



Postclassic Petén Maya bow-and-arrow use as revealed by immunological analysis



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ABSTRACT

The bow-and-arrow was a widely used weapon in the Postclassic and Contact periods in the Maya lowlands. A sample of 108 arrow points from varied archaeological contexts in the lakes region of central Petén, northern Guatemala, was submitted for cross-over immunoelectrophoresis (CIEP) analysis. Analysis resulted in 25 positive matches to available antisera for a wide range of local and introduced fauna, from small and large land mammals to avians. These findings indicate possible uses in subsistence and ritual, as well as the first immunological identification of human proteins from projectile weaponry in Mesoamerica. This study did not reveal strong correlations between targeted fauna and point morphology, although larger points were likely used for larger game.

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1. Introduction

Small projectile points are one of the most common formal stone tools in Postclassic lithic assemblages in the Maya lowlands of southern Mexico, northern Guatemala (Department of El Petén), and Belize. These points, generally 1–3 cm long and weighing 0.25–1.0 g, are typically side-notched, with varying base and hafting styles (Fig. 1; Meissner, 2014: 237–352). Functionally, they are “arrowheads,” hafted to slender shafts. Despite several studies of these points (Blake, 2010; Graham, 1991, 2011; Masson, 2000; Oland, 2013; Proskouriakoff, 1962; Shafer and Hester, 1988; Simmons, 1995, 2002), little research has attempted to reconstruct their actual uses in hunting, warfare, or other activities, through archaeological data.

This study used cross-over immunoelectrophoresis (CIEP), an immunological method for identifying protein residues, to investigate point use: specifically to determine fauna hunted using the bow-and-arrow. The sample of 108 analyzed points, largely made from obsidian, comes from Late Postclassic (ca. AD 1400–1525) and (Spanish) Contact (AD 1525–1697) period sites in Petén. Residue analysis addressed several questions related to use of these points

in subsistence, ritual, and defensive behavior.

2. Background

2.1. The postclassic Petén lakes region

The “lakes region” of the Department of Petén refers an east-west chain of eight lakes in northern Guatemala (see Fig. 2 inset). Continually occupied since the early Middle Preclassic period (ca. 800 BC) and probably well before, the lake basins’ defensible islands and peninsulas became a settlement focus beginning in the Terminal Classic (ca. AD 800–950/1000). The arrow points analyzed here came from archaeological excavations into Late Postclassic and Contact period contexts at five sites in the western portion of the lakes chain: Nixtun-Ch’ich’, Tayasal, Quexil, Ixlú, and Zacpetén.

Lake Petén Itzá, the largest of the lakes, was controlled by the Itzas from their island capital at Nojpeten (modern Flores) until Spanish conquest in 1697, after which the island became a garrison (Jones, 1998). Nixtun-Ch’ich’ was ruled by the Chak’an Itzas, which became an opposing faction sometime in the seventeenth century or before. The points analyzed here come from the peninsular part of the site, specifically Mound ZZ at its eastern tip (Rice, 2009), location of the early eighteenth century Spanish mission San Jerónimo. Tayasal occupies the western Tayasal Peninsula, where

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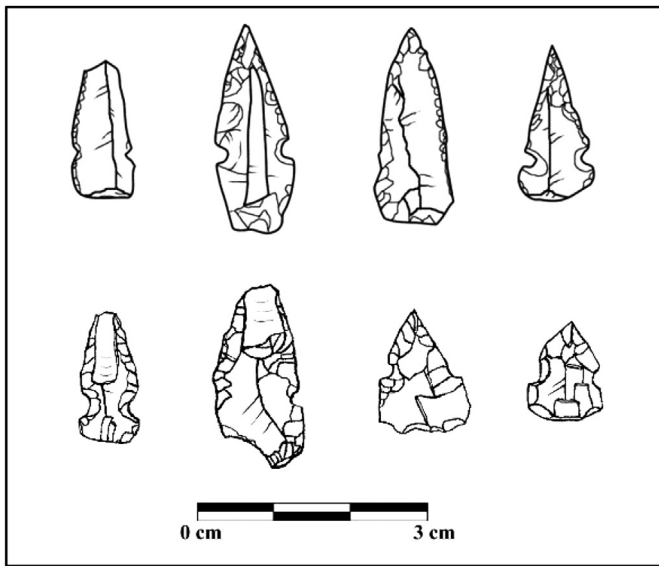


Fig. 1. Examples of small obsidian arrow points from the Petén lakes region. Note impact-damaged specimens in bottom row.

two additional Spanish missions were established. The site of Quexil (Schwarz, 2004) comprises two islands in small Lake Quexil, south of the main arm of Lake Petén Itzá.

To the east, Ixlú occupies a narrow isthmus separating Lakes Petén Itzá and Salpetén. Ixlú was an Itza port, but in the late seventeenth century it was contested by their eastern enemies, the Kowoj, allied with the Chak'an Itza against the ruling Itzas of Nojpeten (Rice and Rice, in press). The Kowoj had an important settlement with two distinctive "temple assemblage" civic-ceremonial complexes and a possible *popol naj* or council house at the nearby peninsular site of Zacpetén in Lake Salpetén (Pugh, 2001, 2003; Rice and Rice, 2009).

2.2. Ethnohistorical and ethnographic accounts

Written accounts from the sixteenth and seventeenth centuries describe bow-and-arrow use in Petén primarily in the context of defense and resistance to Spaniards (see Jones, 1998: 50, 135–136). To the north in Yucatán, Franciscan Father Diego de Landa (in Tozzer, 1941) concluded that the bow-and-arrow was rarely used for hunting forest creatures. Instead, it was used in coastal lagoons to shoot fish in the shallows. Secondary sources, such as Diego López de Cogolludo (2006 [1688]: Lib. IV, Cap. 5) mention hunting birds, stating the Maya "shoot with their arrows peacocks, some birds they call *phaysanes*, and many others."

Arrows may have been used in hunting rituals during the early Contact period: hunters gathered in a house, the house was blessed and evil spirits removed, and an altar was prepared (Landa [in Tozzer, 1941]: 153–155). Hunters offered copal incense while summoning deities associated with the pursuit of game; afterward, they removed arrows from their quivers and danced with blue-painted deer skulls. Some participants used their arrows to pierce their ears and tongues and let blood. Other ritual uses include "arrow sacrifice" of Spaniards in Champotón and Ixpimienta, in which an individual was tied to a tree and ceremoniously killed by arrows (Jones, 1989: 221). Padre Pedro Sánchez de Aguilar mentioned rituals in Cozumel that included a "dance of their paganism, and while dancing they shoot with arrows a dog which they are to sacrifice" (Roys et al., 1940: 6).

Ethnographic research among the Lacandon Mayas revealed lexical distinctions among sizes and types of arrow points, often based on the type of animal hunted. "Barbed arrows" were used for monkey hunting (Baer and Merrifield, 1971: 236; Boremanse, 1998: 73; Nations, 1989: 456), while "bird bolts" were wooden arrow tips with wide shoulders (Nations, 1989: 456; Tozzer, 1907: 59). Larger stone-tipped arrows were used for defensive purposes or for big game, such as peccaries or deer (Boremanse, 1998: 84; Nations, 1989: 456), while certain wooden arrow tips were for bow-hunting fish (Nations, 1989: 454). Blunted arrow tips were used

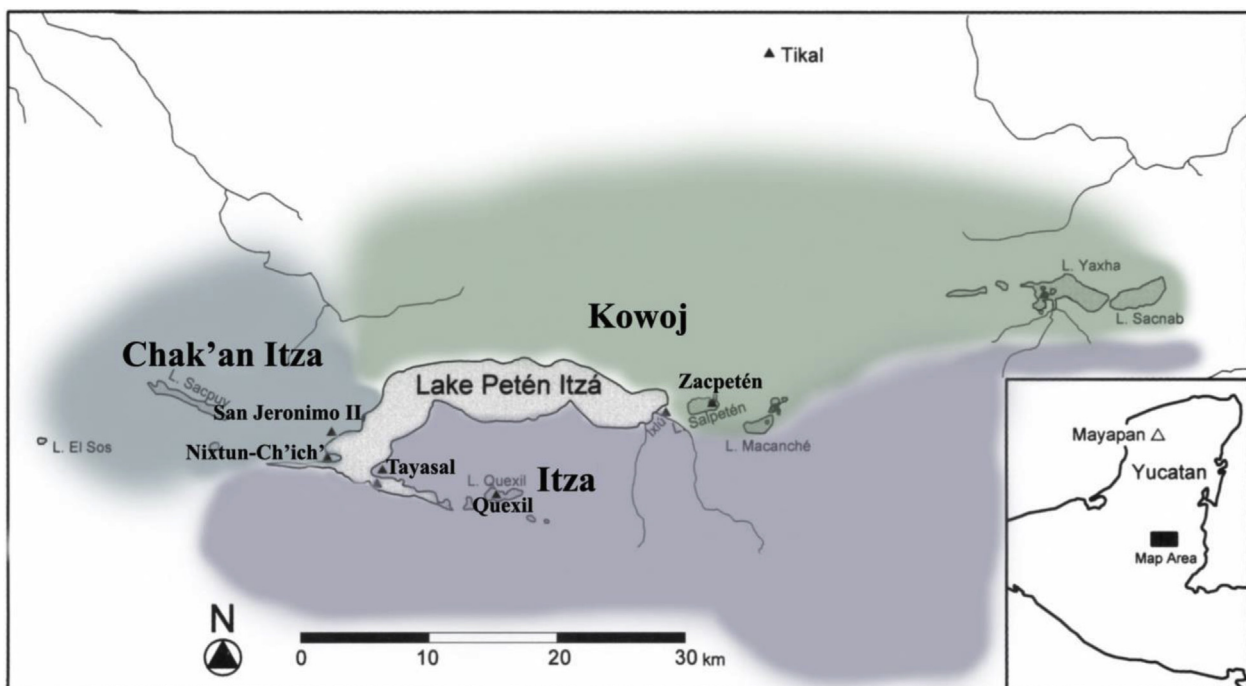


Fig. 2. Detail of the Petén lakes region with sites and ethno-political affiliations marked (redrawn and modified from Pugh et al., 2012:4, Fig. 1). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

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