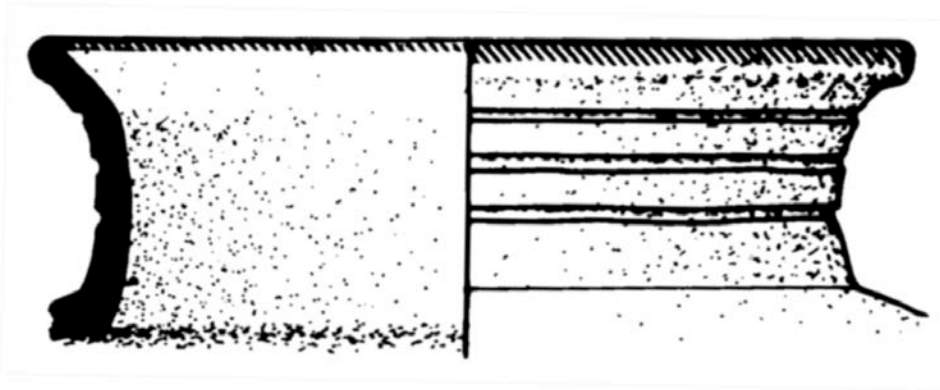


Final Report
of the
Cochuah Regional Archaeological Survey's
2006 Analysis Season



edited by Dave Johnstone and Justine M. Shaw

written by Dave Johnstone

College of the Redwoods
Eureka, CA

Cover photograph by Dave Johnstone

Table of Contents

Acknowledgements..... iv

List of Tables and Figures..... v

Chapter 1: Surface Collected Ceramics from 2005
..... 1

Chapter 2: Osteological Analysis of Human Remains
..... 24

References Cited:
..... 31

Acknowledgements

The 2006 CRAS laboratory season was funded by the Selz Foundation, as was our 2001 season at Yo'okop. Funding for the 2002 season at Yo'okop, and the 2003, 2004, and 2005 CRAS field seasons were funded by the Antiqua Foundation. We very much appreciate the support and encouragement that Bernard Selz has continued to provide to us through the years. The 2000 season was funded by the H. John Heinz III Fund of the Heinz Family Foundation (reference number H1305) and the Foundation for the Advancement of Mesoamerican Studies Inc. (FAMSI project number 99016). Without these funds, our research in this region would not have been possible.

We also would like to thank our colleagues from the United States, Canada, Sweden, and Mexico, including INAH-QR and INAH-Nacional, for helping us with our sixth season of research. Adriana Velazquez Morlet, director of INAH-Quintana Roo, has been incredibly helpful in helping us to continue our research in the Cochuah region. She was also instrumental in arranging support facilities at the INAH offices in Chetumal.

Finally, and most importantly, we would like to thank the people of Ichmul, Sacalaca, Saban, San Felipe, and Huay Max who graciously allow us to live and work in their *ejidos* during our summers. In addition to the crew members we were able to hire (following pages), we received countless archaeological (and survival) tips and assistance from individuals throughout the *ejidos*.

List of Tables and Figures

Figure 1) Location of the CRAS Study Area.....	7
Figure 2) Sites within the CRAS Study Area.....	8
Figure 3) Middle Formative Ceramics from Chakal Ja'as: Loche Jar and Tumben Incised Jar.....	9
Figure 4) Late Formative Ceramics: Shangurro Red-on-Orange de Chakal Ja'as and Xanaba Red de X-makaba.....	10
Figure 5) Terminal Classic Ceramics: Muna Jar from Chakal Ja'as (left) and Muna Basin from San Pedro Sacalaca.....	11
Figure 6) Burial 2, Dentition.....	26
Figure 7) Burial 5, Cranium.....	29
Table 1) Ceramics from Ichmul, San Juan, X-baquil, and San Felipe.....	14
Table 2) Ceramics from X-balche.....	16
Table 3) Ceramics from X-makaba.....	18
Table 4) Ceramics from Chakal Ja'as.....	20
Table 5) Ceramics from San Pedro, Sacalaca.....	22
Table 6) Summary of Ichmul Burials.....	30

Surface Collected Ceramics from 2005

Ceramics surface collections are not a replacement for ceramics recovered from excavated contexts. They suffer a number of drawbacks including: poor preservation resulting in their inability to be typed (Johnstone 2000), differential preservation resulting in overrepresentation of certain more durable types, and the biasing of the collection in favor of the most recent occupation. Despite these shortcomings, the CRAS project has not entirely abandoned surface collections. While not suitable for establishing a site chronology, they do serve as a kind of checklist from which it may be determined if a certain period is present at a given site. Surface collections were used in two contexts during the 2005 field season: to examine other portions of a site, which had been subjected to excavation, and to sample those sites, which were visited too briefly to undertake excavations. The first case provided a kind of check, to see if the excavated materials were also found at other portions of a site, or if other portions of the site contained materials not represented in the excavated sample. We did this because experience at Nohcacab (Johnstone 2004) and at Yo'okop (Johnstone 2002) showed that small samples could omit portions of a site's occupational chronology. The second case allowed for a more extensive (though potentially biased) regional overview by increasing the number of sites for which we had at least minimal data (Figures 1 and 2).

The surface collection from 2005 totaled 1802 sherds and included material from 7 sites: Chakal Ja'as, San Pedro Sacalaca, X-balche, San Felipe, Ichmul, X-makaba, and X-baquil (Tables xx-xx). As with the excavated ceramics, the surface ceramics were analyzed using the Type-Variety system (Smith et al. 1960).

Ichmul

Two ceramic samples were collected from relatively clear sections of Ichmul's Sacbe 1 in order to supplement the small sample from near-sacbe context (Flores C. and Normark 2004). Unfortunately, these surface collections were small and poorly preserved. The latest ceramics recovered date to the Terminal Classic, suggesting that the *sacbe* might date to this period.

X-balche

The excavated prehispanic ceramic sample from X-balche was unsatisfactory owing to its small size, single locus, and to the incomplete nature of the excavation that did not proceed to bedrock (Kaeding 2005). The surface collection provided a larger sample from more varied contexts, and permitted a fuller understanding of the occupational history of the site. As with the excavated sample, the surface collection suggests a strong Terminal Classic occupation. In addition, an Early Classic occupation is also indicated. This latter result was somewhat unexpected, as most of the sites surrounding Ichmul suffered an occupational hiatus during this period.

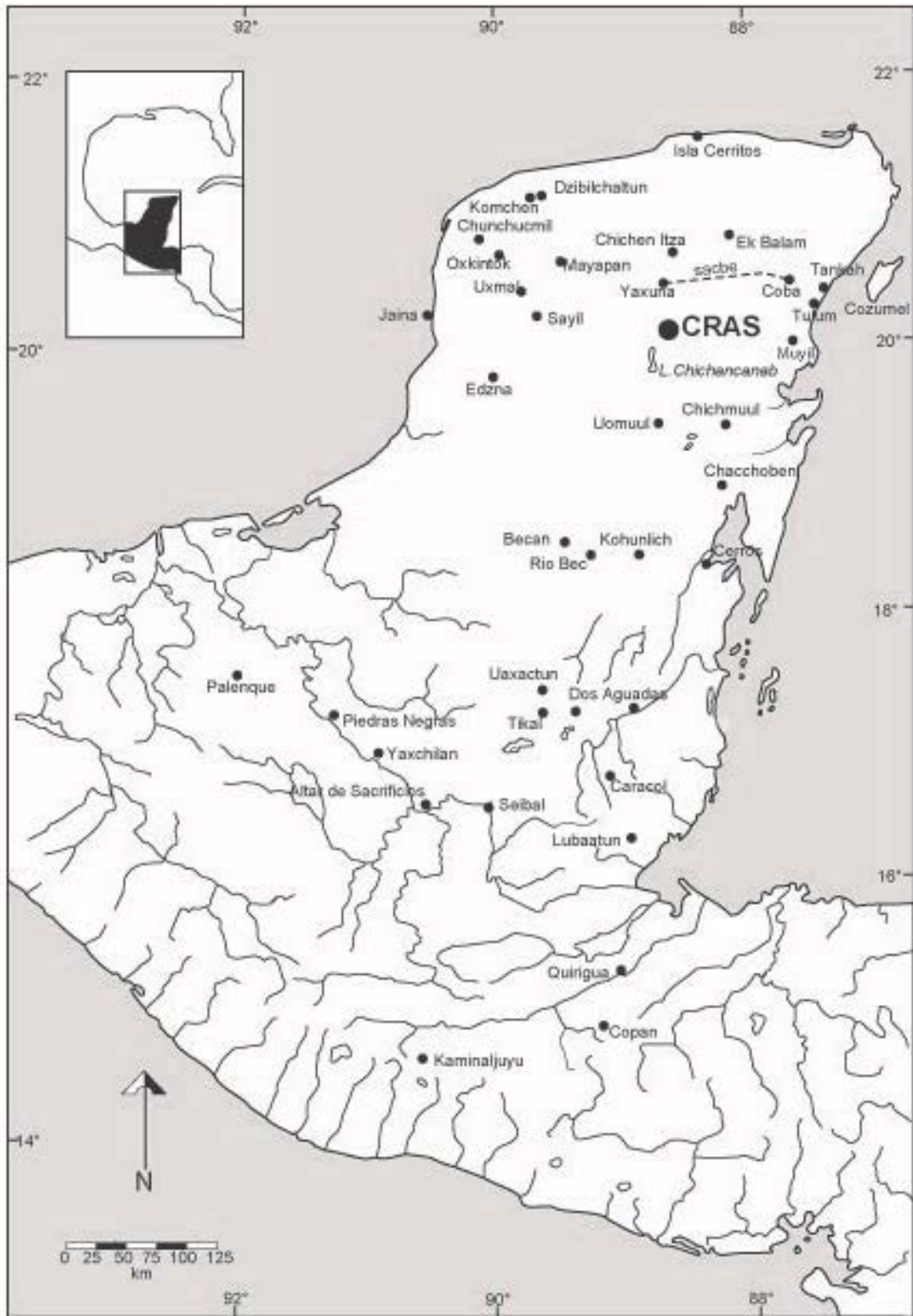


Figure 1. Location of the CRAS Study Area

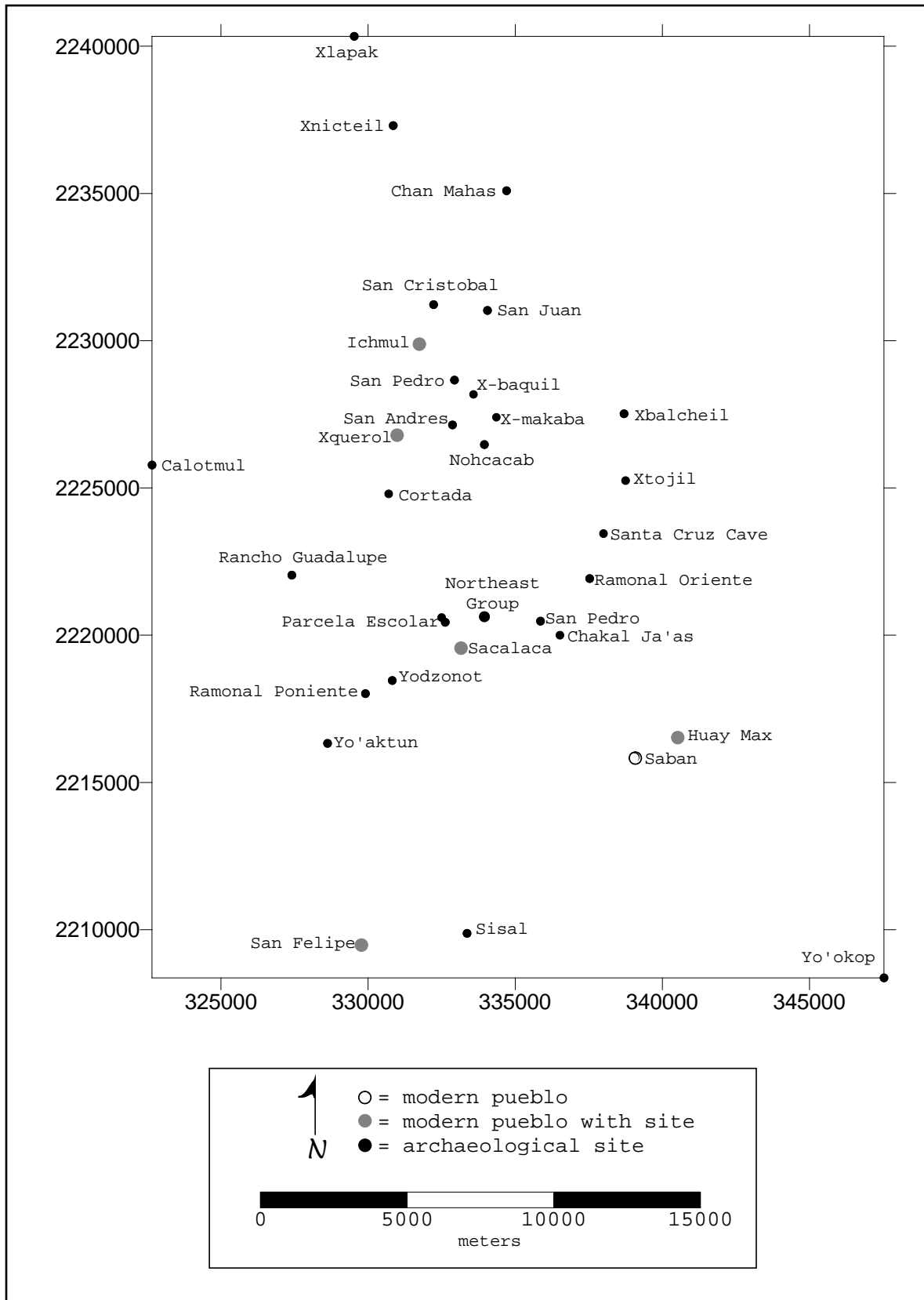
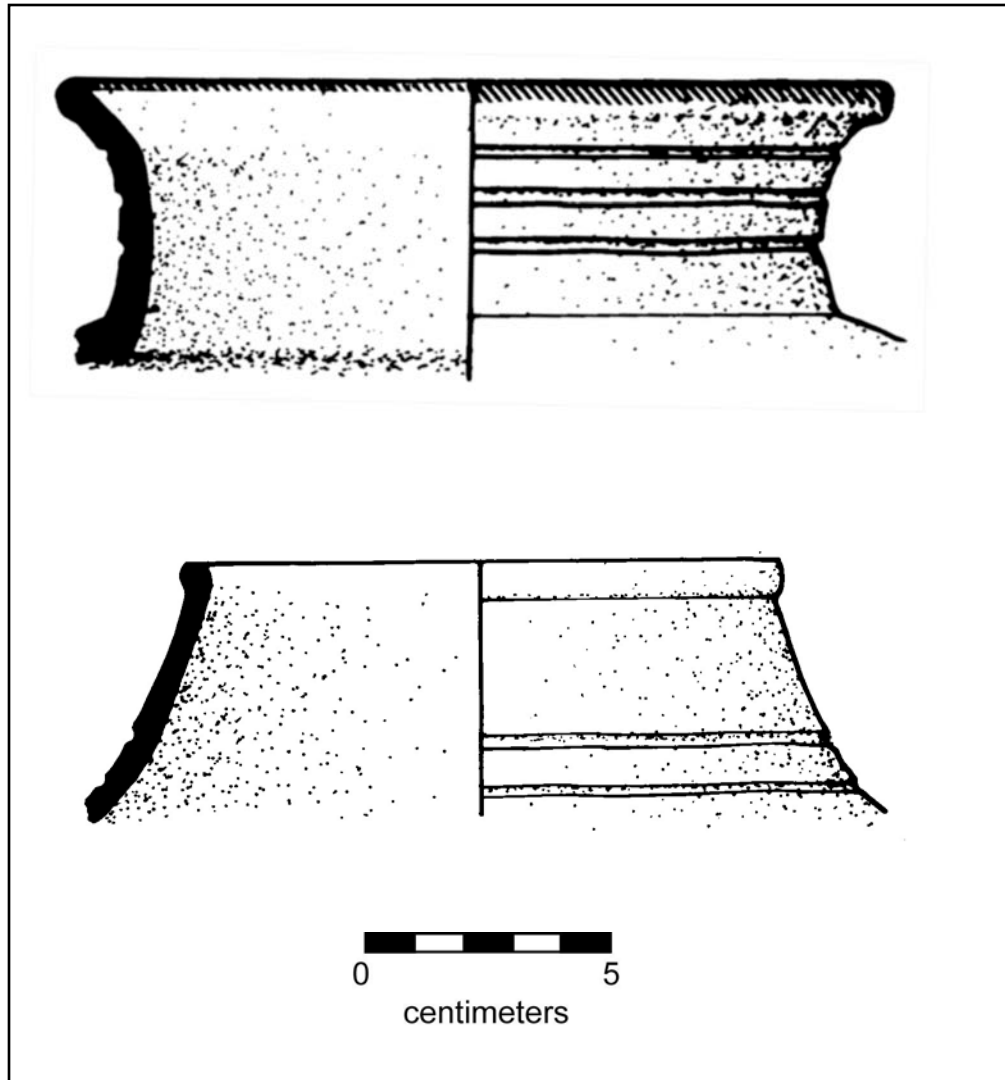


Figure 2. Sites Within the CRAS Study Area



**Figure 3. Middle Formative Ceramics from Chakal Ja'as:
Loche Jar and Tumben Incised Jar**

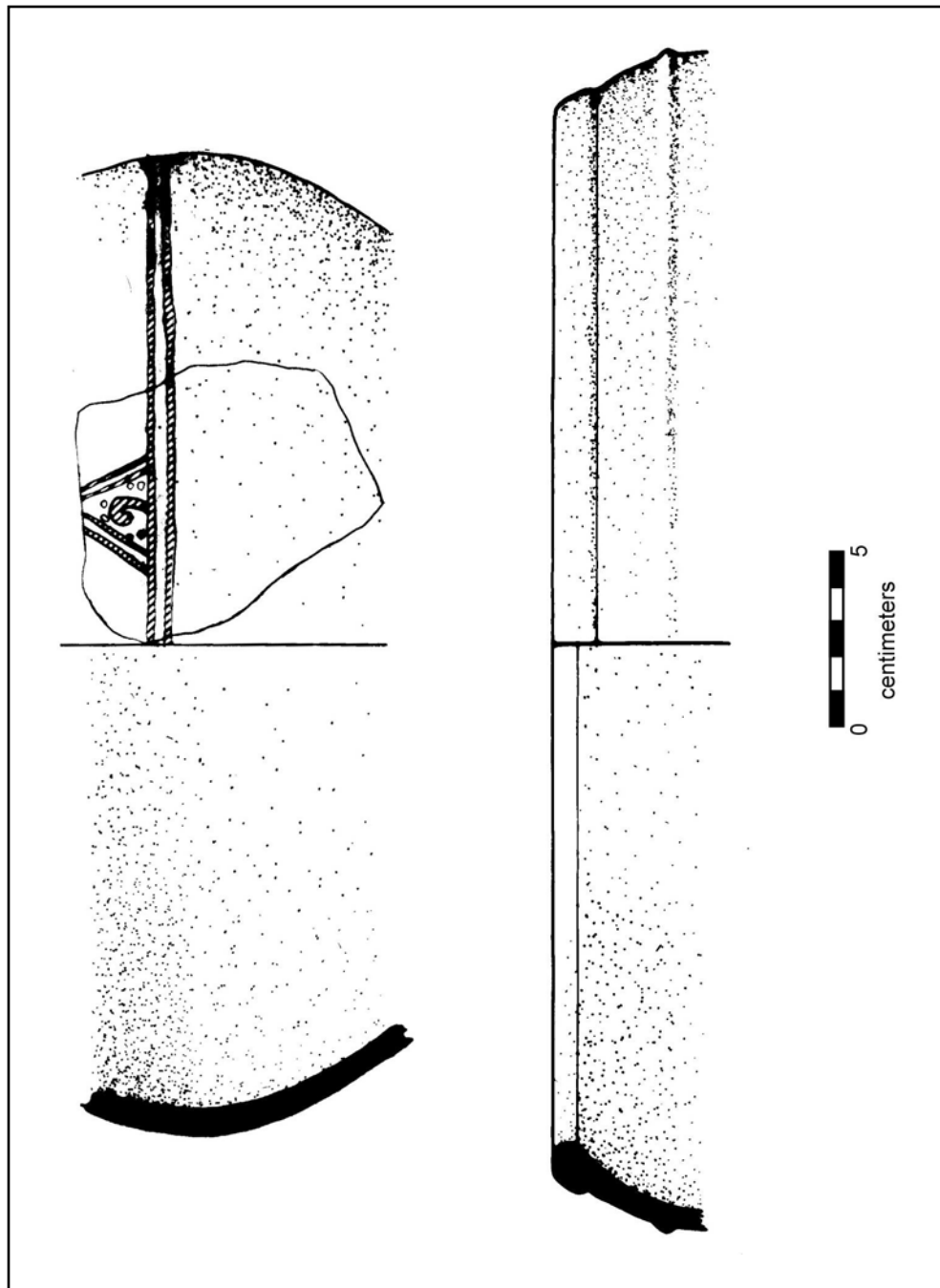


Figure 4. Late Formative Ceramics: Shangurro Red-on-Orange de Chakal Ja'as and Xanaba Red de X-makaba

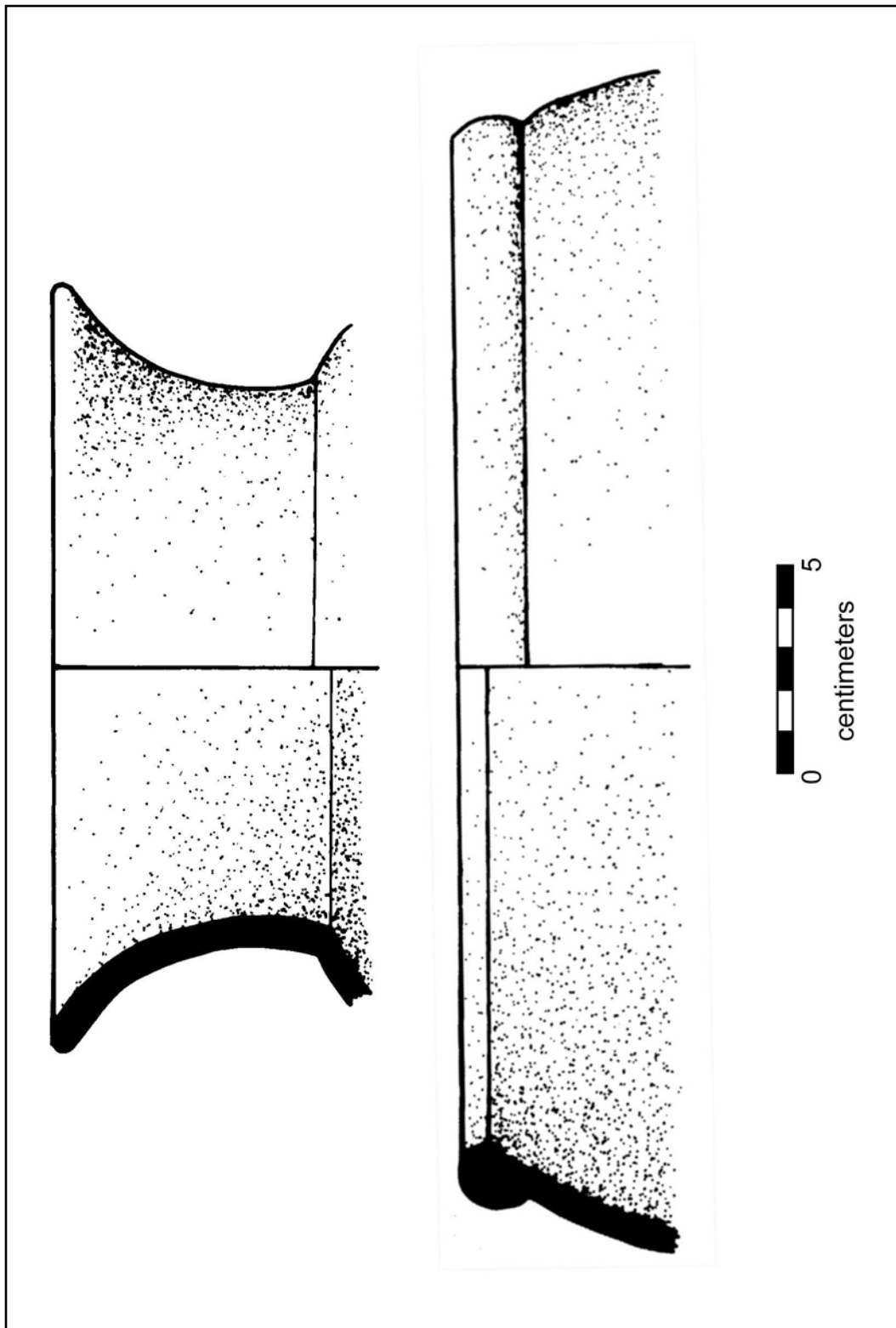


Figura 5. Terminal Classic Ceramics: Muna Jar from Chakal Ja'as (left) and Muna Basin from San Pedro Sacalaca (right)

X-makaba and X-baquil

X-makaba and X-baquil were sites visited only briefly in the course of other investigations (Flores C. and Normark 2005) in the vicinity of Ichmul. These commitments prohibited spending any more time than that needed to record the location of the site and the collection of a small ceramic samples from their surfaces. The absence of excavated samples from these sites makes it impossible to say how representative these samples might be, and so it is likely that some periods of occupation may not be represented in the samples. The samples do however permit us to document those periods that are represented in the sample from their respective site.

X-makaba has a strong Terminal Classic occupation, as well as the suggestion of a Late Classic occupation. The Late Classic is the most poorly represented period within the study area, both within any given site, as well as across the region. As such, X-makaba should warrant more intensive investigation in the future.

X-baquil's strongest period of representation is the Late Formative, with indications of a Terminal Classic occupation. Of interest is the presence of an as yet unidentified unslipped ceramic type with cloth impressions on its exterior. It is possible that this is a locally produced Colonial domestic ware.

Chakal Ja'as

The surface collection from Chakal Ja'as derives exclusively from the interior of the *rejollada* (karst sinkhole not in contact with the water table). Operation 1 was also placed in this locality, so a large excavated sample was available from this context. The material was collected by Huerta in the hope of defining activity areas within the *rejollada*, perhaps in association with the petroglyphs found within the cave. It is possible that given the possible religious aspect of the cave use, the ceramics within might have had a functionally specific sub-complex, similar to the Aguila Orange bowls used for lip-to-lip caches at Uaxactun (Smith 1955).

Given the small sample of material recovered from non-cave contexts, it is difficult to say with any degree of certainty how unique the cave collection may be. With that said, there are some differences of note. Firstly, a large sample of sherds dating to the Middle Formative period was recovered. This period was not represented in either of the excavations from Chakal Ja'as. Secondly, striated wares are almost absent from the cave regardless of time period, a result mirroring that of the excavated material (Johnstone 2005). These pots were used to boil liquids, and were set directly on hot coals to do so. Their near absence in the *rejollada* suggests that a significant aspect of domestic activity is not represented within the *rejollada*. Another difference resides in the restricted nature of vessel forms. Serving vessels such as plates and bowls are virtually absent. Jars and basins dominate the collection. By the Terminal Classic the size of these vessels was such that they were frequently constructed with strap handles to permit a tumpline that would ease their transportation. Jars in particular are well suited for transporting liquids. Whether the recovery of water

from the cave part of the *rejollada* (it still has a seep today) was a matter of ritual or simply a source of water remains a matter of speculation. Shaw's excavation (2005) at the deepest part of the *rejollada* indicated that by the Terminal Classic, water extraction had become important enough to construct a masonry lined well similar to those from the Puuc area (Barrera and Huchim 1989).

Both lines of evidence suggest that the material within the *rejollada* represents a specialized deposit. The absence of certain types and forms rules out the possibility that the material within the *rejollada* was redeposited from elsewhere on the site. Both production and consumption of foods are absent in their ceramic signatures within this locality.

Chronologically, there was a surprise in that some ceramics dating to the Late Classic were recovered. While this small sample is enough to state that the *rejollada* was used during this period, it is too small to indicate an occupation of the surrounding site for this period.

San Pedro Sacalaca

While excavations at San Pedro Sacalaca did produce a relatively large ceramic sample, a significant portion of this was unidentifiable owing to thermal modification from repeated *milpa* (agricultural field) fires. In addition, the shallow nature of the deposits excavated and the absence of extant floors made establishing a firm chronology difficult and left open the possibility that one or more periods of occupation were unrepresented in the sample. Our limited time budget prohibited further excavations to test this possibility, and so surface collections were undertaken at a number of localities in order to round out the ceramic sample from the site.

The surface collected sample was surprisingly large, approaching that of the excavated sample, and, given the protection from weathering afforded by the *sascabera* (lime quarry), relatively free of unidentified sherds. The surface collection reinforces the results of the excavated sample; namely that the site experienced an occupational hiatus during the Early and late Classic periods.

Table 1. Ceramics from Ichmul, San Juan, X-baquil, and San Felipe

Type	Location				San Felipe	Total
	Sacbe 1 mid-side	Sacbe 1 roadcut	San Juan well	X-baquil		
Achiotes Unslipped						0
Chunhintá Black v. Ucu					1	1
Nacolal Incised						0
Dzocobel Red on Black						0
Joventud Red						0
Desvario Chamfered						0
Guitarra Incised						0
Dzudzuquil Cream to Buff						0
Tumben Incised						0
Majan Red on Cream						0
Tipikal Red on Striated						0
Loche Incised Dichrome						0
Chancenote Unslipped						0
Tancah Unslipped				18		18
Xanaba Red (LF)			2	45		47
Dzalpach Composite						0
Sierra Red		1		2	1	4
Laguna Verde Incised						0
Ciego Composite						0
Lagartos Puctate						0
Repasto Black on Red						0
Flor Cream						0
Saban Unslipped						0
Yaxcaba Striated						0
Xanaba Red	1					1
Caucel Trickel on Red						0
Shangurro						0
Tituc Orange Polychrome v. Tituc						0
Huachinango Bichrome						0
Incised						0
Dos Arroyos Orange Polychrome						0
Maxcanu Buff						0

Table 1. Ceramics from Ichmul, San Juan, X-baquil, and San Felipe

(continued)

Type	Location					Total
	Sacbe 1 mid-side	Sacbe 1 roadcut	San Juan well	X-baquil	San Felipe	
Sacalaca Striated						0
Arena Red						0
Muna Slate (LC)						0
Saxche Orange Polychrome						0
Chum Unslipped						0
Yokat Striated v. Yokat	1	2			1	4
Yokat v. Applique						0
Muna Slate		1		3	1	5
Sacalum Black on Slate						0
Tekit Incised						0
Akil Impressed						0
Teabo Red						0
Ticul Thin Slate						0
Chen Mul Modeled					1	1
Colonial?				3		3
Unidentified	2	8	1	39	11	61
Total	4	12	3	110	16	145

Table 2. Ceramics from X-balche

Type	Location			Total	
	Sascabera	Bag 1	Bag 2		Bag 3
Achiotes Unslipped				0	
Chunhintá Black v. Ucu				0	
Nacolal Incised				0	
Dzocobel Red on Black				0	
Joventud Red				0	
Desvario Chamfered				0	
Guitarra Incised				0	
Dzudzuquil Cream to Buff				0	
Tumben Incised				0	
Majan Red on Cream				0	
Tipikal Red on Striated				0	
Loche Incised Dichrome				0	
Chancenote Unslipped				0	
Tancah Unslipped				0	
Xanaba Red (LF)				0	
Dzalpach Composite				0	
Sierra Red			1	2	3
Laguna Verde Incised					0
Ciego Composite					0
Lagartos Puctate					0
Repasto Black on Red					0
Flor Cream					0
Saban Unslipped					0
Yaxcaba Striated		1	1		2
Xanaba Red	1	7	5	3	16
Caucel Trickle on Red					0
Tituc Orange Polychrome v. Tituc		1		1	2
Huachinango Bichrome					0
Incised					0
Dos Arroyos Orange Polychrome		1			1
Maxcanu Buff					0

Table 2. Ceramics from X-balche

(continued)

Type	Location				Total
	Sascabera	Bag 1	Bag 2	Bag 3	
Sacalaca Striated					0
Arena Red					0
Muna Slate (LC)					0
Saxche Orange Polychrome					0
Chum Unslipped		2			2
Yokat Striated v. Yokat	1	15	10	15	41
Yokat v. Applique		3	1	3	7
Muna Slate	1	24	10	9	44
Sacalum Black on Slate		4	10	2	16
Tekit Incised		1			1
Akil Impressed					0
Teabo Red			2		2
Ticul Thin Slate					0
Chen Mul Modeled					0
Unidentified	1	51	9	21	21
Total	0	4	110	49	163

Table 3. Ceramics from X-makaba

Type	Location			Total
	N. md. Bag 1	N. md. Bag 2	Aktun	
Achiotes Unslipped				0
Chunhintá Black v. Ucu				0
Nacolal Incised				0
Dzocobel Red on Black				0
Joventud Red				0
Desvario Chamfered				0
Guitarra Incised				0
Dzudzuquil Cream to Buff				0
Tumben Incised				0
Majan Red on Cream				0
Tipikal Red on Striated				0
Loche Incised Dichrome				0
Chancenote Unslipped				0
Tancah Unslipped				0
Xanaba Red (LF)			2	2
Dzalpach Composite				0
Sierra Red				0
Laguna Verde Incised				0
Ciego Composite				0
Lagartos Puctate				0
Repasto Black on Red				0
Flor Cream				0
Saban Unslipped				0
Yaxcaba Striated				0
Xanaba Red	1			1
Caucel Trickel on red				0
Tituc Orange Polychrome v. Tituc				0
Huachinango Bichrome Incised			1	1
Dos Arroyos Orange Polychrome				0

Table 3. Ceramics from X-makaba

(continued)

Type	Location			Total
	N. md. Bag 1	N. md. Bag 2	Aktun	
Dos Carras Striated			1	1
Sacalaca Striated				0
Arena Red			4	4
Muna Slate (LC)			4	4
Saxche Orange Polychrome				0
Chum Unslipped				0
Yokat Striated v. Yokat	9	9		18
Yokat v. Applique	1			1
Muna Slate	5	11	4	20
Sacalum Black on Slate		1	3	4
Tekit Incised			2	2
Akil Impressed				0
Teabo Red		1	2	3
Ticul Thin Slate	1			1
Chen Mul Modeled				0
Unidentified	22	30	23	75
Total	39	53	45	137

Table 4. Ceramics from Chakal Ja'as

Type	Location											Total
	Ia	Ila	IIb	III	IV	Va	Vb	Vc	Vd	Ve	VI	
Achiotes Unslipped												0
Chunhinta Black v. Ucu						2	3					5
Nacolal Incised												0
Dzocobel Red on Black												0
Joventud Red						1	1					2
Desvario Chamfered												0
Guitarra Incised												0
Dzudzuquil Cream to Buff						2	2	6		1		11
Tumben Incised			2					1	1			4
Majan Red on Cream						1						1
Loche Incised Dichrome	1					1		2				4
Chancenote Unslipped						1						1
Tancah Unslipped												0
Xanaba Red (LF)	1	1					3					5
Dzalpach Composite												0
Shangurro Red on Orange					1							1
Sierra Red	1		1	2	21	35	19	35	4	18	1	137
Laguna Verde Incised		2		1	3	4	1	7	1	4		23
Ciego Composite								2				2
Lagartos Puctate												0
Repasto Black on Red						2						2
Flor Cream						1						1
Saban Unslipped												0
Yaxcaba Striated												0
Xanaba Red					6	2		26		15		49
Caucel Trickle on red					2	2		5		1		10
Tituc Orange Polychrome v. Tituc												0
Huachinango Bichrome Incised		1										1
Dos Arroyos Orange Polychrome												0
Maxcanu Buff								1				1

Table 4. Ceramics from Chakal Ja'as

(continued)

Type	Location												Total
	Ia	Ila	IIb	III	IV	Va	Vb	Vc	Vd	Ve	VI		
Sacalaca Striated							1						1
Arena Red					2		4						6
Muna Slate (LC)					1								1
Saxche Orange Polychrome													0
Chum Unslipped													0
Yokat Striated v. Yokat					1	9	6	12				1	29
Yokat v. Applique					2								2
Muna Slate	14	1	1	2	132	57	48	206	6	42	8		517
Sacalum Black on Slate	2	1		3	26	29	3	43	2	14	2		125
Tekit Incised									1		1		2
Akil Impressed									2				2
Teabo Red				1	2	2		3		1			9
Ticul Thin Slate							1						1
Chen Mul Modeled								2					2
Unidentified	1	1	1	1	42	15	32	59		22	2		176
Total	20	9	3	10	241	166	124	413	14	119	14		1133

Table 5. Ceramics from San Pedro, Sacalaca

Type	Location					Total
	S1W3-2	N1W1-1	N1W1-2	Cave Ent	Cave Grotto N. Passage	
Achiotes Unslipped						0
Chunhinta Black v. Ucu					1	1
Nacolal Incised						0
Dzocobel Red on Black						0
Joventud Red						0
Desvario Chamfered						0
Guitarra Incised						0
Dzudzuquil Cream to Buff						0
Tumben Incised						0
Majan Red on Cream						0
Loche Incised Dichrome						0
Chancenote Unslipped			1			1
Tancah Unslipped						0
Xanaba Red (LF)			1			1
Dzalpach Composite						0
Sierra Red			2	2	13	4
Laguna Verde Incised					1	1
Ciego Composite						0
Lagartos Puctate						0
Repasto Black on Red						0
Flor Cream						0
Saban Unslipped						0
Yaxcaba Striated						0
Xanaba Red						0
Caucel Trickel on red						0
Tituc Orange Polochrome v. Tituc						0
Huachinango Bichrome Incised						0
Dos Arroyos Orange Polychrome						0
Maxcanu Buff						0

Table 5. Ceramics from San Pedro, Sacalaca

(continued)

Type	Location						Total
	S1W3-2	N1W1-1	N1W1-2	Cave Ent	Cave Grotto	N. Passage	
Sacalaca Striated							0
Arena Red							0
Muna Slate (LC)							0
Saxche Orange Polychrome							0
Chum Unslipped							0
Yokat Striated v. Yokat	2	11	65	5			83
Yokat v. Applique			1				1
Muna Slate	1	4	26	2	15		48
Sacalum Black on Slate			1	2			3
Tekit Incised							0
Akil Impressed							0
Teabo Red				1			1
Ticul Thin Slate							0
Chen Mul Modeled			1				1
Unidentified	3	21	21	3	13		61
Total	6	36	115	13	28	0	198

Chapter 2: Osteological Analysis of Human Remains

The 2005 season at Ichmul encountered elements of seven individuals. All were intrusive through floors, with one (Burial 1) placed in a flexed position, and the remainder extended in a supine position (Kaeding and Flores 2005). Owing to their discovery at the end of the season, only a preliminary analysis was possible during the 2005 season. The goals of the 2006 analysis was to where possible identify, age at death, sex, stature, and pathologies.

Burial 1

Burial 1 was anomalous in terms of its placement, being flexed instead of extended like the remainder of the burials. At the time of its excavation, there was some speculation that this individual might be a Colonial or later internment. Careful examination of the profiles showed that the burial pit was sealed by Floor 1, a floor associated with a series of postholes. As no post-contact artifacts were encountered in the burial pit or below Floor 1, it would seem that Burial 1 dates minimally to the Postclassic period.

The only elements recovered were the left humerus and femur. As the femoral condyles were fused and obscured, an age of greater than 22 years can be inferred. The degree of robusticity in the muscular insertions suggested that this individual was a male. This was confirmed using Black's (1978) study of sex determination using the midshaft circumference of the femur. In this case, the circumference of 85 mm was above the 81 mm cut point for males.

As the femur was incomplete, stature estimation was carried out using Trotter and Gleser's (1958) formula for the humerus based on modern Mexican males. The results indicate a height of 164.15 cm +/- 4.24 cm. These results are well within the stature range for modern Maya males within the study area, and elsewhere in the Yucatan (Marquez and del Angel 1997:57).

Burial 2

Burial 2 was the only skeleton to fall totally within the confines of the excavation unit. Despite the fragmentation of many of the skeletal elements, it is relatively complete. It lay within a well-defined burial pit extending 10 cm beyond the body's dimensions. This pit was cut from Floor 3, and penetrated Floor 4. As Floor 3 underlies Terminal Classic collapse debris, this burial dates to the Terminal Classic period. The burial was extended, supine, and facing west.

The incomplete nature of epiphyseal fusion suggested a subadult. Using McKern and Stewart's (1957) data from American males, a range of ages are possible. The closure of the incisive suture suggests an age of >14 years. The unfused epiphyses of the femur, tibia, fibula and sacrum suggest ages of 16-18, <18, <19, and 13-18 years of age respectively. Ubelaker's (1978) dental eruption data suggests an age of 15-20 years. Given these data, an age estimate of 17 years is offered.

As the individual was nearly adult, sexing of the skeleton was relatively straightforward. The innominate has a wide sciatic notch and pre-auricular

sulcus, characteristic identifying traits of a female. Other female traits include a flat sacrum, pointed chin, and small mastoid process. The stature of Burial 2 can be estimated at 140.65 cm +/- 3.816 cm by using Genoves' (1967) study of a Mesoamerican population based on a femoral length of 351 mm.

Discrete traits included septal apertures of the humerus and sternum, and moderately defined spina bifida. Pathologies were mostly related to the dentition. The upper right second premolar was deflected into the palate (Figure xx). Enamel hypoplasia is visible on the mid crowns of the central incisors as well as near the junction of the crown and root of the 1st premolars through the second molars. This indicates an infection or illness when the individual was of 3-5 years of age. This illness was sufficiently severe to suspend growth during the time when crown formation was taking place, resulting in a distinctive groove in the enamel of the tooth. Some calculus buildup is apparent on the upper right first molar. Most interesting, is a massive infection of the Petrous portion of the right temporal. A large abscess formed, that drained through to the inferior surface. Such an infection was potentially severe enough to be the cause of death. Certainly, there is no sign of healing that might suggest that the individual survived this infection.

Cultural traits of the skeleton include dental filing and uneven wear of the teeth. All incisors bear bilateral filing, producing pointed teeth corresponding to Romero's (1970) type C5 (Figure 6). While it might be argued that tooth filing was an indicator of the social status of the individual, it does not seem to have been the case with the Maya (Havill et al. 1997). There is noticeable asymmetrical tooth wear with this individual. The dentition is much more extensively worn on the left side. For some individuals, uneven wear may be an indicator of handedness. The corresponding septal aperture of the left humerus might also suggest a left-handed individual. On the other hand, the asymmetrical wear might be a response to pain associated with the deflected premolar. Such uneven wear then may indicate an attempt to avoid using a tender portion of the mouth.

Burial 3

This burial also intruded through Floor 3, nearly to the level of Floor 4. Unlike Burial 2, Burial 3's pit contained a number of large rocks, which served to mask the outlines of the grave pit of Burial 2, which it partially covered. Burial 3 was placed extended, supine, and facing west. Only the lower legs and feet were recovered.

The unfused epiphyses suggest an age of less than 11 years at death. Anderson et al. (1964) have estimated age based on tibial length in a study of roentgenograms of modern American children. By comparing a tibial length of 249 mm. to their results, an age estimate of between 7 and 8 years is obtained. Tibial length can also yield a stature estimate. Genoves' (1967) stature formula for tibias produce and estimated height of 142.556 +/- 2.815 cm for a male, and 131.509 +/- 3.513 cm for a female. As the individual's age precludes the identification of sex, both male and female formulae were used.

No discrete traits, or pathologies were noted with Burial 3.



Figure 6. Burial 2, Dentition

Burial 4

Burial 4 was sealed by Floor 4 at a depth of 1.13 m. It was impossible to discern the outlines of a burial pit given the small portion of the feature extant within the unit. As only a patella, femur, and fragment of innominate were recovered, the orientation and placement of the body are unknown.

The epiphyses of the femoral head and trochanters were fused, suggesting an age at death of greater than 22 years. No discrete traits or pathologies were noted with this individual.

The sex of this individual is male, based on a number of indicators. Firstly, the robusticity of the muscle insertions suggest a male. A femoral length of 43 cm is much longer than the corresponding femur from Burial 2- a known female. Black's (1978) method for determining sex based on the midshaft circumference also suggests a male, with a value of 85 mm.

Using Genoves' (1967) formula for determining an individual's height, an estimate of 162.359 +/- 3.31 cm results. This places Burial 4 at just slightly shorter than the adult male of Burial 1.

Burial 5

Sealed beneath Floor 4, Burial 5 was apparently buried at the time of the floor's construction (Keading and Flores 2005:38). The burial was extended, supine, and oriented to the west. The upper half of the individual that extended into the excavation unit was complete, though in a fragile state of preservation.

As all of the epiphyses of the long bones were fused and obliterated, we can assume an age at death of over 21 years (McKern and Stewart 1957). An upper estimation of age may be gleaned from the crown to neck junction alignment of the second and third molars. Ubelaker (1978) places this alignment at 35 years. Since Burial 5's third molar is not in alignment with the second, we can infer an age of less than 35 years at death.

Sexually specific skeletal traits include a wide sciatic notch, pre-auricular sulcus, shallow mandible, small mastoid process, marked cranial bossing, and a small nuchal line. These characteristics permit a secure assignment of female.

The stature estimate for Burial 5 is less confident than for other burials due to two factors. Firstly, the non-recovery of the legs forced the use of the humerus in the formula. This bone is a less sensitive measure of stature than any of the leg bones, and this is reflected in the larger uncertainties associated with the estimates. Secondly, Genoves (1967) did not include a formula for the humerus in his work on Mesoamerican populations. Therefore, the stature estimates are derived from Mexican men, and Euro-American women (Trotter and Gleser 1952). The results respectively were 140.15 +/- 4.24 cm. and 145.36 +/- 4.45 cm.

Burial 5 had a number of discrete traits. Like Burial 2, this individual had moderate spina bifida and septal apertures of the humerus, though bilateral in this case. As the muscle insertions of the right humerus and ulna were more robust than those on the left, this may be an indicator of handedness.

Pathologies were limited to the dentition. Heavy calculus deposits were noted on the incisors and canines. Most of the molars exhibited carries, with the pre-mortem loss of the lower left first molar (Figure 7).

Burial 6

Burial 6 lay at the base of an intrusive pit nearly a meter in depth, capped by Floor 3. As only the head and neck were recovered the position of the body could not be determined. The head was oriented to the west.

The presence of the dentition made for very accurate dating of this individual, especially as both formation and eruption were factors. Using Ubelaker's dental age chart, an age of death is estimated at 5 +/- 1.5 years.

Sex assignment and stature estimation were more problematic. As sexually diagnostic traits are not present on the skeleton until after puberty, it is impossible to assign a sex to this individual. The absence of long bones likewise prohibits an estimate of the individual's height.

No discrete traits were noted, but some pathologies were present. Calculus deposits were present on both labial and lingual surfaces of many teeth. Dental carries were all but one of the left canines and molars and one of the right molars. The upper right canine was split and dead.

Burial 7

As with Burials 4 and 5, Burial 7 was sealed below Floor 4, without evidence of an intrusive pit. The bones were extremely fragile and fragmentary. Only the right humerus and portions of the cranium were recovered.

The thin, unfused cranial vault and short humerus missing epiphyseal elements suggested that the individual was a young child or infant. Unfortunately, the teeth were not recovered, making precise age estimation impossible. However, Johnston (1962) determined a method of estimating ages in children based on the growth of long bones from a prehistoric population of Kentucky. Using this method, an estimated age of between 2.5 and 3.5 years is possible.

Using the same humerus, it was possible to arrive at a height estimate. Using Trotter and Gleser's (1952) formula for Mexican males, the child's stature is estimated to have been 78.15 +/- 4.24 cm.

Assigning a sex to this individual was impossible owing to its age, as sexually diagnostic skeletal differences are not apparent until after puberty. No discrete traits were noted. One pathology was apparent. A partially ossified subperiosteal haematoma was visible on the inner surfaces of the occipital and left parietal. Such a haematoma might have resulted from periostitis.



Figure 7. Burial 5, Cranium.

(Note caries and dental abscessing)

<u>Burial</u>	<u>Stratigraphic Association</u>	<u>Burial Position</u>	<u>Orientation</u>	<u>Age</u>	<u>Sex</u>	<u>Stature (cm)</u>	<u>Pathologies</u>
1	Floor 1	Flexed	East	>22	M	164.15	None Petrous Abscess, Deflected tooth, Enamel
2	Floor 3	Extended	West	17	F	140.65	Hypoplasia
3	Floor 3	Extended	West	7-8	U	131-142	None
4	Floor 4	Unknown	Unknown	>22	M	162	None Carries, Dental
5	Floor 4	Extended	West	22-35	F	140-145	Abcess
6	Floor 3	Unknown	West	5	U	Unknown	Carries Subperiosteal
7	Floor 4	Unknown	West	3	U	78	Haematoma

Table 6. Summary of Ichmul Burials

References

- Anderson, M., M.B. Messner and W.T. Green
1964 Distribution of lengths of the normal femur and tibia in children from one to eighteen years of age. *The Journal of Joint Surgery* 46:197-202.
- Barrera Rubio, Alfredo and Jose Huchim Herrera
1989 Exploraciones Recientes en Uxmal (1986-1987). *Memorias del Segundo Coloquio Internacional de Mayistas*. UNAM, Mexico.
- Black, T.K. III
1978 A new method for assessing the sex of fragmentary skeletal remains: Femoral shaft circumference. *American Journal of Physical Anthropology* 48:227-231.
- Flores Colin, Alberto and Johan Normark
2004 All Roads Lead to Ichmul: Sacbeob in the Cochuah Region. In, *Final Report of the Cochuah Regional Archaeological Survey's 2004 Field Season*. Ed. by J. Shaw. College of the Redwoods, Eureka.

2005 The Central Portion of Ichmul. In, *Final Report of the Cochuah Regional Archaeological Survey's 2005 Field Season*. Ed. by J. Shaw. College of the Redwoods, Eureka.
- Genoves, S.
1967 Proportionality of Long bones and their relation to stature among Mesoamericans. *American Journal of Physical Anthropology* 26:67-78.
- Havill, L.M., D. Warren, K.P. Jacobi, K.D. Gettleman, D.C. Cook, and K.A. Pyburn
1997 Late Postclassic Tooth Filing at Chau Hiix and Tipu, Belize. In, *Bones of the Maya: Studies of ancient skeletons*. Ed. by S.L. Whittington and D.M. Reed. Smithsonian Institution Press, Washington.
- Johnston, F.E.
1962 Growth of the long bones of infants and young children at Indian Knoll. *Human Biology* 23:66-81.
- Johnstone, Dave
2000 Ceramic Analyses. In, *Final Report of the 2000 Yo'okop Field Season: Initial Mapping and Surface Collections*. By J.M Shaw, D. Johnstone and R. Krochok. College of the Redwoods, Eureka.

2002 Ceramics of Yo'okop: 2002 Field Season. In, *Final Report of Proyecto Arqueologico Yo'oko's 2002 Field Season: Excavations and Continued Mapping*. Ed. by J. Shaw. College of the Redwoods, Eureka.

2004 Ceramic Report from Ichmul and Nohcacab. In, *Final Report of the Cochuah Regional Archaeological Survey's 2004 Field Season*. Ed. by J. Shaw. College of the Redwoods, Eureka.

2005 Ceramic Summary from the 2005 Cochuah Regional Archaeological Survey. In, *Final Report of the Cochuah Regional Archaeological Survey's 2005 Field Season*. Ed. by J. Shaw. College of the Redwoods, Eureka.

Kaeding, Adam

2005 X-balche. In, *Final Report of the Cochuah Regional Archaeological Survey's 2005 Field Season*. Ed. by J. Shaw. College of the Redwoods, Eureka.

Kaeding, Adam and Alberto Flores Colin

2005 Ichmul Operation 3. In, *Final Report of the Cochuah Regional Archaeological Survey's 2005 Field Season*. Ed. by J. Shaw. College of the Redwoods, Eureka.

Marquez, Lourdes and Andres del Angel

1997 Height among Prehispanic Maya of the Yucatan Peninsula. In, *Bones of the Maya: Studies of ancient skeletons*. Ed. by S.L. Whittington and D.M. Reed. Smithsonian Institution Press, Washington.

McKern, T.W. and T.D. Stewart

1957 Skeletal age changes in young American males. *U.S. Army Quartermaster Research and Development Command, Technical Report EP-45*.

Romero Molina, J.

1970 Dental Mutilation, Trephination, and Cranial Deformation. In, *Physical Anthropology*, ed. by T.D. Stewart pp. 50-67. Handbook of Middle American Indians Vol. 9. University of Texas Press, Austin.

Shaw, Justine M.

2005 Chakal Ja'as Operation 1. In, *Final Report of the Cochuah Regional Archaeological Survey's 2005 Field Season*. Ed. by J. Shaw. College of the Redwoods, Eureka.

Smith, Robert E.

1955 Ceramic Sequence at Uaxactun, Guatemala. *Middle American Research Institute Publication No. 20*. Tulane University, New Orleans.

Smith, Robert E., Gordon R. Willey, and James C. Gifford

1960 The Type Variety Concept as a Basis for the Analysis of Maya Pottery. *American Antiquity* 25(3): 330-340.

Trotter, M., and G.C. Gleser

1958 A re-evaluation of estimation based on measurements of stature taken during life and of long bones after death. *American Journal of Physical Anthropology* 16:79-123.

Ubelaker, D.H.

1978 *Human Skeletal Remains: Excavation, Analysis, Interpretation*. Aldine Press, Chicago.