure analysis of Ka'kabish. Unlike Lamanai, which has benefitted from the governmental protection of a natural reserve, Ka'kabish has been extensively looted, with some excavations bisecting the primary axis of monumental structures. The trenches from these excavations have been mapped to understand the developmental history of structures in the civic-ceremonial centre (Tremain 2011). These data, and other information from excavations in the civic-ceremonial centre, are used in my research to understand the settlement dynamics of Ka'kabish, with the

goal of comparing the historical trajectory of Ka'kabish to Lamanai.

To complement the chronological reconstruction of Lamanai and Ka'kabish, I surveyed several areas peripheral to the site cores, which are collectively referred to as the inter-site settlement zone and represent a hinterland. Ceramic material from each structure identified in the inter-site settlement zone was collected and analysed to recreate the settlement dynamics of the periphery, or hinterland, of Lamanai and Ka'kabish. By reconstructing the settlement dynamics of Lamanai, Ka'kabish, and the inter-site settlement zone, I intend to provide a detailed and thorough understanding of the historical trajectory of the region. This reconstruction is subsequently compared to the settlement dynamics of other sites in the Precolumbian Maya world to highlight consistency and variability in the archaeological record.

Research Questions

The major research question addressed by this study is: What are the settlement dynamics at Ka'kabish, Lamanai, and the inter-site settlement zone, and how do these compare to the environmental evidence of pollen cores from the New River Lagoon, as well as the core-hinterland dynamics at other Maya sites in the greater region of Northern Belize?

To answer this question, it is important to identify several key characteristics of the study zone, such as:

1. What is the character of the settled landscape between Ka'kabish and Lamanai (number of structures; patterns and distribution of settlement; modifications to the natural environment) and how does this compare to other sites in Northern Belize?
2. How does the chronology of the inter-site settlement zone compare to the chronology of the two civic-ceremonial centres – Lamanai and Ka'kabish – as well as chronology of other sites in Northern Belize?
3. How does the distribution and density of occupation (as defined by the location and date of each structure) in the inter-site settlement zone change over time, and how does this compare to occupation of the centres, as well as other sites in Northern Belize?
4. To what extent is there consistency or variation in material culture found at structures in the region within and between these two major centres?
5. What does the environmental evidence from pollen cores collected adjacent to Lamanai suggest about the settlement patterns at Lamanai, Ka'kabish, and the inter-site settlement zone?

Review of Chapters

Chapter's 1, 2, and 3, look to: 1) provide an overview of Precolumbian Maya history and the historical development of archaeological settlement pattern studies, 2) discuss the theoretical background of settlement studies and urbanism

in Maya cities, 3) describe the character and composition of Maya cities, 4) analyse evidence of landscape modifications and their effect on past environments. The goal of Chapter 1 is to place my work within the broader context of Maya studies and show how the reconstruction of settlement dynamics at Lamanai, Ka'kabish, and the inter-site settlement zone, adds to the narrative of Precolumbian history. Chapter 2 highlights the ways in which my work builds on the theoretical development of settlement pattern studies, especially as it relates to low-density urbanism. Chapter 3 presents some of the ambiguities in Precolumbian Maya studies, with a goal of assessing the way the configuration – the plan, or layout – of the settlement affected the environment in the past.

Chapter 4 outlines the methods used to collect and analyse data from Lamanai, Ka'kabish, and the inter-site settlement zone. At Lamanai and Ka'kabish, I reviewed and reused existing data from unpublished fieldwork notebooks, site reports, and published articles, to identify the occupation date of each excavated structure in the civic-ceremonial centres. I surveyed 6 fields over the course of 7 years along a 10 km corridor between Lamanai and Ka'kabish to add to our understanding of core-periphery dynamics and to further understand the historical trajectory of the area. To visually assess and analyse the distribution and chronology of structures at Lamanai, Ka'kabish, and the inter-site settlement zone, I created kernel density maps and, in some cases, relative-risk surfaces (see pg. 43 for an explanation of relative-risk surfaces). I used interpolation to visualize the density of ceramics in the inter-site settlement zone and to identify changes in the density of ceramics across space. Chapter 4 presents a new method for analysing core-periphery dynamics at Precolumbian Maya sites – a method that has yet to be used in current studies of spatial and chronological distributions of settlement.

Chapter 5 is divided into two sections: one that focuses on the Precolumbian Maya at Lamanai and the other at Ka'kabish. For each site, there is a summary of the ceramics that were identified and a discussion of their chronology. The dates from the ceramics at each structure at Lamanai and Ka'kabish are used to present maps of the changes in settlement over time. This is the first time data has been used Lamanai and Ka'kabish to recreate changes in the settlement over time and offers a unique perspective on the growth and decline of these centres.

Chapter 6 provides a structure-by structure analysis of the architectural and ceramic evidence from the area between Ka'kabish and Lamanai, from Settlement Zones A to F. I analyse the spatial distribution and composition of structures in the settlement zone and categorise the structures in a morphological system based on structural features and relative placement location (see pg. 42 for an explanation of the typology). In the final section, I combine the spatial distribution, density, and chronology, of individual structures to recreate the settlement dynamics of the inter-site settlement zone. Chapter 6 offers a fine-

grained understanding of changes in the periphery of major settlements (Lamanai and Ka'kabish) over time.

Chapter's 7, 8, and 9, present the results of my project and places them within the larger study of Maya archaeology. The purpose of this section is to: 1) compare the settlement dynamics of Lamanai, Ka'kabish, and the inter-site settlement zone, to the environmental data from pollen cores collected adjacent to Lamanai, 2) compare the human and environment dynamics of the study area to sites in the greater region of Northern Belize, 3) assess the manner in which the results of the project address several methodological and theoretical problems in Maya archaeology. This section starts with a local perspective, moves to a regional perspective, and ends with a culture-wide perspective of Precolumbian Maya history.

Chapter 10 summarizes my major conclusions. The first part reiterates my research questions and offers responses to each question. The second part outlines the implications for future study and discusses the direction for future research. The last part of this chapter offers concluding remarks about Precolumbian Maya studies and my experience in attempting to understand their societies. I provide a new perspective on settlement dynamics at Lamanai, Ka'kabish, and the inter-site settlement zone, as well as sites in Northern Belize, and address several current themes in Maya archaeology, such as spatial organization, low-density urbanism, human/environment interactions, and sustainability.



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'Ever since the discovery of Early Postclassic public architecture at Lamanai, the site was regarded as an anomaly that survived the precipitous population decline of the 9th century. Now we know that this time was Lamanai's population peak and have new ways of going forward to understand how it thrived while other cities were abandoned.'

Professor Thomas Guderjan, The University of Texas at Tyler

'Alec McLellan's monograph is well written, well researched, and well thought out. It is fresh, timely, and exciting research and it fills a big gap in our understanding of Lamanai and of northern Belize during the Preclassic, Classic, and Postclassic periods.'

Dr Terry Powis, Kennesaw State University

'I looked at each chapter and found something useful at every turn. This book will be incredibly useful for anyone involved in Maya (or Mesoamerican) archaeology.'

Professor Fred Valdez, Jr., The University of Texas at Austin

At Lamanai and Ka'kabish, two Precolumbian Maya centres in north-western Belize, archaeologists have researched the environment, architecture, and long-term occupation of the civic-ceremonial centres. The sites' rural or hinterland populations, however, which were presumably critical to the support of the centres, have not been studied. These populations are key to an understanding of the sites' long histories, which survived the Maya collapse (AD 600-900), flourished during the transition to the Postclassic period (AD 900-1500), and continued to be a focus of settlement in the Spanish Colonial period (AD 1521-1708). By reconstructing the spatial and temporal dynamics of Ka'kabish, Lamanai, and the inter-site settlement zone, and comparing them to environmental evidence from pollen cores collected in the New River Lagoon, this study sheds much-needed light on the processes that promoted the continuity in evidence in this region.

Alec McLellan is a Research Fellow at Trent University, Peterborough, Canada. He has excavated archaeological sites in Belize, Canada, and the United Kingdom. He specialises in settlement patterns, spatial analysis, geographic information systems, and early complex societies. Alec received his PhD from University College London.

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