

FAMSI © 2006: Jerald D. Ek

The Champotón Regional Settlement Survey: Results from the 2005 Field Season



Research Year: 2005

Culture: Maya

Chronology: Classic to Post Classic

Location: Campeche, México

Site: Champotón

Table of Contents

[Abstract](#)

[Resumen](#)

[Introduction](#)

[Background](#)

[Geographical Setting](#)

[Ethnohistoric and Indigenous Accounts](#)

[Previous Archaeological Research in Coastal Campeche](#)

[The Proyecto Champotón Research](#)

[The 2005 Investigations](#)

[Methods](#)

[Operation 1: Potrerito](#)

[Operation 2: Rancho San Carlos](#)

[Operation 3 Summary: Rancho Potrero Grande](#)

[Conclusions](#)

[Future Research](#)

[Acknowledgements](#)

[List of Figures](#)

[Sources Cited](#)

Abstract

The Champotón Regional Project is a research project conducted in several phases, which include survey, mapping, and test excavations. These investigations have been conducted jointly with the Champotón Project, directed by Dr. William Folan of the Campeche Autonomous University. The project's research goals are to examine the interaction between economic, political, and climatic factors in the diachronic changes experienced by the important state of Champotón, Campeche, and to determine how these transformations happened within the broader context of the Classic-to-Postclassic period transition in the Maya area.

At the time of the first contact with the Spanish, the ancient city of Chakan Putún was the capital of an important coastal political unit (Arnabar G. 2001; Folan *et al.* 2002; Molina Solís 1943, 1973). This site had previously been seen as belonging to the Postclassic, but four field seasons by the Champotón Project directed by Dr. William Folan showed a continuous occupation dated from the Middle Formative period (Folan *et al.* 2002, Folan, *et al.* 2004; Forsyth and Jordan 2003). The first phases of the Champotón Regional Project have given us a regional perspective of the Champotón Project, documenting a sharp nucleation of population in the coast areas at the end of the Classic period (Ek and Rosado Ramírez 2004, 2005).

From this ongoing research have derived two models of processes on a regional scale within Champotón. The first model explains the shift to coastal areas as a response to climate changes and to drought, with an increase in the exploitation of marine resources by the people in the Champotón area (see Folan *et al.* 2004; Lange 1971). In the alternative model the movement of populations to coastal areas reflects a change from a peripheral involvement in an interaction sphere focused on the Petén elite during the Late Classic period to an incorporation within the Mesoamerican World System of the Postclassic (Ek and Rosado Ramírez 2005; Smith and Berdan 2000, 2003). Since both models are not mutually exclusive, the project's goal is to understand the role played by marine resource exploitation, climate change, and long-distance exchange in the sociopolitical changes within the Champotón area.

The topographic survey and excavation phases of the Champotón Regional Project will be focused on the Champotón River basin. This research area extends some 68 km², from the river's mouth to three kilometers inland and 11 Km toward the south (see [Figure 2](#)). For future research the area has been divided in three zones, which will be studied in three separate field seasons. The 2005 field season consisted of topographic survey of the settlements and test excavations in the area around the modern city of Champotón. These excavations consisted of test pits excavated away from the mounds in a sample of residential groups found within the settlement zone around the modern city of Champotón. These excavations' goal was to obtain a representative sample of domestic refuse in a variety of contexts. These materials will be used to reconstruct the fundamental aspects of ancient economy in Champotón and the changes it experienced through time. Future research in the Champotón River hydrological network will widen the sample of settlement zones tested in the inland areas.

The data obtained during 2005 will also give us information about the demography of peripheral settlements around the ancient city of Champotón. Preliminary analysis of pottery from Potrerito and Rancho Potrero Grande suggests that the population in these areas was higher during the Postclassic period, while the data from Rancho San Carlos suggest higher densities of archaeological materials for the Formative and Classic. It's interesting to mention that the latter area is near the zone with the best preserved monumental architecture known for Champotón. These data indicate an early settlement pattern more nucleated for the Formative and Classic periods, with a later expansion of population during the Postclassic. These data agree with the demographic model of a centralization of population in Champotón linked with the abandonment of the Late Classic centers located inland.

Resumen

El Proyecto Regional Champotón es una investigación de varias fases, que incorpora recorridos, mapeo, y excavaciones de prueba. Estas investigaciones se han llevado a cabo conjuntamente con el Proyecto Champotón, dirigido por el Dr. William Folan de la Universidad Autónoma de Campeche. El objetivo de este proyecto es examinar la interacción entre factores económicos, políticos, y climáticos en el cambio diacrónico acaecidos en el importante Estado regional de Champotón, Campeche, y cómo estas transformaciones corresponden dentro del contexto más amplio de la transición del período Clásico al Postclásico en el Área Maya.

Al momento del contacto español, la antigua ciudad de Chakan Putún fue la capital de una importante unidad política costera (Arnabar G. 2001; Folan, *et al.* 2002; Molina Solís 1943, 1973). Previamente visto como un centro Postclásico, cuatro temporadas de investigaciones del Proyecto Champotón, dirigido por el Dr. William Folan, documentaron ocupaciones continuas fechadas para el Período Formativo Medio (Folan, *et al.* 2002; Folan, *et al.* 2004; Forsyth y Jordan 2003). Las fases iniciales del Proyecto Regional Champotón han proporcionado una perspectiva regional a las investigaciones del Proyecto Champotón, documentando una marcada concentración de poblaciones en áreas costeras a finales del período Clásico (Ek y Rosado Ramírez 2004, 2005).

A partir de los resultados de esta investigación en curso se han formulado dos modelos de procesos a escala regional dentro de Champotón. El primer modelo de trabajo explica el cambio a zonas costeras como respuesta al cambio climático y a la sequía, con el incremento en la explotación de recursos marinos por las poblaciones del área de Champotón (ver Folan, *et al.* 2004; Lange 1971). En el modelo alternativo, el movimiento de poblaciones a zonas costeras refleja un cambio de una participación periférica en la esfera de interacción enfocada en la élite del Petén en el Clásico Tardío a una incorporación dentro del Sistema Mundial Mesoamericano del Postclásico (Ek y Rosado Ramírez 2005; Smith y Berdan 2000, 2003). Debido a que ambos modelos no son mutuamente excluyentes, el objetivo de este proyecto es entender el papel de la

explotación de recursos marinos, el cambio climático, y el intercambio a larga distancia en el cambio sociopolítico del área de Champotón.

Las fases de levantamiento y excavación del Proyecto Regional Champotón se centrarán en la cuenca del Río Champotón. Esta zona de investigación comprende un área de aproximadamente 68 km², extendiéndose desde la desembocadura del río hasta 3 kilómetros tierra adentro y 11 kilómetros al sur (ver [Figura 2](#)). Para investigaciones futuras, se ha dividido a esta área en tres zonas, mismas que serán abordadas en tres diferentes temporadas de campo. La temporada de campo del 2005 consistió en el levantamiento de los asentamientos y excavaciones de sondeo en el área que circunda a la presente ciudad de Champotón. Las excavaciones realizadas consistieron en pozos de sondeo excavados fuera de los montículos en una muestra de grupos residenciales comprendidos dentro de la zona de asentamientos que circunda a la moderna ciudad de Champotón. El objetivo de estas excavaciones fue el de recuperar una muestra representativa de los desechos domésticos en una variedad de contextos. Estos materiales serán utilizados para la reconstrucción de los fundamentos de la antigua economía de Champotón y los cambios que la misma experimentó a lo largo del tiempo. Las investigaciones futuras en la red hidrológica del Río Champotón ampliarán la muestra de zonas de asentamiento sondeadas en las áreas de tierra adentro.

Los datos obtenidos durante el 2005 también nos proporcionarán información acerca de la demografía de los asentamientos periféricos que rodearon la antigua ciudad de Champotón. El análisis preliminar de la cerámica de Potrerito y Rancho Potrero Grande sugieren que la población en estas zonas fue mayor durante el periodo Postclásico, mientras que los datos provenientes del Rancho San Carlos indicaron densidades de materiales arqueológicos más altas para los periodos Formativo y Clásico. Es interesante notar que esta última área está cercana a la zona con la arquitectura monumental mejor preservada documentada para Champotón. Estos datos indican un patrón de asentamiento temprano más nuclear para los periodos Formativo y Clásico, con una expansión más tardía de población en el Postclásico. Estos datos concuerdan con el modelo demográfico de una centralización de poblaciones en Champotón asociada con el abandono de los centros del Clásico Tardío localizados tierra adentro.

Submitted 06/28/2006 by:

Jerald D. Ek

Department of Anthropology

State University of New York at Albany

jerryek@hotmail.com

Introduction

The collapse and transformation of ancient New World states is a topic that has been at the forefront of archaeological interest, incorporating such issues as rapid political decentralization, the development of post-collapse societies, and the reorganization of economic systems. The role of environmental catastrophe in economic and political collapse is a controversial topic that is currently receiving international attention. The Champotón Regional Settlement Survey (CRSS) will evaluate the contributions of political, economic, and environmental factors in bringing about one of the most profound societal transformations in Ancient Maya history: the collapse of Classic Period (A.D. 250-1100) hierarchical city states and their replacement by a decentralized system of highly integrated and internationally-oriented mercantile societies in the Postclassic Period (A.D. 1100-1500) (Berdan, *et al.* 2003; Braswell and Glascock 2002; Freidel and Sabloff 1984; Gasco and Berdan 2003; Sabloff and Rathje 1975; Smith and Berdan 2003a).

The ancient polities of the southern Gulf Coast, in the modern Mexican states of Tabasco and Campeche, played a central role in the development of Epiclassic and Postclassic Period interregional trade networks (Andrews 1978; Andrews V and Sabloff 1986; Ball and Taschek 1989; Vargas Pacheco 1994). These emergent states were strategically positioned along the major maritime trade route linking greater Mesoamerica. During the Epiclassic Period, the movement of people, goods, and ideas along this corridor facilitated an unprecedented level of pan-Mesoamerican economic and social integration (Berdan, *et al.* 2003; Ringle, *et al.* 1998; Smith and Berdan 2003c). While the large centers of the central Maya Lowlands were abandoned, Gulf Coast polities flourished within the new economic and political systems of the Postclassic Period. This project follows in the footsteps of new research on societal collapse, viewing this period of upheaval not as the termination of a civilization, but as a transformative stage within long-term cultural dynamics. The goal of the project is to understand the economic foundations of the successful transition from the Classic to Postclassic as it was manifested at the important coastal polity of Champotón, Campeche.

Champotón represents an ideal regional case study to investigate late Maya societal transformations for three key reasons: its long-term occupational continuity through the Classic and Postclassic periods; its advantageous geopolitical location; and its rich coastal ecological setting. Unlike most of the polities of the interior southern Maya lowlands, Champotón maintained high levels of population from the Classic through Postclassic periods, with no evidence for demographic collapse (Ek and Rosado Ramírez 2004, 2005; Folan, *et al.* 2002; Folan, *et al.* 2004; Forsyth 2004; Forsyth and Jordan 2003). This remarkable condition attests to the successful adaptation of Champotón Maya groups in the face of political, economic, or environmental crisis. The Champotón polity was strategically located at the intersection of the Gulf Coast trade route and the mouth of the Río Champotón, the only navigable river in the Yucatán Peninsula. This geographical zone would play a critical role in the development of the Epiclassic interaction network linking disparate centers in Veracruz, Highland México,

and the Maya Lowlands. Champotón also possessed a unique combination of riverine and marine aquatic ecozones, which potentially provided an important source of food resources and a safeguard against agricultural failure wrought by severe droughts linked to the Classic collapse (Collier 1964; Eaton 1978; Ek and Rosado Ramírez 2005; Lange 1971).

Despite stable population levels in the late history of Champotón, my preliminary research indicates that important political and demographic shifts took place at the end of the Classic Period (Ek and Rosado Ramírez 2004, 2005). Most striking are the abandonment of inland centers and a concentration of population along the coast. This research will evaluate the importance of political, economic, and ecological factors in these changes in regional settlement patterns. Were local groups driven to settle on the coast to exploit aquatic resources due the failure of inland agricultural systems (Folan, *et al.* 2002; Folan, *et al.* 2004; Lange 1971)? Investigations elsewhere in the Maya lowlands have favored this ecological disaster model, with severe droughts culminating in abandonment of entire regions around A.D. 800-1000 (Curtis, *et al.* 1996; Dahlin 1983, 2002; Gunn, *et al.* 2002; Hodell, *et al.* 1995). Yet this pattern is not uniformly observed, and drought may not have affected all parts of the Maya area in the same ways (Dahlin 2002; Shaw 2003). An alternative explanation is that political leaders of this region established new coastal cities to exploit the burgeoning long-distance trade networks that amplified in scale throughout Mesoamerica beginning around A.D. 800 (see Braswell and Glascock 2002; Ringle, *et al.* 1998; Smith and Berdan 2003c). These models are not mutually exclusive, and ecological disaster may have coincided with emerging opportunities for marine subsistence and participation in international exchange centered on coastal zones.

This report outlines the results of the second season of field research, undertaken from November and December 2005. These investigations, funded by a research grant from the Foundation for the Advancement of Mesoamerican Studies Inc., (FAMSI) are a continuation of research initiated in 2003 (Ek and Rosado Ramírez 2004) in conjunction with the Proyecto Champotón, directed by Dr. William Folan of the Centro de Investigaciones Históricas y Sociales, Universidad Autónoma de Campeche.

Background

Geographical Setting

Champotón is located near the northwestern edge of the Maya Area. The landscape consists of sandy and rocky beaches interspersed with seasonal wetlands and mangrove swamps. Several important rivers drain into the Gulf Coast Champotón and Tabasco, connecting Gulf Coast polities with centers in the Maya Highlands, the Petén and the edge of the Puuc Hills region. The ancient city of Chakanputun was situated at the mouth of the Río Champotón, the northernmost of these rivers and the only navigable waterway on the Yucatán Peninsula. The ancient people of Champotón were

well situated to control both coastal trade as well as inland commercial traffic via the river and across the base of the Peninsula into the Caribbean.

The physical landscape in the area around Champotón provides opportunities for a variety of food production strategies. The Campeche Bank, a submarine shelf that extends far off the shoreline (see Collier 1964), produces enrichment of waters and shallow seafloor conditions, both of which promote high biodiversity. In the immediate Champotón area, river discharge from the Río Champotón results in further nutrient enrichment, supporting highly productive zones for maritime resource extraction. Inland from the coast, the terrain is hilly and well drained, and amenable to agriculture, with particularly thick soils on the Río Champotón floodplain (Eaton 1978:26). There are also extensive seasonally inundated lands favorable for intensive agriculture. Landscape modifications for intensive agriculture and water management have been noted nearby in the Candelaria drainage (Siemens and Puleston 1972; Siemens, *et al.* 2002) and Edzná (Andrews 1984; Benavides Castillo 1997; Forsyth 1983; Matheny 1986). This diversity of potential food sources was likely an important factor in the prehistory of Champotón.

Ethnohistoric and Indigenous Accounts

The ancient city of Champotón is frequently mentioned in ethnohistoric and indigenous sources, reflecting its importance in Late Postclassic Yucatán (Bolles 2003; Folan, *et al.* 2002). Champotón was the capital of the province of Chakanputun, which encompassed the area between Seybaplaya to the edge of the Laguna de Terminos (Arnabar G. 2001; Folan, *et al.* 2002; Molina Solís 1943, 1973; Roys 1957). Descriptions of the city of Chakanputun at Contact describe it as a large port center with over 8,000 houses and a fleet of 2,000 canoes (Roys 1957:168). Ethnohistoric data reflect the importance of both trade and maritime resource exploitation in Gulf Coast economies at contact. Spanish accounts discuss the great variety and productivity of marine food resources (Lange 1971), and fishing remains the primary economic activity in modern times.

Champotón is also frequently mentioned in the Chilam Balam texts (Bolles 2003; Folan, *et al.* 2004), which discuss the prehispanic migration of the Itza to Champotón from their capital at Chichén Itzá (Jones 1998; Roys 1933). Indigenous documents link Champotón with the legendary Kukulcan, a figure that played a prominent role in the indigenous histories across Mesoamerica. These sources suggest that the people of Champotón erected a temple in honor of Kukulcan after he stayed there during his journey West to Central México (Ruz Lhullier 1969:36; Scholes and Roys 1968; Tozzer 1941:26). A structure located on a small island just offshore from the modern city is probably this same temple (Eaton 1978:26; Ruz Lhullier 1969:72; Shook and Proskouriakoff 1951:239). The presence of a shrine to a deity with pan-Mesoamerican significance at Champotón is especially interesting given the combination of functions as pilgrimage site and trade center that has been well-documented in the Maya Lowlands (Freidel 1975; Freidel and Sabloff 1984).

Previous Archaeological Research in Coastal Campeche

Prior to recent research by the Proyecto Champotón, archaeological investigations in Champotón were limited to coastal surveys. Ruz's (1969) study of the Campeche coast included surface collections and a limited number of test pits near the modern city. A later coastal survey by Eaton (1978), incorporating the entire northern and western coasts of the Yucatán Peninsula, revealed a pattern of coastal settlement and marine resource exploitation in the Preclassic and Postclassic periods, with little evidence of occupation of the coastal margin in the Classic Period (Ball 1978). Both of these studies documented primarily Postclassic occupations at Champotón. While these projects helped to elucidate general patterns of coastal settlement, there has been little ensuing research to build on these data. The focus on coastal zones, with limited research inland, perpetuated the view of Champotón as a primarily Postclassic center. More recent projects have been undertaken on the Northwest Coast (Dahlin 2000; Dahlin, *et al.* 1998; Dahlin and Ardren 2002; Inurreta Diaz 2004) and to the south near the Campeche/Tabasco border (Ochoa and Casasola 1979; Ochoa and Vargas Pacheco 1980; Vargas Pacheco 2001). Since the initial coastal surveys, there has been little research in on the central coast of Campeche.

Research across Lowland Mesoamerica has provided strong evidence for population expansions in coastal and riverine zones beginning in the Terminal Classic Period. There is a demographic boom in Southern Veracruz in the Epiclassic period, with a shift from inland settlement to a repopulation of coastal areas between A.D. 700 and 1000 (Killion and Urcid 2001:19). A similar pattern has been noted in Champotón (Ek and Rosado Ramírez 2004), Itzamkanac (Vargas Pacheco 1998, 2001), Chikinchel (Kepecs 1999, 2003), and the Caribbean coast (Joyce 1991; Masson 2000, 2003; McKillop 1996). Ball and Eaton (Ball and Eaton 1972; Ball and Taschek 1989) and Kepecs (2003; 1994) have correlated the rise of centers along the north coast with the expansion of maritime trade controlled by Chichén Itzá. These similar demographic trends over a large geographical area likely reflect the increasing importance of the Gulf Coast trade route by A.D. 700-1000.

Gulf Coast groups have played a central role in many reconstructions of Maya prehistory. The coastal groups of Tabasco and Campeche have been correlated with ethnic groups including the Putun (Thompson 1970), Itza (Andrews, *et al.* 1988; Ball 1986; Kowalski 1989), or Chontal Maya (Fox 1987; Ochoa and Vargas Pacheco 1980; Scholes and Roys 1968). These peoples have been associated with the introduction of Mexican cultural traits into the Maya area, with purported roles ranging from outright military conquest (Adams 1973; Sabloff and Willey 1967; Thompson 1970) to opportunistic domination of maritime trade networks (Andrews, *et al.* 1988; Freidel and Scarborough 1982; Kepecs, *et al.* 1994). Critiques of these models have explained the introduction of foreign or new styles of material culture as indigenous developments (Schele and Mathews 1998; Tourtellot and González 2004) or by focusing on problematic details of early formulations of these models (Kaplan 1998; Kremer 1994).

While invasion models are no longer widely accepted, questions regarding the role of Gulf Coast groups in Terminal Classic economic transformations remain unanswered. Recent research has abandoned questions of mythic migrations, invasions, and tracking the temporal primacy of specific cultural features in favor of more appropriate research topics, such as the development of internationalism, the nature of interaction networks, and the spread of transcendental religions (Ringle, *et al.* 1998; Smith n.d.; Smith and Berdan 2003b).



Figure 1. Map of Champotón region with sites documented in 2003 reconnaissance.

The Proyecto Champotón Research

Investigations by the Proyecto Champotón have dramatically altered understanding of the prehispanic history of this ancient polity (see Folan, *et al.* 2002; Folan, *et al.* 2004; Forsyth and Jordan 2003). The Champotón Regional Settlement Survey was

undertaken in conjunction with the Proyecto Champotón, and has already provided a broader understanding of regional demographic processes between the Formative and Postclassic periods (Ek and Rosado Ramírez 2004, 2005). My 2003 pilot study focused on subordinate centers within the Champotón regional state identified in ethnohistoric sources (Arnabar G. 2001; Molina Solís 1943, 1973). In total, 13 pre-Hispanic centers were identified and documented (Figure 1, shown above). This study provided preliminary data on the distribution of settlement in inland zones and a rough regional chronology. The results of the preliminary study reflect a discontinuity in regional settlement patterns after the Late Classic, with a shift from inland centers to coastal locations in the Terminal Classic and Early Postclassic periods (Ek and Rosado Ramírez 2004, 2005). Late Classic sites are concentrated in inland zones, with large centers at San Dimas and Ulumal (Figure 2, shown below). Both centers were abandoned by the Terminal Classic Period, with movement of populations to sites located near the coast.

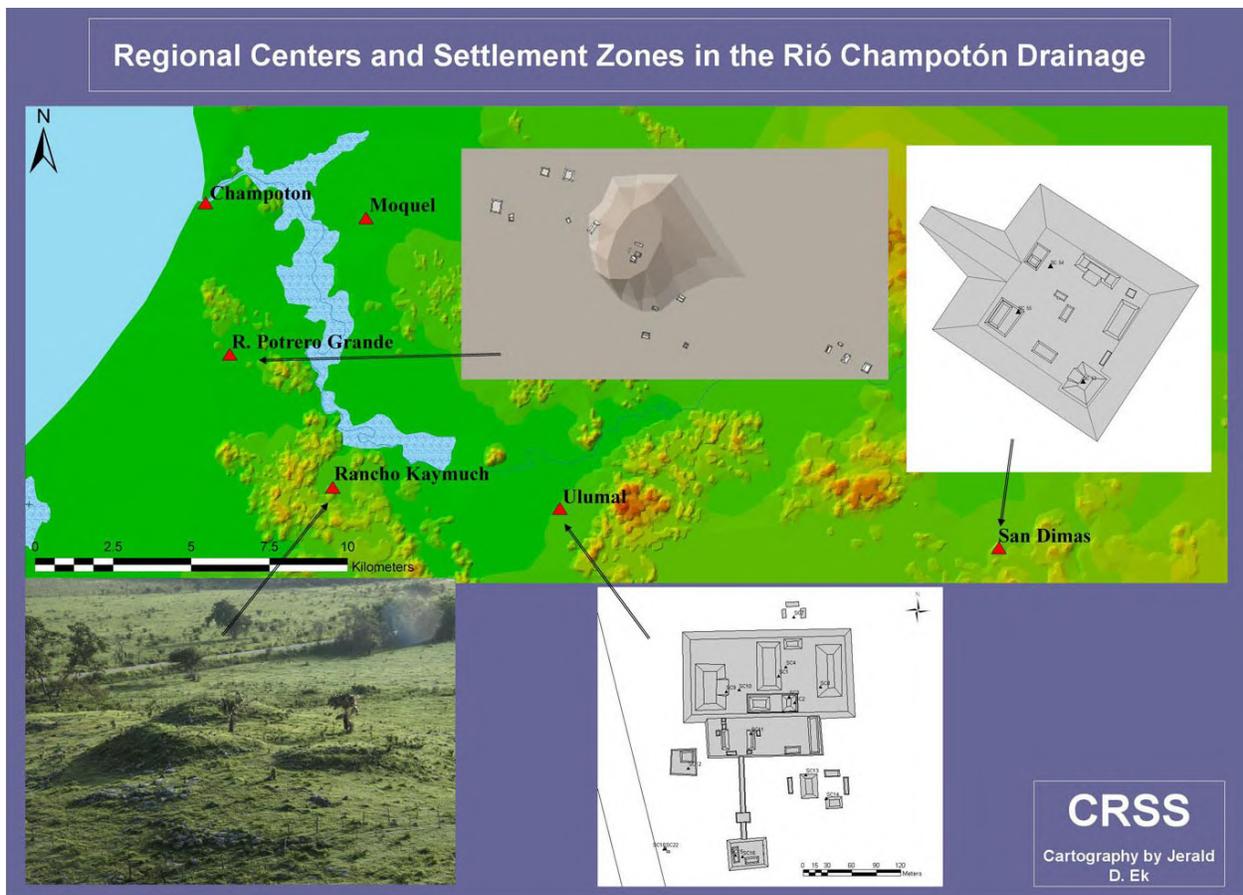


Figure 2. Río Champotón drainage and major centers.

The Proyecto Champotón excavations have provided strong evidence of external ties. Interments from the Proyecto Champotón excavations display mortuary patterning consistent with Xipe Totec rituals, including sacrifice and the removal of the skin and

flesh (Gómez Cobá, *et al.* 2003). These ritual practices originated in Veracruz in the Classic or Formative period and have been well documented in later periods in Central México (Coe 1968:111-114; Joralemon 1971:79-81; Killion and Urcid 2001:17; Nicholson 1971:15), suggesting that exchange between Central México, Veracruz, and the Maya Lowlands was not limited to goods, but included ideas and ritual practices. Other evidence of the importance of long-distance trade in the Champotón economy include high quantities of obsidian cores and blades (Ek 2006; Folan, *et al.* 2002:11), with a relative scarcity of tools or debitage made from locally available chert resources. Fine paste ceramics, produced in the Usumacinta drainage and in Tabasco (Bishop 2003), are ubiquitous in the Champotón ceramic assemblage. Fine Grey ceramics appear in abundance in the Terminal Classic, and are later replaced with Fine Orange types in the Early and Late Postclassic. Fine Buff wares, produced in Veracruz, also are present at Champotón (Bishop, personal communication 2005). These temperless wares were traded across the Maya Lowlands in the Terminal Classic and Early Postclassic periods. While forming a small percentage of assemblages at most Maya centers, fine paste ceramics are a major component of the Champotón ceramic inventory, functioning as the main serving ware after the end of the Classic Period (Forsyth 2004). These data all reflect increases in the level of interregional interaction by the Terminal Classic Period. The 2005 investigations, and ensuing research, will further examine the role of interregional networks in the Champotón polity.

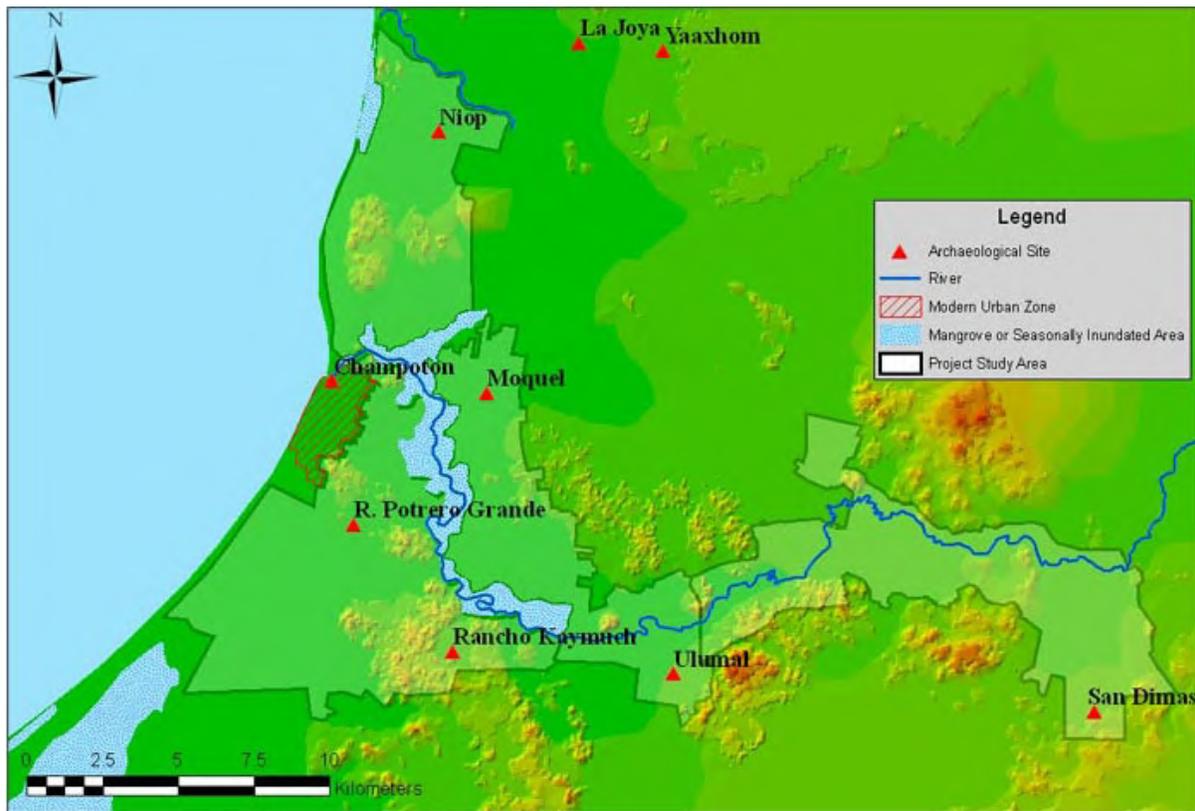


Figure 3. Champotón Regional Settlement Survey study area.

The 2005 Investigations

The final phases of the CRSS will consist of mapping and archaeological excavations in the Río Champotón drainage ([Figure 3](#), shown above). Research conducted during the 2005 field season was limited to the area surrounding the modern city of Champotón. The 2005 excavations focused on the zone south and west of the Río Champotón and adjacent to the modern city. This zone was broken up into three main areas, named after modern land designations: Potrerito, Rancho San Carlos, and Rancho Potrero Grande ([Figure 4](#), shown below). These areas correspond to clusters of residential groups incorporated within the settlement zone surrounding the ancient city of Champotón.

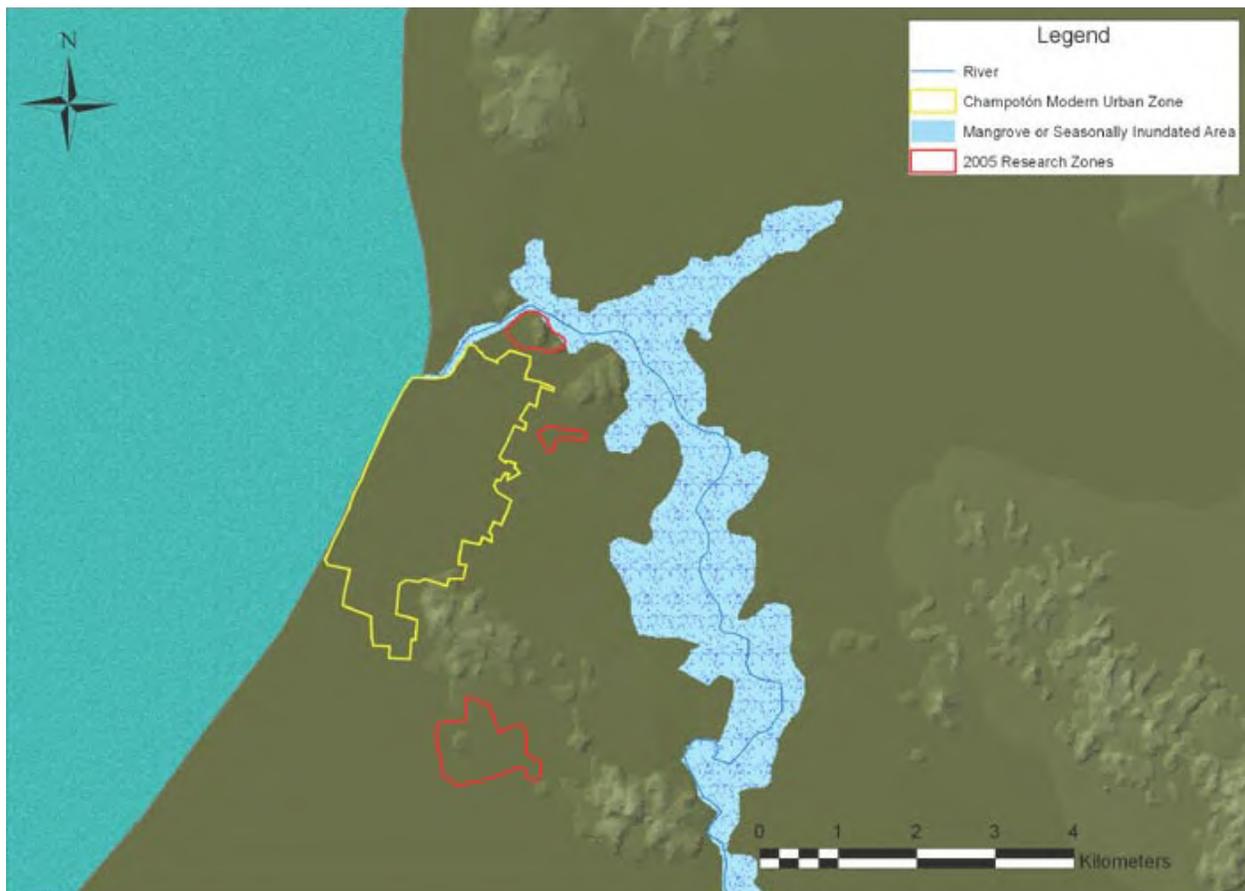


Figure 4. Three zones for 2005 research.

The three areas of research are quite variable in terms of location, topography, site preservation, and local resource availability. The Potrerito zone is located within the floodplain of the Río Champotón, close to the south bank of the river and 1 kilometer from the Gulf Coast. Rancho San Carlos is located much closer to the center on the ancient city. This area is 180 meters from the large platform (Group 1) excavated by the Proyecto Champotón (Folan, *et al.* 2002; Folan, *et al.* 2004). Rancho Potrero Grande is

the farthest from both the Río Champotón and the modern city. Rancho Potrero Grande is the most extensive area investigated in 2005, and disturbance of archaeological deposits is the least prominent here. These three examples provide a cross-section of settlement distribution, location in relation to natural resources, and degrees of architectural elaboration in the immediate periphery of Champotón.

In 2005, survey and excavations were undertaken at the same time, with mapping of architecture, artifact concentrations, and other cultural features prior to the establishment of excavation units. In total, 41 structures were mapped and a total of sixteen 1 × 2 meter test units were excavated.

Methods

Field methods for the settlement survey included a variety of techniques. Because the 2005 field season was undertaken at the end of the rainy season, high vegetation in all areas hindered the efficiency of the settlement mapping. Survey in areas with favorable visibility included topographic mapping with a Topcon TDS 3030 digital transit in conjunction with a control point network established with AshTech Promark GPS units. Survey in other areas included tape and compass mapping and GPS coordinates.

The test excavations were designed to identify and test refuse deposits associated with residential structures. The settlement surrounding the modern city of Champotón was organized into several large clusters of residential groups. To obtain a representative sample of the status continuum within these settlement macro-clusters, 1 × 2 meter excavations units were established near residential structures with variable degrees of architectural elaboration. Excavation units were placed within concentrations of artifacts identified on the surface, or along the margins of residential patio groups, where midden deposits are most commonly encountered. These refuse deposits provide a sample of artifacts with the most relevance to understanding ancient economy.

Because these test excavation units focused on midden deposits—accretional deposits that often lack defined stratigraphic layering—excavation and recording methods were based on 10-cm arbitrary levels. Additional lot and level designations were assigned at any significant contextual change. A total of 16 sub-operations were opened and fully excavated, with a total of 120 discrete contexts documented.

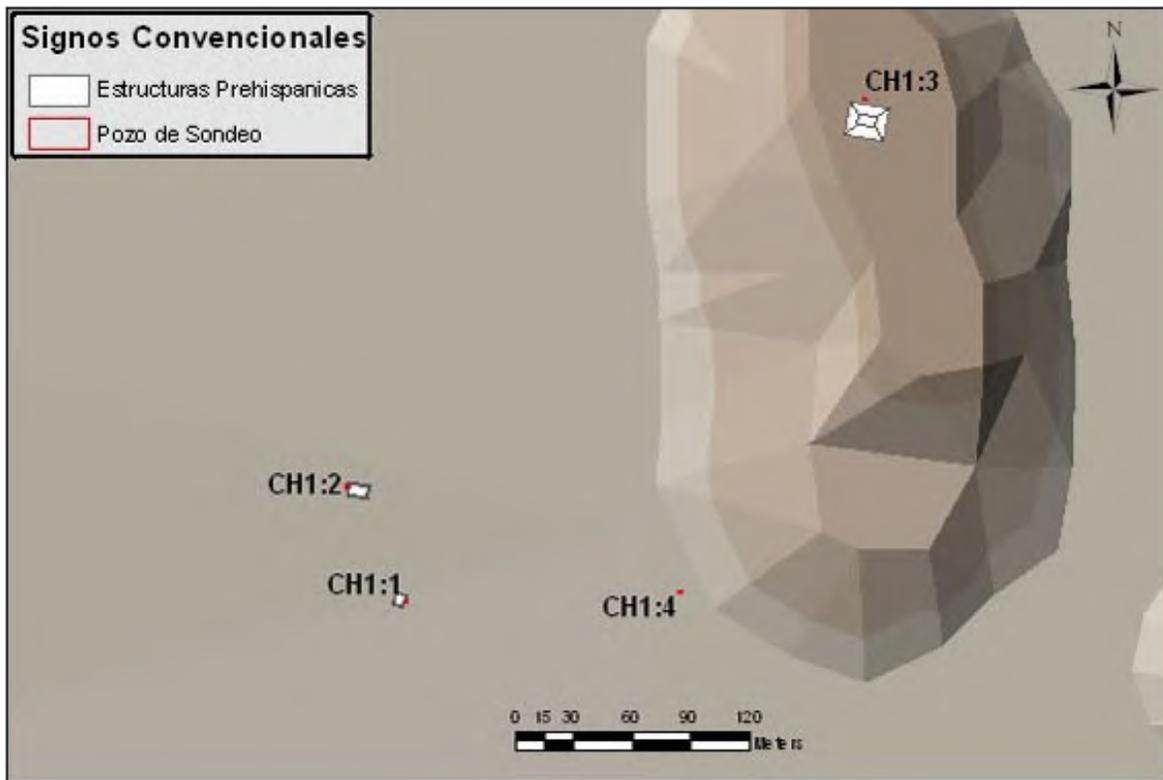


Figure 5. The Potrerito Research Zone.

Operation 1: Potrerito

Potrerito was the first settlement zone tested during the 2005 field season, and consists of a 24.5 hectare zone within a modern ranch of the same name (Figure 5, shown above). Potrerito is located to the north of the modern city of Champotón, adjacent to the south bank of the Río Champotón. The landscape consists of low-lying areas of the river floodplain broken up by two large hills. Potrerito is located along a bend in the Río Champotón approximately 0.95 kilometers from the coast, and the area investigated in 2005 was bounded by the river on the west, north, and east sides. This area occupies a strategic position in relation to the ancient capital, with a large hilltop location providing a commanding view of the city below, the river and the coastline. The largest structure documented at Potrerito is located above this hill, although the settlement density is much higher on the flat areas below.

Modern land modification at Potrerito has resulted in significant disturbance of archaeological materials. Most of this modification has taken the form of mechanized leveling of mounds on the low lying areas of the ranch, particularly in the area adjacent to the modern city. Leveling of the terrain has resulted in the destruction of mounded architecture, with only a few remaining structures clearly visible from the surface. Concentrations of artifacts and faced stones on the surface provide some evidence of the original density of the settlement in this area, although quantitative estimates are

difficult to extrapolate. The most extensive damage to ancient architecture is concentrated near the southeastern edge of the ranch. In this area, land modification and clearing of terrain for the construction of a new housing development has left several large mounds of highly disturbed backdirt. While the original architectural configuration has been lost, the size of these backdirt piles, and the presence of large construction debris, including megalithic stones similar to those documented in monumental constructions in other parts of Champotón (Folan, *et al.* 2002), suggest that the ancient architecture here was substantial.

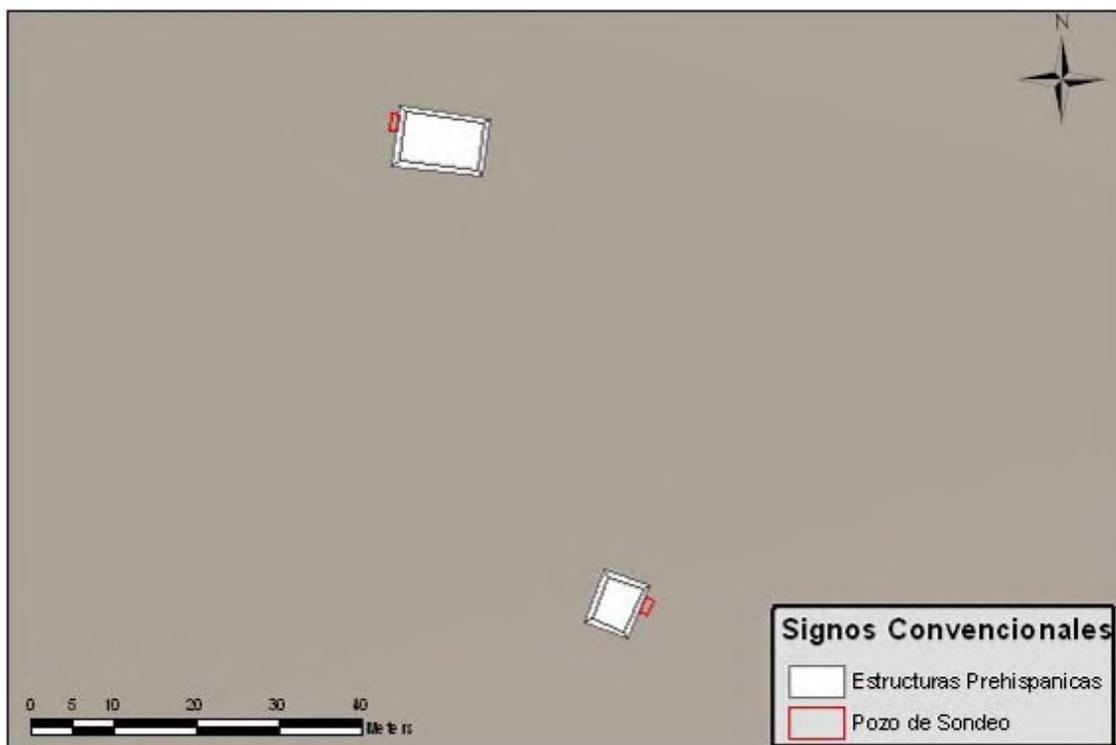


Figure 6. Sub-Operations 1 and 2.

Archaeological research in 2005 included four test excavations, including two units located near isolated mounds on the low lying areas of the ranch (Sub-operations 1 and 2, [Figure 6](#), shown above), one excavation near the large hilltop structure (Sub-operation 3, [Figure 7](#), shown below), and one excavation unit established in one of the several artifact concentrations identified across the cleared field areas of the ranch (Sub-operation 4, [Figure 5](#)). The results from these four excavations provide important information about the nature of settlement in this part of the ancient city of Champotón.

SubOps 1 and 2 yielded typical assemblages of domestic artifacts, including ceramics, shell, obsidian, and small quantities of lithic materials. The SubOp 4 unit was established near a cluster of artifacts associated with a scatter of faced stones. No mounds or evidence of in-situ architecture were visible. The purpose of this excavation was to determine if these surface concentrations represent the remains of destroyed

residential structures. The results of the excavations support that hypothesis. The assemblage of artifacts recovered was relatively dense, consisting of similar materials to those encountered in SubOps 1 and 2. These findings have implications for the settlement density of Potrerito, as it seems clear that modern land modifications have reduced the number of visible mounded architecture in this area.

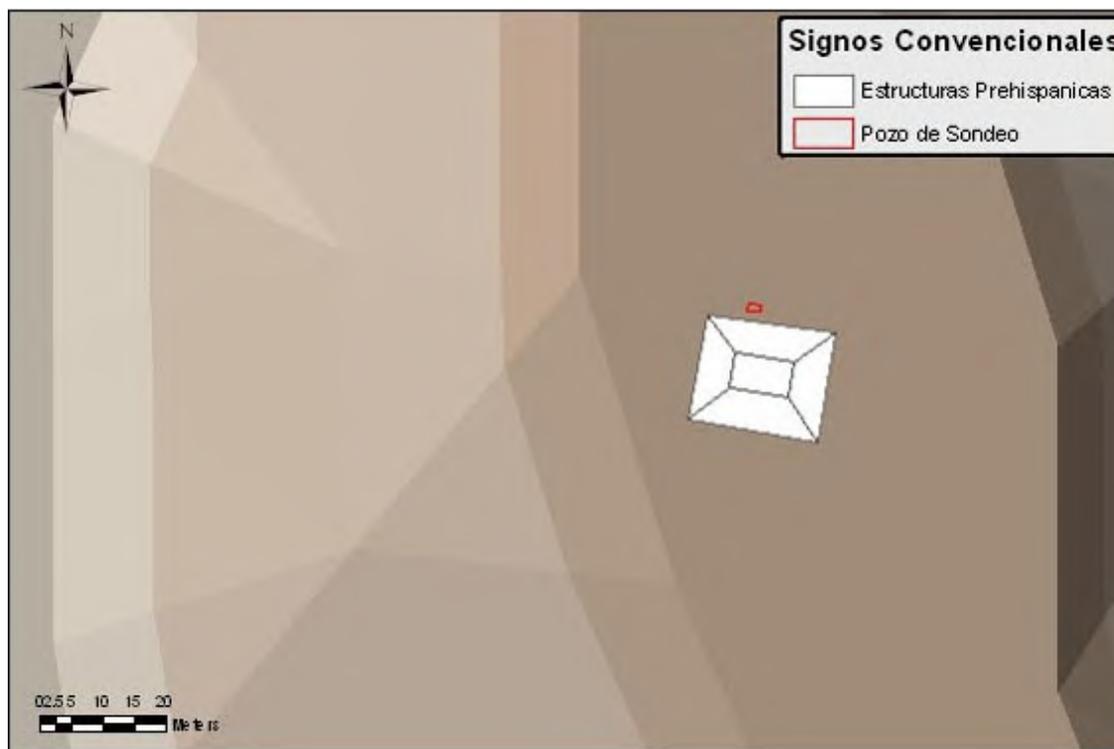


Figure 7. Sub-Operation 3.

SubOp 3 was established in a very different context from the other units. The excavation was adjacent to a large pyramidal structure located atop the hill that dominates the landscape at Potrerito. This structure has a commanding view of the ancient city of Champotón, a large expanse of coastline, and the course of the river from the mouth and extending some distance inland. While the structure is the only identifiable architecture in the immediate area, a large portion of the hillside was removed for the construction of a gas duct and an access road for a high-power electrical line tower that is located nearby, and could have resulted in the destruction of architecture associated with this building.

Unfortunately, the Sub-operation 3 excavations were not very successful in recovering a good sample of artifacts. However, there are several conclusions that can be drawn from the excavations. First, the architecture of this building is quite formal, including the use of large, well-faced stones and stucco. Given the pyramidal shape of the structure, this suggests that this building was not residential in function. If it was once a part of a residential group, it probably represents a domestic shrine or ritual structure. Given the

commanding view that the structure affords, it could also have functioned as some sort of watchtower. Second, the results of the excavation suggest that the building was constructed over a limited period of time. The plaza surface adjacent to the building was built in a single phase of construction, and raised some areas of the hillside 50 centimeters. This would have artificially leveled a significant portion of the hillside. Because of the level of destruction on the north and east sides of the structure, it is impossible to estimate the original extent of this leveled area. The lack of superimposed floor surfaces, or any evidence of previous occupation, suggests that this building had a limited period of occupation.

In total, the excavations at Potrerito provide some valuable information about this zone of the Champotón settlement area. Analysis of the ceramic materials from these four excavations demonstrates a strong Postclassic occupation, with little evidence of earlier settlement in the area. Further, the frequencies of obsidian encountered in the Potrerito excavations were much higher than in any of the other areas investigated in 2005. The ceramic assemblages from the four excavations also included a higher frequency of fine paste ceramics, which were traded across the Maya Area in the Terminal Classic and Postclassic periods. While the thick alluvial soils in the low lying areas of Potrerito would have been favorable for agriculture, the residents of this part of Champotón would have also been strategically situated in relation to riverine trade. The artifact assemblages from the three excavation units reflect the importance of trade goods in local consumption patterns. This association between high densities of obsidian, imported ceramics, and proximity to the river is a pattern that will be examined in more detail in ensuing research.

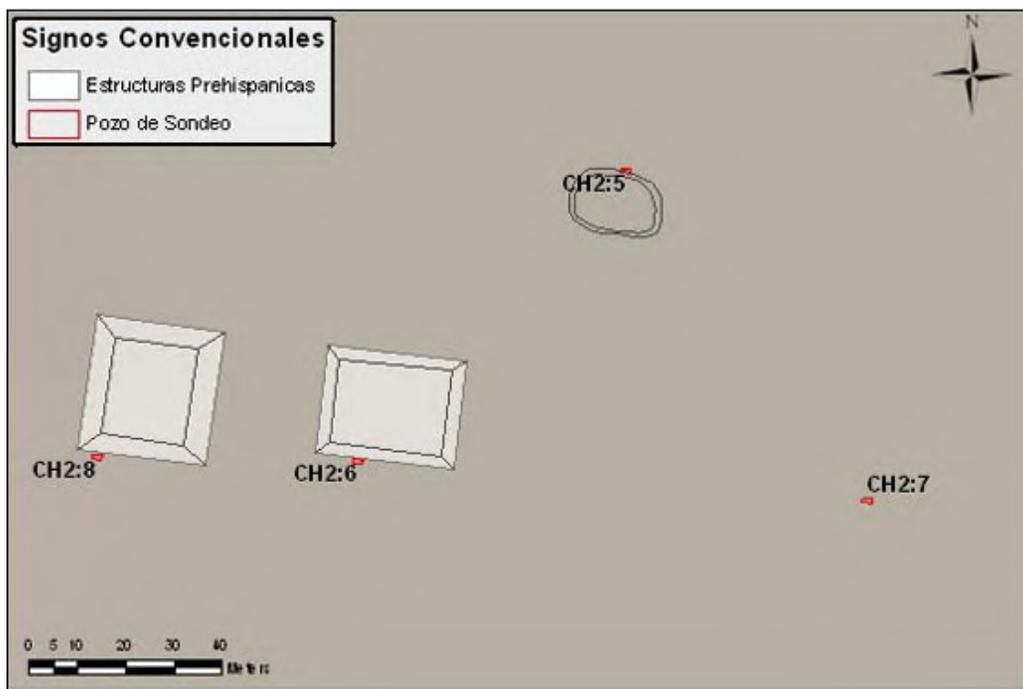


Figure 8. Rancho San Carlos Research Zone.

Operation 2: Rancho San Carlos

Rancho San Carlos is another ranch located to the northeast of the modern city of Champotón. This ranch is located 200 meters east of the edge of the modern city and 1.6 kilometers west of the Río Champotón, although a swampy extension of the river floodplain is located 200 meters to the east ([Figure 8](#), shown above). The landscape surrounding Rancho San Carlos consists of a mosaic of cleared grass fields, fallow fields, secondary forest, and planted zones. Because the research was undertaken towards the end of the rainy season, most of the ranch was covered in high secondary growth, making visibility difficult. Because of these limitations, mapping and excavations at Rancho San Carlos in 2005 were limited to a cleared area of approximately 9.25 hectares.

While visibility was less than ideal, modern land modification at Rancho San Carlos has been far less extensive than in Potrerito or other areas adjacent to Champotón. Architecture within and near Rancho San Carlos includes the largest documented at Champotón. Group 1, investigated by Dr. William Folan and Lynda Foley Folan of the Proyecto Champotón (see Folan, *et al.* 2002), is located 180 meters to the west. Architecture within the ranch includes two large platforms that measure approximately 25 meters by 25 meters in area and 2 meters in height. Other pyramidal structures, likely representing public architecture, were identified in the eastern part of the 2005 study area. A total of four sub-operations were established at Rancho San Carlos.

Sub-operations 5 and 7 were located in a heavily disturbed area of Rancho San Carlos. SubOp 5 was set up on what initially appeared to be a large mound in the center of this cleared zone, and yielded nothing of interest. It is likely that this feature was created by modern bulldozing.

Sub-operation 7 was located near a surface concentration of faced stones located on the edge of a modern cane field near SubOp 5. This zone was bulldozed in recent years to level terrain for agricultural use. As in SubOp 3, the purpose of this excavation was to test the hypothesis that this bulldozing had destroyed ancient mounded architecture and to further evaluate the utility of off-mound testing in heavily disturbed areas. SubOp 7 provided one of the best stratigraphic sequences from the 2005 excavations. The ceramics recovered range from predominantly Postclassic materials in the upper levels to Middle Formative deposits at the bottom, including the only strong Early Classic component documented at Champotón. The SubOp 7 excavations also further highlight the effects of modern land use practices adjacent to the modern city of Champotón, and the implications of site destruction on estimates of population density.

Sub-operations 6 and 8 were located adjacent to two of the larger platforms in the area. SubOp 6 was associated with a structure that measured approximately 20 meters by 20 meters in area and approximately 1.5 meters in height. Sub-operation 8 was established near a very large platform measuring approximately 28 meters by 28 meters and 2 meters in height. Several alignments of stones were noted on the summit of both platforms, suggesting that these structures supported masonry buildings.

The size of the collapse debris and the thickness of the deposits in both SubOp 6 and 8 suggest that the associated platforms included masonry superstructural architecture. This collapse debris deposit was similar in extent to that encountered in SubOp 3, which was likely a non-residential structure. However, the artifacts encountered within this deposit are consistent with residential function.

Like SubOp 7, the SubOp 6 and 8 excavations encountered contexts dating to the early periods in Champotón's historical development. The materials from SubOp 6 date from the Late Formative through the Terminal Classic period, with substantial occupation in all but the Early Classic Period. The ceramics encountered from the SubOp 8 excavations date almost entirely to the Formative Period. Data from the Proyecto Champotón research, focusing on monumental architecture nearby, revealed similarly early occupations in this area. The earlier occupational periods for the large structures at Rancho San Carlos are consistent with the general demographic model derived from the regional reconnaissance phase of this project (see [Conclusions](#)). It is likely that this area was close to the ancient center of the Champotón polity, with later demographic growth radiating outward.

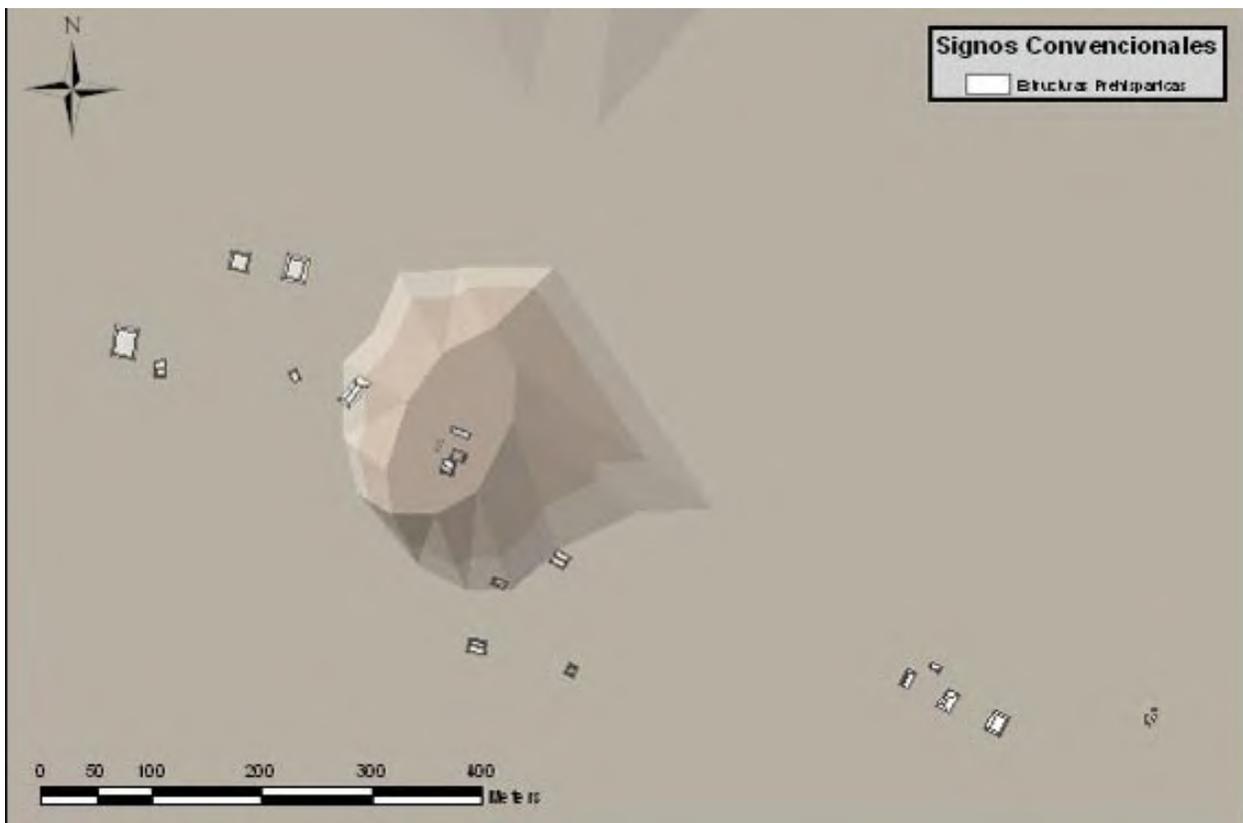


Figure 9. Rancho Potrero Grande Research Zone.

Operation 3 Summary: Rancho Potrero Grande

Rancho Potrero Grande is one of the largest ranches in the area, encompassing an area of slightly over 231 hectares. The ranch is located approximately 1 km southeast of the edge of Champotón, just outside the boundary of the modern city. Field research in 2005 focused on the central 88 hectares, where visibility and access were most favorable ([Figure 9](#), shown above).

The landscape at Rancho Potrero Grande has been cleared for cattle and sheep. While clearing of vegetation has been extensive, there have been far less intrusive modifications to the landscape than in the other two areas. Preliminary reconnaissance at Rancho Potrero Grande in 2003 provided a general view of the distribution of settlement in the ranch. These preliminary data, combined with excavations in 2005 focusing on the central part of the ranch, provide a good understanding of the chronology and nature of ancient settlement in this part of Champotón.

The architecture encountered at Potrero Grande ranged from very low platforms to some buildings up to three meters in height. While many structures were grouped into plazas, isolated mounds are common throughout the cleared areas of the ranch. The ruins of a substantial hacienda were encountered at the southern edge of the property, near the Champotón-Escarcega highway. A sascabera, well, and an outlying building of the hacienda were located within the ranch, and were associated with a high density of Pre-Columbian ceramics. Settlement extends to the eastern edge of the cleared zones. Limited reconnaissance in cleared areas beneath power lines extending beyond the ranch property to the southeast suggests that settlement is continuous for some distance beyond the boundaries of the ranch.

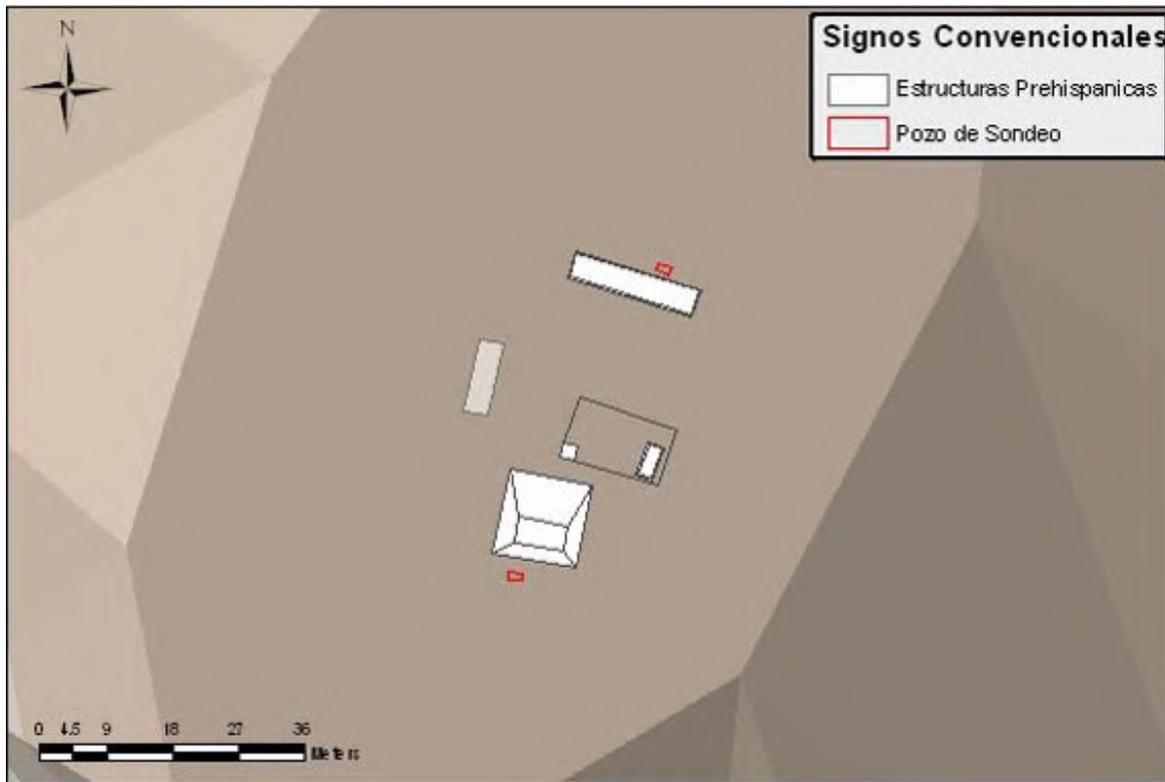


Figure 10. Sub-Operations 9 and 10.

A total of 14 surface collections were taken at Rancho Potrero Grande in 2003, representing four residential groups and several collections in disturbed areas around the sascabera and outlying hacienda structures. Research in 2005 included eight test excavations concentrated near the base of a large hilltop group in the central part of the ranch. This hilltop site and several large structures located at the western foot of the hill seemed to be the focus of settlement in the area (Figure 9). The settlement pattern to the north, east, and south of this hill consists of many isolated platforms supporting single structures.

Sub-operations 9 and 10 were established within the large hilltop group (Figure 10, shown above). The hill rises over 30 meters above the surrounding terrain, and has a commanding view of the landscape below. The architecture appears to have two phases of occupation. The first phase of the group included four structures situated around a central patio. The largest structure is a pyramidal building on the south side of the plaza, measuring approximately 2.5 meters in height. The northern building consists of a smaller structure. The eastern and western buildings are only visible as rectangular rock concentrations, and likely consisted of low foundations for perishable structures. A later building was constructed above the eastern structure in the group, and extending out in the central patio. The architecture of this latter building was very different from the earlier structures, and likely consisted of a foundation brace for perishable walls. Sub-operations 9 and 10 were both located outside this group of buildings.

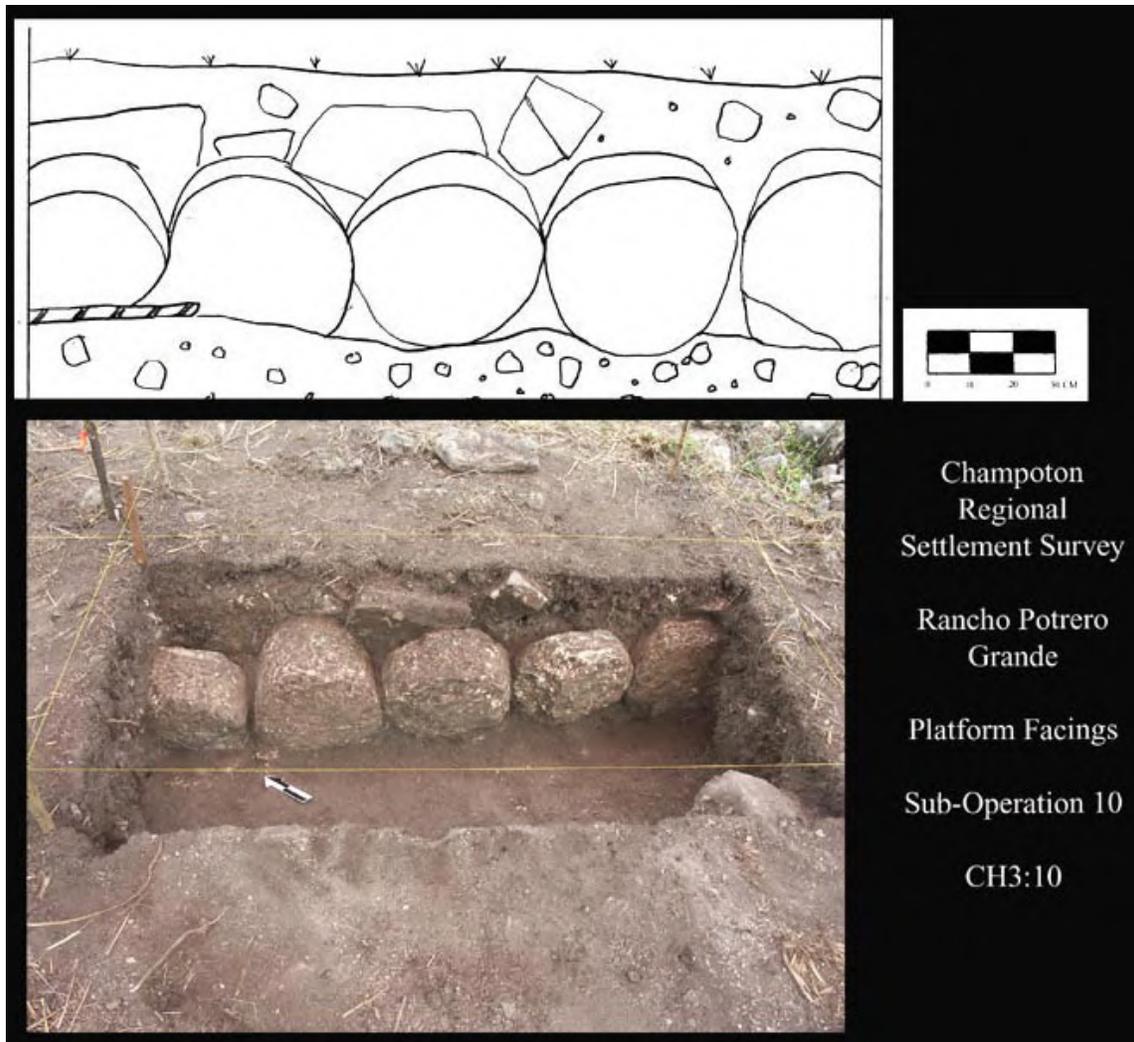


Figure 11. Platform Facings, Rancho Potrero Grande, Sub-Operation 10.

SubOp 9 was located down a steep slope on the south side of the southern structure, a few meters downhill from the plaza surface. The unit was established here to identify refuse deposits resulting from garbage being tossed off the back of the building. The Sub-operation 9 excavations provided some interesting results. First, the excavations revealed an unanticipated architectural feature on the terrace which supports the entire complex of buildings. The architecture of the backside of the platform incorporated rounded stone facings oriented upright and embedded into the plaster surface of an exterior plaza floor (Figure 11, shown above). The stones could represent re-utilized column drums. The platform facing likely represents a façade built adjacent to the natural hill, creating the illusion of a larger substructural platform. A similar architectural feature has been noted at the site of Yaaxhom, located approximately 14 kilometers southeast of Champotón (Ek and Rosado Ramírez 2004). This small civic-ceremonial center dates to the Early Postclassic Period. The largest structure at the site incorporates similar rounded upright stones used as platform facings.

The non-residential function of this building is reflected in the types of ceramics encountered in the upper levels of this excavation. The materials included a substantial deposit of modeled censer fragments. Most of these censers were executed in the same white paste that is common in censer deposits from the Proyecto Champotón excavations (Forsyth 2004). These censers are similar in form to the Chen Mul modeled type identified at Mayapan (Smith 1971).

Sub-operation 10 was located outside the courtyard group, behind the northern structure of the hilltop complex ([Figure 10](#)). This building is smaller and less elaborate than the southern structure of the group. The Sub-operation 10 excavations were not successful in identifying a domestic refuse deposit. The materials encountered in the excavation consist mainly of collapsed construction materials, likely the result of the superstructure of the building falling down the slope off the back of the platform.

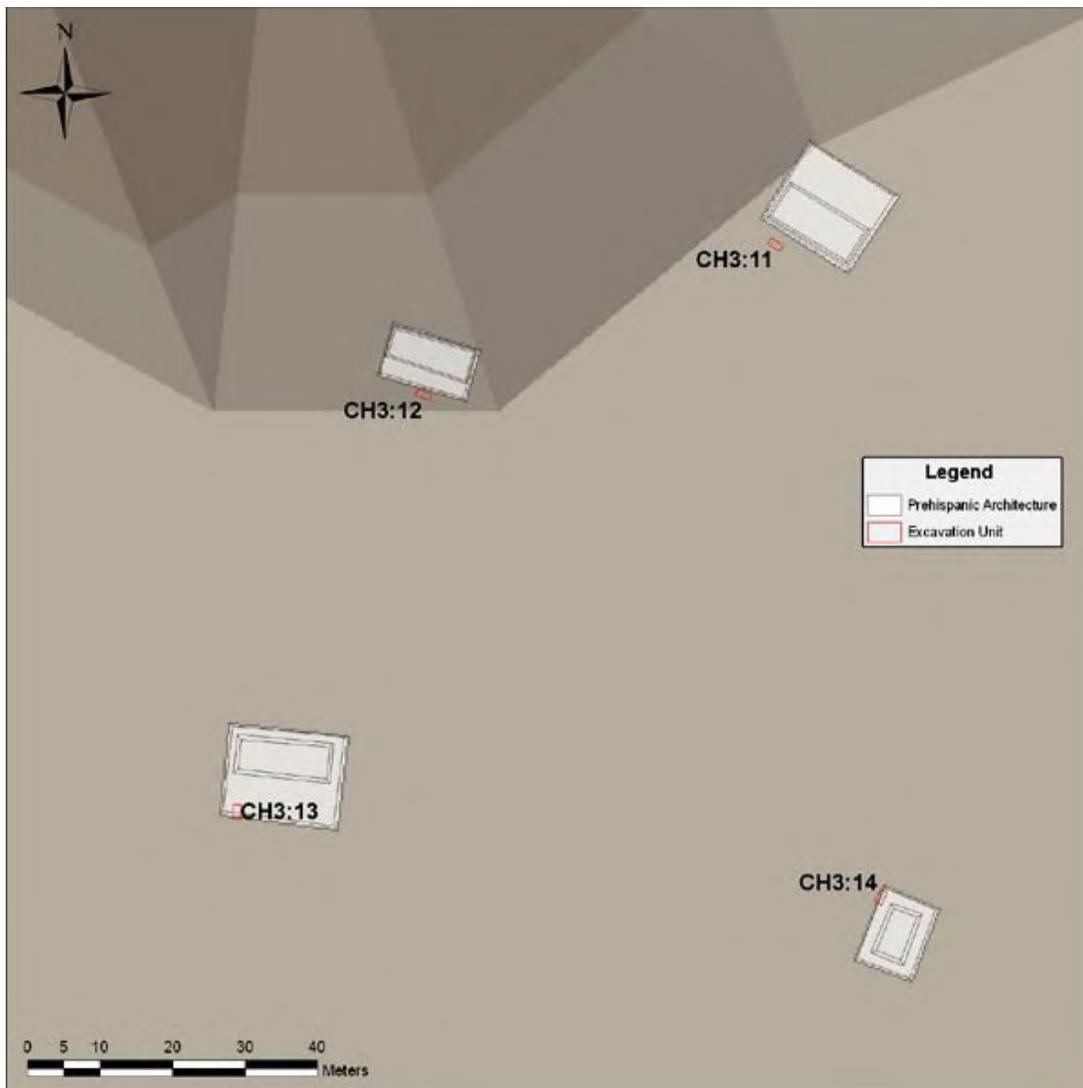


Figure 12. Sub-Operations 11, 12, 13 and 14.

Sub-operations 11, 12, 13 and 14 were established near isolated mounds located to the southeast of the large hilltop group ([Figure 12](#), shown above). All of these platforms were approximately square in form, and ranged from 80 to 168 square meters in area. These platforms were all under one meter in height, ranging from 20 centimeters to 60 centimeters. Several of the platforms had evidence of small superstructures, likely representing foundation braces for perishable structures.

Unfortunately, few dense midden deposits were encountered in the excavations in these smaller structures. Artifact assemblages recovered were sparse, and the preservation of ceramic artifacts was very poor in all cases. This made determination of chronology for these buildings difficult. The identifiable ceramics included some Late Formative types, as well as Late Classic, Terminal Classic, and Postclassic occupations. However, the prevalence of Chicanel sphere materials in the assemblages is misleading. The durable and distinctive slip that characterize these ceramics are less prone to erosion, which surely resulted in artificially high identified frequencies of these materials.

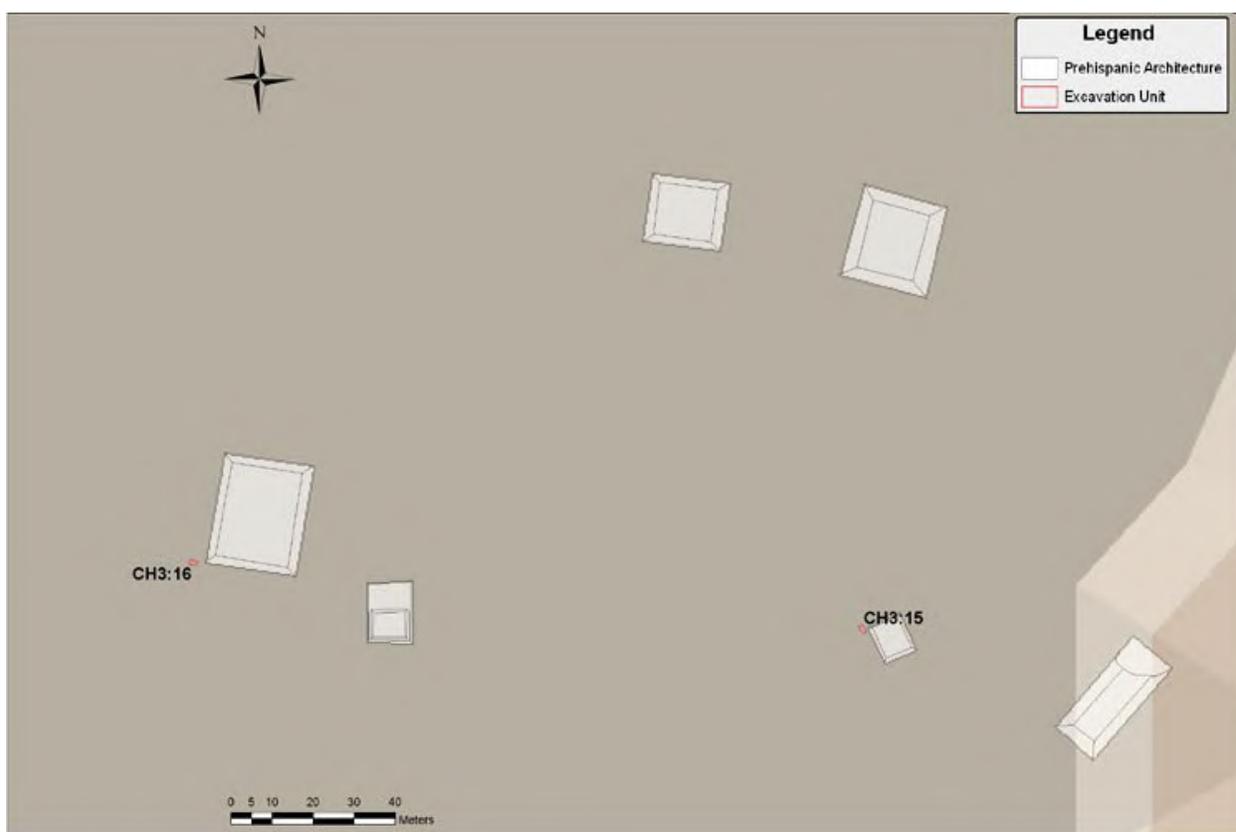


Figure 13. Sub-Operations 15 and 16.

Two additional excavation units, Sub-operations 15 and 16, were associated with the more elaborate architecture located to the west of the large hilltop group ([Figure 13](#), shown above). SubOp 15 was established on the southeast side of a large structure, which measured 9 meters by 11 meters and approximately 1 meter in height. The

structure likely is the western building in a complex associated with a much larger and higher range structure to the east, and forming a large open plaza. The Sub-operation 15 excavation was successful in identifying a dense domestic refuse deposit. Unlike most of the other excavations at Rancho Potrero Grande, the artifact assemblage includes a variety of domestic refuse, including shell, bone, and lithic materials. This excavation provides the best sample of materials from the Rancho Potrero Grande excavations. Unfortunately, ceramic preservation was similarly poor.

Sub-operation 16 was located south of a large platform located approximately 145 meters west of SubOp 15. This platform had the largest surface area of the buildings tested at Rancho Potrero Grande, measuring approximately 22×22 meters in area and 75 centimeters in height. Evidence of superstructural architecture was visible on the summit of the platform.

Another unanticipated architectural feature, the edge of a substructural platform, was encountered within the excavation. The platform does not align in any way with the orientation of the large mound located about a meter away. Although the point of articulation between this feature and the mound itself was not encountered, it is likely that the platform wall documented in the excavation represents an earlier construction phase or an ancillary platform. The excavation was successful in recovering a sample of artifacts associated with this building, but no dense deposits of domestic refuse were encountered.

Analysis of the ceramic materials from surface collections in 2003 and excavations in 2005 at Rancho Potrero Grande suggest an ephemeral Formative occupation in some of the larger structures west of the hilltop group, with an expansion of settlement during the Terminal Classic to Postclassic periods. Settlement in this zone seems to be continuous into the Colonial Period. The frequencies of obsidian artifacts from Rancho Potrero Grande were very low in all excavation units except SubOps 15 and 16.

Conclusions

The 2005 excavations in the immediate periphery of the modern city of Champotón provide some information about the nature and distribution of settlement surrounding the ancient center, and further reinforce the demographic model derived from the preliminary reconnaissance. A major methodological issue addressed in the 2005 research was the problem of site disturbance. Preliminary reconnaissance in Potrerito and Rancho San Carlos, focusing on mounded architecture, suggested that settlement in these areas was sparse and dispersed. However, data from test excavations of surface artifact concentrations demonstrate that modern land modifications have obscured mounded architecture, particularly in areas closest to the edge of the modern city. Excavations in two of these artifact scatters yielded very similar materials as the excavations near clearly visible architecture. Many of these surface concentrations have been identified during reconnaissance and mapping around Champotón. These data highlight the extent of disturbance of archaeological materials near the edge of the

modern city, but also suggest that research can effectively deal with this problem if artifact scatters are successfully identified.

The 2005 data will also provide information about the demography of the peripheral settlement surrounding the ancient city of Champotón. The ceramic data from Potrerito and Rancho Potrero Grande suggest that settlement in these zones expanded during the Terminal Classic and into the Postclassic Period. The data from Rancho San Carlos reflect a much longer occupational sequence, with substantial Formative and Classic Period occupations. Interestingly, this latter area is located in proximity to the largest intact monumental architecture at Champotón. Excavations by the Proyecto Champotón (Folan, *et al.* 2002) also demonstrate early occupation in this area, with continuity into the Postclassic Period. This zone is also located near Barrio Pozo Monte, a neighborhood in the northeast part of the modern city of Champotón. There is ubiquitous evidence of prehispanic occupation, including reutilized column drums and some intact architecture, throughout this part of the modern city (Folan, *et al.* 2004). These data could reflect a pattern of more nucleated early settlement in the Formative and Classic Period, with later expansion of populations in outlying areas in the Terminal Classic and Early Postclassic.

This demographic model is consistent with information from the regional reconnaissance, which includes a pattern of abandonment in inland zones associated with a demographic boom at Champotón and other coastal centers. Thus, the expansion of population surrounding Champotón likely was a result of relatively short-distance migrations from abandoned centers located upriver. Field research in 2007 and 2008, extending inland along the Champotón River drainage, will further examine this emerging pattern.

Ongoing analysis of the materials excavated during 2005, as well as assemblages from subsequent excavations in 2007 and beyond, will provide a more detailed understanding of economic change in the Champotón polity. The preliminary results of this project reflect an increase in the frequency of trade goods beginning in the Terminal Classic Period, reaching a peak in the Postclassic. There also seems to be a greater density of trade goods concentrated in areas closest to the river. These findings are preliminary, and a larger sample of test excavations will further illuminate these emerging patterns. Likewise, source analysis of obsidian and ceramic artifacts in the future will help determine both the provenience of trade commodities and the mechanisms of distribution within the Champotón economy. Together, the final results of this project will provide insight into the relationship between demographic processes, economic change, interregional integration, and climatic change in the Classic to Postclassic transition.

Future Research

The Champotón Regional Settlement Survey research will continue in 2007, focusing on the parts of the Río Champotón drainage located further inland (see [Figure 2](#) and [Figure](#)

3). These investigations, funded by the IIE Fulbright Program, will include excavations in and around the large Classic Period centers of Ulumal and San Dimas. These zones should provide an ideal comparative data to construct a diachronic model of demographic and economic processes within the region.

Acknowledgements

The Champotón Regional Settlement Survey has been undertaken in conjunction with the Proyecto Champotón, directed by Dr. William Folan of the Centro de Investigaciones Históricas y Sociales of the Universidad Autónoma de Campeche. Financial support for this research was provided by grants from the Foundation for the Advancement of Mesoamerican Studies, Inc., (FAMSI) the Institute of International Education Fulbright Program, the Institute for Mesoamerican Studies, and various grants from the State University of New York at Albany. I would also like to recognize the contributions of William Folan, Lynda Florey Folan, Donald Forsyth, Josalyn Ferguson, José Antonio Hernández Trujeque, Marilyn Masson, Michael E. Smith, Elizabeth Graham, Tomas Arnabar Gunam, Roberto Rosado Ramírez, and Felix Arcoha Gómez, without whom this research would not have been possible.

List of Figures

[Figure 1](#). Map of Champotón region with sites documented in 2003 reconnaissance.

[Figure 2](#). Río Champotón drainage and major centers.

[Figure 3](#). Champotón Regional Settlement Survey study area.

[Figure 4](#). Three zones for 2005 research.

[Figure 5](#). The Potrerito Research Zone.

[Figure 6](#). Sub-Operations 1 and 2.

[Figure 7](#). Sub-Operation 3.

[Figure 8](#). Rancho San Carlos Research Zone.

[Figure 9](#). Rancho Potrero Grande Research Zone.

[Figure 10](#). Sub-Operations 9 and 10.

[Figure 11](#). Platform Facings, Rancho Potrero Grande, Sub-Operation 10.

[Figure 12](#). Sub-Operations 11, 12, 13 and 14.

[Figure 13](#). Sub-Operations 15 and 16.

Sources Cited

Adams, Richard E.W.

1973 "Maya Collapse: Transformation and Termination in the Ceramic Sequence at Altar de Sacrificios." In *The Classic Maya Collapse*, edited by T. Patrick Culbert, pp. 133-163. University of New Mexico Press, Albuquerque.

Andrews, Anthony P.

1978 "Puertos Costeros del Postclásico Temprano en el norte de Yucatán." In *Estudios de Cultura Maya* 11:75-93.

Andrews, Anthony P., Tomas Gallareta Negron, Fernando Robles Castellanos, Rafael Palma Cobos and Pura Cervera R.

1988 "Isla Cerritos: An Itzá Trading Port on the North Coast of Yucatán, México." In *National Geographic Research* 4(2):196-207.

Andrews, George F.

1984 *Edzna, Campeche, México: Settlement Patterns and Monumental Architecture*. Foundation for Latin American Anthropological Research, Culver City.

Andrews V, E. Wyllys and Jeremy A. Sabloff

1986 "Classic to Postclassic: A Summary Discussion." In *Late Lowland Maya Civilization: Classic to Postclassic*, edited by Jeremy A. Sabloff and E. Wyllys Andrews V, pp. 433-456. University of New Mexico Press, Albuquerque.

Arnabar G., Tomas

2001 "El Cacicazgo de Champotón en el Siglo XVI." In *Los Investigadores de la Cultura Maya* 9(2):368-380.

Ball, Joseph W.

1978 *Archaeological Pottery of the Yucatán-Campeche Coast*. Studies in the Archaeology of Coastal Yucatán and Campeche, México. Middle American Research Institute, Tulane University, New Orleans.

- 1986 "Campeche, the Itza, and the Postclassic: A Study of Ethnohistorical Archaeology." In *Late Lowland Maya Civilization*, edited by Jeremy A. Sabloff and E. Wyllys Andrews V, pp. 379-408. University of New Mexico Press, Albuquerque.
- Ball, Joseph W. and Jack D. Eaton
 1972 "Marine Resources and the Prehistoric Lowland Maya: A Comment." In *American Anthropologist* 74:772-776.
- Ball, Joseph W. and Jennifer T. Taschek
 1989 "Teotihuacán's Fall and the Rise of the Itza: Realignment and Role Changes in the Terminal Classic Maya Lowlands." In *Mesoamerica After the Decline of Teotihuacán: A.D. 700-900*, edited by Richard A. Diehl and Janet C. Berlo, pp. 187-200. Dumbarton Oaks, Washington DC.
- Benavides Castillo, Antonio
 1997 *Edzna: A Pre-Columbian City in Campeche*. INAH/University of Pittsburgh Press, Pittsburgh.
- Berdan, Frances F., Marilyn A. Masson, Janine Gasco and Michael E. Smith
 2003 "An International Economy." In *The Postclassic Mesoamerican World*, edited by Michael E. Smith and Frances F. Berdan, pp. 96-108. University of Utah Press, Salt Lake City.
- Bishop, Ronald L.
 2003 "Five Decades of Maya Fine Orange Ceramic Investigation by INAA." In *Patterns and Process: A Festschrift in Honor of Dr. Edward V. Sayre*, edited by Lambertus van Zelst, pp. 81-91. Smithsonian Center for Materials Research and Education, Suitland.
- Bolles, David
 2003 *Post-Conquest Maya Literature: A Compilation of the Various Books of the Chilam Balam*. Labyrinthos, Culver City.
- Braswell, Geoffrey E. and Michael D. Glascock
 2002 "The Emergence of Market Economies in the Ancient Maya World: Obsidian Exchange in Terminal Classic Yucatán, México." In *Geochemical Evidence for Long-Distance Exchange*, edited by Michael D. Glascock, pp. 33-52. Bergin and Garvey, Westport.
- Coe, Michael D.
 1968 *America's First Civilization*. American Heritage Publishing Co., New York.

- Collier, A.
1964 "The American Mediterranean." In *Handbook of the Middle American Indians* 1:122-142.
- Curtis, Jason H., David A. Hodell and Mark Brenner
1996 "Climate Variability on the Yucatán Peninsula (México) During the Past 3500 Years, and Implication for Maya Cultural Evolution." In *Quaternary Research* 46:37-47.
- Dahlin, Bruce H.
1983 "Climate and Prehistory on the Yucatán Peninsula." In *Climate Change* 5:245-263.
2000 "The Barricade and Abandonment of Chunchucmil: Implications for Northern Maya Warfare." In *Latin American Antiquity* 46:37-47.
2002 "Climate Change and the End of the Classic Period in Yucatán: Resolving a Paradox." In *Ancient Mesoamerica* 13:327-340.
- Dahlin, Bruce H., Anthony P. Andrews, Timmothy Beach, C. Bezanilla, P. Farrell, S. Luzzadder-Beach and V. McCormick
1998 "Punta Canbalam in Context: A Peripatetic Coastal Site in Northwest Campeche, México." In *Ancient Mesoamerica* 9(1):1-15.
- Dahlin, Bruce H. and Traci Ardren
2002 "Modes of Exchange and Regional Patterns: Chunchucmil, Yucatán." In *Ancient Maya Political Economies*, edited by Marilyn A. Masson and David Freidel, pp. 249-285. Alta Mira Press, New York.
- Eaton, Jack D.
1978 "Archaeological Survey of the Yucatán-Campeche Coast." In *Studies of Coastal Yucatán and Campeche, México*, edited by Jack D. Eaton and Joseph W. Ball. Middle American Research Institute, Tulane University, New Orleans.
- Eaton, Jack D. and Joseph W. Ball
1978 *Studies on the Archaeology of Coastal Campeche, México*. Middle American Research Institute Publication 46. Tulane University, New Orleans.
- Ek, Jerald D.
2006 *Reconocimiento del Asentamiento y Excavaciones Arqueológico de la Región de Champotón: resultados de la temporada de campo 2005*. Report Submitted to INAH, Campeche.

- Ek, Jerald D. and Roberto Rosado Ramírez
- 2004 *Reconocimiento del Asentamiento Arqueológico de la Región de Champotón: Resultados de la Temporada de Campo 2003*. Report Submitted to Centro INAH, Campeche.
- 2005 "Transformaciones Políticas, Económicas, y Ambientales en Champotón, Campeche." In *Los Investigadores de la Cultura Maya* 13:281-308.
- Folan, William J., A. Morales, Rosario Dominguez, R. Ruiz, R. Gonzalez, Joel D. Gunn, Lynda Florey, M. Barredo, J. Hernandez and D. Bolles
- 2002 "La Ciudad y Puerto de Champotón, Campeche: Una Encrucijada del Golfo de México y su Corredor Eco-Arqueológico." In *Los Investigadores de la Cultura Maya* 10(1):8-16.
- Folan, William J., Abel Morales López, José Antonio Hernández Trujeque, Raymundo González Heredia, Lynda Florey Folan, David Bolles and Joel D. Gunn
- 2004 "Recientes Excavaciones en el Barrio de Pozo Monte en las Ciudad y Puerto de Champotón (Chakan Putun) Campeche: Un Lugar Central del Preclásico Medio a Posclásico en la Costa Oeste de la Península de Yucatán." In *Los Investigadores de la Cultura Maya* 12(2):38-53.
- Forsyth, Donald W.
- 1983 *Investigations at Edzna, Campeche, México: Ceramics*. Papers of the New World Archaeological Foundation 46, Part II. Brigham Young University, Provo.
- 2004 "Reflexiones Sobre la Ocupación Posclásica en Champotón a través de la Cerámica." In *Los Investigadores de la Cultura Maya* 12(2):32-38.
- Forsyth, Donald W. and Aaron Jordan
- 2003 "La Secuencia Cerámica de Champotón, Campeche: Un Ensayo Preliminar." In *Los Investigadores de la Cultura Maya* 11(Tomo II):56-63.
- Fox, John W.
- 1987 *Maya Postclassic State Formation*. Cambridge University Press, Cambridge.
- Freidel, David A.
- 1975 "The Ix Chel Shrine and Other Temples of Talking Idols." In *A Study of Changing Pre-Columbian Commercial Systems*, edited by Jeremy A. Sabloff and William L. Rathje, pp. 107-113. Harvard University Press, Cambridge.
- Freidel, David A. and Jeremy A. Sabloff
- 1984 *Cozumel: Late Maya Settlement Patterns*. Academic Press, New York.

- Freidel, David A. and Vernon Scarborough
 1982 "Subsistence, Trade, and Development of the Coastal Maya." In *Spaniards and Indians in Southeastern Mesoamerica: Essays on the History of Ethnic Relations*, edited by Murdo J. Macleod and Robert Wasserstrom, pp. 40-63. University of Nebraska Press, Lincoln.
- Gasco, Janine and Frances F. Berdan
 2003 "International Trade Centers." In *The Postclassic Mesoamerican World System*, edited by Michael E. Smith and Frances F. Berdan, pp. 109-116. University of Utah Press, Salt Lake City.
- Gómez Cobá, Maria José, Abel Morales López, Vera Tiesler Blos and William J. Folan
 2003 "Ritual Mutilación Póstumo del Cuerpo Humano Durante el Posclásico: Nuevas Evidencias de Champotón, Campeche." In *Mexicon* 25:146-147.
- Gunn, Joel D., Ray T. Matheny and William J. Folan
 2002 "Climate-Change Studies in the Maya Area: A Diachronic Analysis." In *Ancient Mesoamerica* 13:79-84.
- Hodell, David A., Jason H. Curtis and Mark Brenner
 1995 "Possible Role of Climate in the Collapse of the Classic Maya Civilization." In *Nature* 375(6530):391-394.
- Inurreta Diaz, Armando Francisco
 2004 *Uaymil: Un Puerto de Transbordo en la Costa Norte de Campeche*. Universidad Autonoma de Campeche, Campeche.
- Jones, Grant D.
 1998 *The Conquest of the Last Maya Kingdom*. Stanford University Press, Stanford.
- Joralemon, Peter D.
 1971 *A Study of Olmec Iconography. Studies in Pre-Columbian Art and Archaeology* 7. Dumbarton Oaks, Washington D.C.
- Joyce, Rosemary
 1991 *Cerro Palenque: Power and Identity on the Maya Periphery*. University of Texas Press, Austin.
- Kaplan, Jonathan
 1998 "Un Habeas Corpus en el Caso de los Putun. Clásico Terminal, Epiclásico o Posclásico?" In *XI Simposio de Investigaciones Arqueológicas en Guatemala*, edited by Juan P. LaPorte and Hector L. Escobedo, pp. 807-815. vol. II. Museo Nacional de Arqueología y Etnología, Guatemala City.

- Kepecs, Susan
 1999 *The Political Economy of Chikinchel, Yucatán, México: A Diachronic Analysis from the Prehispanic Era through the Age of Spanish Administration*. Ph.D. dissertation, University of Wisconsin.
 2003 "Chikinchel." In *The Postclassic Mesoamerican World*, edited by Michael E. Smith and Frances F. Berdan, pp. 259-268. University of Utah Press, Salt Lake City.
- Kepecs, Susan, Gary Feinman and Sylviane Boucher
 1994 "Chichén Itzá and Its Hinterland: A World Systems Approach." In *Ancient Mesoamerica* 5:141-158.
- Killion, Thomas W. and Javier Urcid
 2001 "The Olmec Legacy: Cultural Continuity on México's Southern Gulf Coast." In *Journal of Field Archaeology* 28:3-25.
- Kowalski, Jeff K.
 1989 "Who Am I Among the Itza?: Links Between Northern Yucatán and the Western Maya Lowlands and Highlands." In *Mesoamerica After the Decline of Teotihuacán*, edited by Richard A. Diehl and Janet C. Berlo, pp. 173-186. Dumbarton Oaks, Washington DC.
- Kremer, Jurgen
 1994 "The Putun Hypothesis Reconsidered." In *Hidden Among the Hills: Maya Archaeology of the Northwest Yucatán Peninsula*, edited by Verlag von Flemming. Mockmuhl Press, Bonn, Germany.
- Lange, Frederick W.
 1971 "Marine Resources: A Viable Subsistence Alternative for the Prehistoric Lowland Maya." In *American Anthropologist* 73:619-639.
- Masson, Marilyn A.
 2000 *In the Realm of Nachan Kan: Postclassic Maya Archaeology at Laguna de On, Belize*. University of Colorado Press, Boulder.
 2003 "Economic Patterns in Northern Belize." In *The Postclassic Mesoamerican World*, edited by Michael E. Smith and Frances F. Berdan, pp. 269-281. University of Utah Press, Salt Lake City.

Matheny, Ray T.

- 1986 "Early States in the Maya Lowlands During the Late Preclassic Period: Edzna and El Mirador." In *City-States of the Maya: Art and Architecture*, edited by Elizabeth P. Benson, pp. 1-44. Rocky Mountain Institute for Pre-Columbian Studies, Denver.

McKillop, Heather

- 1996 "Ancient Maya Trading Ports and the Integration of Long-Distance and Regional Economies: Wild Cane Cay in South-Coastal Belize." In *Ancient Mesoamerica* 7:49-62.

Molina Solís, Juan Francisco

- 1943 *Historia del Descubrimiento y Conquista de Yucatán*. Ediciones Mayab, Mérida.
1973 *Historia de Yucatán*. Ediciones Mensaje, Mérida.

Nicholson, Henry B.

- 1971 "The Iconography of Classic Central Veracruz Ceramic Sculptures." In *Ancient Art of Veracruz: An Exhibit Sponsored by the Ethnic Arts Council of Los Angeles*, Los Angeles County Museum of Natural History, pp. 13-17. Ethnic Arts Council of Los Angeles, Los Angeles.

Ochoa, Lorenzo and Luis Casasola

- 1979 "Los Cambios del Patron de Asentamiento en el Área del Noroccidentales." In *Estudios Preliminares Sobre los Maya de las Tierras Bajas Noroccidentales*, edited by Lorenzo Ochoa, pp. 19-44. Universidad Nacional Autonoma de México, México.

Ochoa, Lorenzo and Ernesto Vargas Pacheco

- 1980 "El Colapso Maya, Los Chontales y Xicalango." In *Estudios de Cultura Maya* 22:61-91.

Ringle, William M., Tomás Gallareta Negrón and George J. III Bey

- 1998 "The Return of Quetzalcoatl: Evidence for the Spread of a World Religion during the Epiclassic Period." In *Ancient Mesoamerica* 9:183-232.

Roys, Ralph L.

- 1933 *The Book of Chilam Balam of Chumayel* No. 438. Carnegie Institution of Washington, Washington DC.
1957 *The Political Geography of the Yucatán Maya*. Carnegie Institution of Washington Publication No. 613. Carnegie Institution of Washington, Washington DC.

- Ruz Lhullier, Alberto
1969 *La Costa de Campeche en los Tiempos Prehispánicos*. INAH, México.
- Sabloff, Jeremy A. and William L. Rathje
1975 *A Study of Changing Pre-Columbian Commercial Systems: The 1972-1973 Seasons at Cozumel, México*. Peabody Museum Monographs No. 3. Harvard University, Cambridge.
- Sabloff, Jeremy A. and Gordon R. Willey
1967 "The Collapse of Maya Civilization in the Southern Lowlands: A Consideration of History and Process." In *Southwest Journal of Anthropology* 23:311-336.
- Schele, Linda and Peter Mathews
1998 *The Code of Kings: The Language of Seven Sacred Maya Temples and Tombs*. Scribner, New York.
- Scholes, France V. and Ralph L. Roys
1968 *The Maya Chontal Indians of Acalan-Tixchel*. University of Oklahoma Press, Norman.
- Shaw, Justine M.
2003 "Climate Change and Deforestation: Implications for the Maya Collapse." In *Ancient Mesoamerica* 14:157-167.
- Shook, Edwin M. and Tatiana Proskouriakoff
1951 "Yucatán." In *Carnegie Institution of Washington, Yearbook* 50, pp. 236-240.
- Siemens, Alfred H. and Dennis E. Puleston
1972 "Ridged Fields and Associated Features in Southern Campeche: New Perspectives on the Lowland Maya." In *American Antiquity* 37(2):228-239.
- Siemens, Alfred H., Jose Angel Soler Graham, Richard Hebda and Maija Heimo
2002 "'Dams' on the Candelaria." In *Ancient Mesoamerica* 13:115-123.
- Smith, Michael E.
n.d. "Tula and Chichén Itzá: Are We Asking the Right Questions?" In *Many Tollans: Chichén Itzá, Tula, and the Epiclassic-Early Postclassic Mesoamerican World*, edited by Jeff K. Kowalski and Cynthia Kristan-Graham, pp. 1-34. Dumbarton Oaks, Washington DC.

Smith, Michael E. and Frances F. Berdan

- 2000 "The Postclassic Mesoamerican World System: Position Paper." In *Current Anthropology* 41:283-286.
- 2003a "Postclassic Mesoamerica." In *The Postclassic Mesoamerican World*, edited by Michael E. Smith and Frances F. Berdan, pp. 3-13. University of Utah Press, Salt Lake City.
- 2003b *The Postclassic Mesoamerican World*. University of Utah Press, Salt Lake City.
- 2003c "Spatial Structure of the Mesoamerican World System." In *The Postclassic Mesoamerican World*, edited by Michael E. Smith and Frances F. Berdan, pp. 21-31. University of Utah Press, Salt Lake City.

Smith, Robert E.

- 1971 *The Pottery of Mayapan. Papers of the Peabody Museum of Archaeology and Ethnology* 66. Harvard University, Cambridge.

Thompson, J. Eric S.

- 1970 *Maya History and Religion*. University of Oklahoma Press, Norman.

Tourtellot, Gair and Jason J. González

- 2004 "The Last Hurrah: Continuity and Transformation at Seibal." In *The Terminal Classic in the Maya Lowlands: Collapse, Transition, and Transformation*, edited by Arthur A. Demarest, Prudence M. Rice and Don S. Rice, pp. 60-82. University Press of Colorado, Boulder.

Tozzer, Alfred M.

- 1941 *Landa's Relaciones de las Cosas de Yucatán*. Papers of the Peabody Museum of Archaeology and Ethnology 18. Harvard University Press, Cambridge.

Vargas Pacheco, Ernesto

- 1994 "Síntesis de la Historia Prehispánica de los Mayas Chontales de Tabasco-Campeche." In *América Indígena, Historia Prehispánica* 1-2:15-61.
- 1998 "El Dominio de las Rutas Fluviales en la Región Contal. Acalan: El Lugar de las Canoas." In *Rutas de Intercambio en Mesoamérica*, edited by Evelyn Childs Rattray, pp. 259-276. Instituto de Investigaciones Antropológicas-UNAM, México.
- 2001 *Itzamkanac y Acalan: Tiempos de crisis anticipando el futuro*. Instituto de Investigaciones Antropológicas, Universidad Nacional Autónoma de México, México.