

Chapter 1

Introduction

The osteological investigation of skeletal remains is a practice through which much can be learnt about the past, both at the levels of the individual as well as the population. Through this lens past nutrition, disease, and overall health can all be studied and assessed. The following research is based on both biological and socio-cultural evidence to examine Maya health and society in northwestern Belize. The study presents research undertaken at three ancient Maya sites in the Three Rivers Region of northwestern Belize, an area which has not had systematic osteological study. The research compares the skeletal collections in relation to health indicators, in order to establish whether there were health differences and what underlying causes might be. Also considered is how the health of the region relates to the broader Maya area.

The largest of the three sites under consideration, Blue Creek, has been studied extensively since 1992 (Guderjan 2007). However, a systematic analysis of the entirety of the skeletal population had not been completed prior to this research. From what is known archaeologically, Blue Creek is not only the largest of the three sites but for reasons discussed later within this research was perhaps also the wealthiest of the three (Guderjan 2014). The two other sites are Nojol Nah and Xnoha. These two are located less than five kilometres apart, just a few kilometres south and east of the modern borders of Mexico and Guatemala. During the times of occupation, they were of similar social status levels. These three sites together offer potential insight into change over time in the Three Rivers Region. Their occupation periods are slightly varied: Blue Creek had the longest occupational period, as it was inhabited from the Preclassic (prior to about 250CE) through to the Terminal Classic (around 900-1100CE) (Guderjan 2007). Nojol Nah was occupied from the Preclassic Period into the Classic Period (250-850CE) (Brown *et al.*, 2014). Xnoha was also occupied during the Preclassic, but it really was not until the Late Classic when the site experienced extensive construction and occupation (Guderjan 2015c). The research presented here aims to address the rates of pathologies among these three populations to provide an insight into health through time and to discover whether there were any similarities or differences in health and disease among these three sites.

The research presented here represents information from over 220 individuals, and discusses the health indicators seen throughout the region prior to Spanish contact. The skeletal collections from all three sites are housed at the Maya Research Program, in Blue Creek Village, Belize. While extensive excavations and research through the

Maya Research Program have been undertaken in this area since 1992, the skeletal remains collected have received little attention. Maya health through time has long been a concern among osteologists (Wright and White 1996) as will be discussed in further detail in Chapters 2 and 3. This research addresses questions of health amongst the three sites through osteological analysis in order to determine overall health in the region.

The main goals of the research are as follows:

1. To examine health indicators of three small to medium-sized Maya populations.
2. To determine whether there were any differences in health among the residents of the three communities.
3. To determine if there were significant changes in health through the occupational history of the region.
4. To create a paleodemographic profile for three sites which have not yet had a total analysis of the skeletal populations, and to consolidate research on a specific skeletal collection, in this case the skeletal remains housed at the Maya Research Program. This includes not only age-at-death, biological sex, and information on pathology, but also socioeconomic status, and cranial and dental modifications.
5. To provide information on Maya health and culture in this area of the Maya region in order to add to the pre-existing knowledge of Maya health patterns in Mesoamerica.

Due to the tropical environment of the Maya lowlands, preservation of skeletal materials in this region is typically exceedingly poor (Geller 2006: 258; Healy 2007: 262; Wanner 2007: 254; Webster 1997: 8). These three sites however, and Nojol Nah in particular, have been a source for skeletal remains which are in very good condition. This has created a unique opportunity to explore Maya health within the Three Rivers Region of Belize.

As the northern Three Rivers Region study examines the interrelatedness of Maya health with location, biological sex, age, and socioeconomic status, a description of the areas where the burials were excavated within each of the three sites, is presented here. This is to illustrate the different locations within the three sites where the human remains were excavated, and that sometimes, as will be discussed in Chapter 10, socioeconomic status in the ancient Maya world is not straightforward. The northern Three Rivers Region study employs the terminology for various structures and areas that the Maya Research Program publishes in their reports (Driver 2001; Guderjan 2007; Lichtenstein 1999). The terminology is used in my

study is slightly augmented from the Tikal classification system (Bullard 1960; Lichtenstein 1999: 37; Loten and Pendergast 1984; Ricketson and Ricketson 1937). This is because the terminology used in the vast majority of the site reports, articles, and books on the three study sites employ Lichtenstein's (1999) modified terminology and as this is a study of the skeletal remains of the three sites I present the data to be uniform with those reports. However, to avoid confusion the terms for various public and private spaces as used by the Maya Research Program are defined here alphabetically.

Barrio/Neighbourhood: an area of the site composed of a few different structures, patios, courtyards, and plazas.

City-State: cities which are independent and governed by their own individual rule.

Courtyard: there are four different classifications of architectural types: courtyard, patio group, plaza, and plazuela. Courtyards entail restricted access areas bounded on all sides by structures (Lichtenstein 1999: 45). Courtyards are developed over time, having been plaza groups in which the surrounding expansion of structures has created a courtyard (Lichtenstein 1999: 45).

Patio Group: the most open of all four groups (courtyard, patio group, plaza, and plazuela) as they are built in the shape of an 'L' or a 'U' and therefore space is accessible (Lichtenstein 1999: 45).

Plaza: the largest of the four architectural types (courtyard, patio group, plaza, and plazuela) and is an open social space, typically incorporating public monumental architecture (Lichtenstein 1999: 45).

Plazuela: is slightly smaller than a plaza and is four-sided; however, a plazuela is still a large public space (Lichtenstein 1999: 45). These four architectural types (courtyard, patio group, plaza, and plazuela) can all incorporate buildings that contain burials, and indeed sometime burials are excavated not within the buildings, but instead directly under the floors of the courtyard, patio group, plaza, or plazuela.

Polity: the political and social unit of a place (Renfrew 1986); for example, reference to the Blue Creek polity is a reference to the political sphere of that city-state.

Site: the archaeological remains of a place, be that a city, neighbourhood, or structure.

Site Core: the centre of a site. For Maya sites this would mean the political centre, consisting of large monumental architecture.

Structure: the archaeological remains of a something constructed or built, a 'single complete architectural entity,' (Loten and Pendergast 1984: 14).

Social terms will be discussed in further detail in the following chapter (Chapter 2.4); however, a few terms are defined here:

Commoners/Farmers: The lowest social tier. These individuals are not well represented in the archaeology of the Maya area, this is because their houses were made of perishable materials and not much survives (refer to Chapter 2).

Non-ruling elite: this social tier consists of wealthy individuals who did not rule over the polity.

Ruling elite: This group is composed of the rulers of polities, as will be discussed in Chapter 2, and includes individuals such as the *k'uhul ajaws*.

Sub-elites: Not technically of elite social status, these individuals were closer to elite status than to commoner status.

The following chapter, Chapter 2 (*The Maya: A History and Overview*), contains a broad overview of Maya culture history, focusing on the Preclassic and Classic Maya. Maya history, political structure and culture will be discussed within this chapter in order to provide a background on the culture history before delving into the bulk of the research. Chapter 2 also contains a brief contextualization of the practice of osteological study in the Maya Region as well as the osteological evidence of cultural skeletal modification in Mesoamerica. In Chapter 3, (*Osteology and Health Indicators*) the health indicators pertinent to this research are defined and examined in order that a base of knowledge can be obtained prior to the presentation and contextualization of results. Chapter 4 (*The Sample and Locational Context*) provides a detailed investigation into the three study sites to provide context for the osteological study. Chapter 5 (*Osteological Methods*) details the methods used throughout the course of the research, beginning first with how the paleodemographic profiles were created for each site, then how the various health indicators were analysed. Chapter 6 (*Results: The Skeletal Population of the northern Three Rivers Region*) presents the results of the population demographics for the complete dataset as a whole and for each site individually. This chapter focuses on age at death and biological sex ratios. Osteological results are presented in Chapter 7 (*Results: Dental Health of the northern Three Rivers Region*) beginning with dentition and dental pathologies, and continue through Chapter 8 (*Results: Skeletal Health Indicators in the Northern Three Rivers Region*) with the results of assessment of health indicators from the skeleton. Chapter 9 (*Cranial and Dental Modifications to the Skeleton*) combines cultural and osteological data when presenting the results of cultural modifications to the skeleton. Cranial and dental modification are not directly related to health; however, they are important when assessing Maya skeletal populations as they provide possible information on status or residence location. Chapter 10 (*Burial Contexts and Artefact Assemblages in the northern Three Rivers Region*)

presents the archaeological results on burial culture of the northern Three Rivers Region. Though not directly related to osteology or health, burials have the potential to provide information on socioeconomic status and other cultural factors. Chapter 11 (*Discussion*) combines the key topics detailed throughout to address the overall aim of the project. Finally, Chapter 12 (*Conclusion*) presents the conclusion and directions for future research. *Appendix A* presents summaries of each individual in the study, providing information on burial context, age at death, and biological sex. *Appendix B* presents a reference guide for each individual presenting similar information but in spread sheet format. The research presented here represents 222 individuals, from three medium-sized Maya sites, and discusses the health indicators seen throughout the region prior to Spanish contact.