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Power Plants: Paleobotanical Evidence of Rural Feasting in Late Classic Belize

David J. Goldstein and Jon B. Hageman

If food is to be treated as a code, the message it encodes will be found in the pattern of social relationships being expressed. The message is about different degrees of hierarchy, inclusion and exclusion, boundaries and transactions across boundaries. Mary Douglas (1970:249) "Deciphering a Meal"

Our recent investigations into food use and preparation at Guijarral, a small-scale Late Classic Maya settlement in Northwestern Belize, confirm Douglas's observations on the codes embedded in foodways (Keller Brown and Mussell 1997b). Rapid regional population growth after 700 B.C. led to increasing land scarcity, which fostered new forms of social organization, including lineages. Archaeological and paleoenvironmental studies convincingly support that centuries of erosion contributed to Late Classic ecological and social milieus, and forced the pressing of ever more marginal lands into agricultural production. In this instance the marginal lands are hill slopes with thin soil coverage and lowland seasonal swamps, or *bajos*. Agricultural landscape modifications, including terraces and check dams, were critical to the sustainability of human habitation in these areas. Such features generated agricultural microenvironments near residential groups where people could access a wider range of foodstuffs apart from those like *Zea mays* (maize), *Phaseolus* sp. (beans), *Cucurbita* sp. (squash), grown using more traditional means of shifting agriculture.

We recovered archaeobotanical datasets from two distinct contexts at Guijarral, a rural site in northwestern Belize. One is associated with periodic feasting near ancestor shrines, while the other is from daily domestic activities of housemounds unassociated with an ancestor shrine. In both instances the plant remains recovered represent materials grown in successional forest stands associated with the broken terrain where the terraces and check dams occur. We believe that within this archaeobotanical assemblage of plants from successional species, some "coding"

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for different types of commensal events is evident. When compared with daily meals, feasting provides the kind of contrast in food use that Douglas argues actively entrenches and codifies social hierarchy. Our data include plants generally held to represent comestibles outside the agricultural complex considered “traditional” by Mayanists (maize, beans, squash; Coe 1994; Fedick 1996; Reina 1967; Sharer 2005).

The importance of this traditional triumvirate of maize, beans, and squash, however, is largely assumed with respect to other potential foodstuffs among the ancient Maya, and predicated on an often, uncritical approach, to food production and direct historical analogy. This approach uses modern and colonial Maya groups as the basis for this supposition. While it is likely that these “traditional” foodstuffs played a critical role in the development of Maya social and cultural complexity, we argue that these three foodstuffs are overly emphasized in reconstructions of ancient Maya subsistence to the point that they distract from other potential contributors to Maya foodways. At the same time, authors who reinforce the importance of the maize-beans-squash triumvirate over any other contributors indicate that botanical resources expressed and maintained localized social inequality in the Late Classic period (A.D. 600–900). If all ancient Maya had access to the same triumvirate, focusing on these foodstuffs alone is not likely to bring us closer to understanding food use, social use of food, and the different kinds of contexts in which food was consumed (see discussion in (Coe 1994:120-22:247-52). Additionally, precious few archaeological projects present systematically collected and recovered archaeobotanical data that indicate the presence of any of the triumvirate in any significant quantity. Couched within the concepts offered by Douglas, as long as we only focus on the presence, absence, or quantities involved in the main staples of Maya cuisine, we are not likely to locate the foodstuffs that coded for status among the ancient Maya. Our application of Douglas’s observations on coding of food here is in locating the archaeobotanical remains that relate directly to foodstuffs grown on modified portions of the landscape. We compare the remains from a low-level residence with similar samples from a small ancestor shrine and feasting center. Both areas are associated with terracing and check dams that likely provided foodstuffs encountered.

The data and discussions that we present in this analysis demonstrate that the Late Classic Maya, in instances of daily and feasting food production and consumption, used a variety of species both complementarily and differentially. These instances are likely to demonstrate coded food use for the Late Classic Maya. In keeping with the concept of how historical and ecological realities impacted the resource base in our study area, we highlight that the species encountered indicate a heavy reliance on successional forest species, associated with fallowing processes in agricultural terraces and shifting cultivation. The fact that these species were of primary importance for performing the daily and feasting-related food production is consistent with investigations in other lowland tropical zones where successional species are a dominant part of food systems both for daily and ritual practices (Baleé and Erickson 2007; Moran 1990; Rappaport 1984).

Our findings demonstrate that the traditional vision of ancient Maya foodways requires deeper inquiry to better reconstruct the ecological and social implications

of population pressure and subsistence on the landscape. We begin with a description of the evidence as it pertains to the ancient paleoenvironmental and demographic setting. This assessment is followed by a description of the archaeobotanical and other excavation data from our test case, the site of Guijarral. In conclusion, we explain the taxa recovered and their determinations, and discuss the implications of their presence for our understanding of subsistence and the association between plants, coding food utility, and potentially social power.

The Pre-Hispanic Contexts

Palynological and geomorphological studies of northwestern Belize indicate widespread deforestation from the Preclassic (400 B.C. to A.D. 250) through the Classic (A.D. 250–850). Pollen cores show a predominance of maize pollen and disturbance taxa such as grasses and asters typical of maize cultivation (Dunning et al. 2003; Marchant et al. 2002). Within the same diagram most high forest taxa are absent, with the exception of some economic families such as the Sapotaecae (Dunning et al. 1999:654). Deforestation is particularly evident where drainages intersect *bajo* margins. Here, soil profiles include buried peaty layers, which in turn contain pollen from aquatic plants. This evidence led Dunning et al. (1999:655) to argue that, by A.D. 250, the *bajos* of northwestern Belize had transformed from perennial to annual wetlands through infilling processes, and that much of the region's sloping upland terrain was "largely devoid of soil cover" (Dunning et al. 1999:656).

Archaeological remains from the Preclassic through the Classic offer a certain perspective on regional shifts in paleodemography. Investigations in the region from 1992 to 2008 indicate relatively sparse Preclassic and Early Classic occupation followed by a Late Classic population explosion. At ca. A.D. 650, population density for northwestern Belize is estimated at 110 persons per km². The overwhelming majority of settlements were confined to large sites and their immediate environs. By A.D. 800, population density is estimated to have been 510 persons per km². This dramatic increase is mirrored by intensified construction in the major centers of La Milpa, Dos Hombres, and Ma'ax Na and widespread settlement of previously uninhabited rural areas. Survey and excavation have shown that between 80 and 90% of settlements investigated to date in northwestern Belize were occupied from A.D. 700–850 (Adams et al. 2004; Hageman 2004b; Tourtellot et al. 1997).

Mayanists generally agree that, as the Late Classic progressed, Maya society overall became more highly stratified and land became more tightly controlled and contested (Dunning et al. 1999; McAnany 1995). Studies of rural settlement indicate single-phase construction of houses and farms in ever more marginal landscapes, where large-scale modifications to the land were implemented and added to earlier infrastructure to increase agricultural productivity (Hageman 2004a). Elsewhere, Hageman and Lohse (2003) have argued that corporate groups, such as lineages, coalesced in this environment as a means of controlling increasingly scarce land. These newly created field systems would have added a potential fourth

agroecological system, terraced plots, to the one traditionally held existed for the Classic Maya that is composed of three parts, gardens, infield, and outfield agricultural systems (Rice 1990; Reina 1967; Sharer 2005)

Lineages emerge in areas moderately to highly competitive for essential or desired resources (Hayden and Cannon 1982:149), or in contexts of social disruption, competition, uncertainty, and change (Rankin and Esherick 1990:317). Lineages are landholding entities with a group identity, internal ranking, and ancestor veneration. The economic base is rooted in agriculture, with ownership or rights over land maintained through an ancestral claim (Fortes 1953; Shipton 1994; Watson 1982). The lineage head, whose position was negotiated through appeal to ancestral authority, typically coordinates the labor of lineage members, allowing for the construction of complex agricultural systems (Ebrey and Watson 1986; Fortes 1953; Shipton 1994).

In sum, by A.D. 650 the environment of northwestern Belize had been severely degraded as a result of widespread and long-term human impact. Populations in the area increased by over 460% between A.D. 650 and 800 while simultaneously facing ever-diminishing amounts of per capita arable land. During this period, previously unoccupied areas were settled and pressed into agricultural service, in some cases through the construction of terraces. These terraces protected soils and permitted marginal areas to sustain more intensive agricultural activity. Corporate groups, such as lineages, emerged in these areas as a means of securing productive resources and minimizing risk.

Guijarral: A Late Classic Maya Rural Settlement

Guijarral is a small rural settlement located some 8 Km east of the monumental Late Classic center of La Milpa (Fig. 1). Guijarral is on the western slope of the Rio Bravo Escarpment and brackets a broad, shallow drainage flowing from the escarpment edge on the east to a *bajo* on the west (Fig. 2). Guijarral features a series of housemounds, small plaza groups, and a single two-courtyard group. This group contains, as a focal point, two shrines in the form of small pyramids (Structures A-1 and A-8; Fig. 3). Areas between the site center and other plaza groups and housemounds feature terraces, *chich* mounds, and *chich* berms of varying types and sizes. Over 140 hill slope and crosschannel terraces have been recorded in an area measuring less than 0.5 km². This is a particularly heavy investment in construction for an area so far removed from a large center. We interpret this density to mean that Guijarraleños were dedicated to wringing every last ounce of productivity from their land while maintaining a dependable and consistent level of production over time (Dunning et al. 2003).

The settlement history of Guijarral is complex and not completely understood. Late Preclassic and Early Classic ceramics appear in excavated contexts both at the site center and at some of the smaller *plazuela* groups, indicating the presence of human activity at the site for over a period of 800 years. At the site center, the smaller of the two pyramids was built near the end of the Early Classic at about AD 550, but

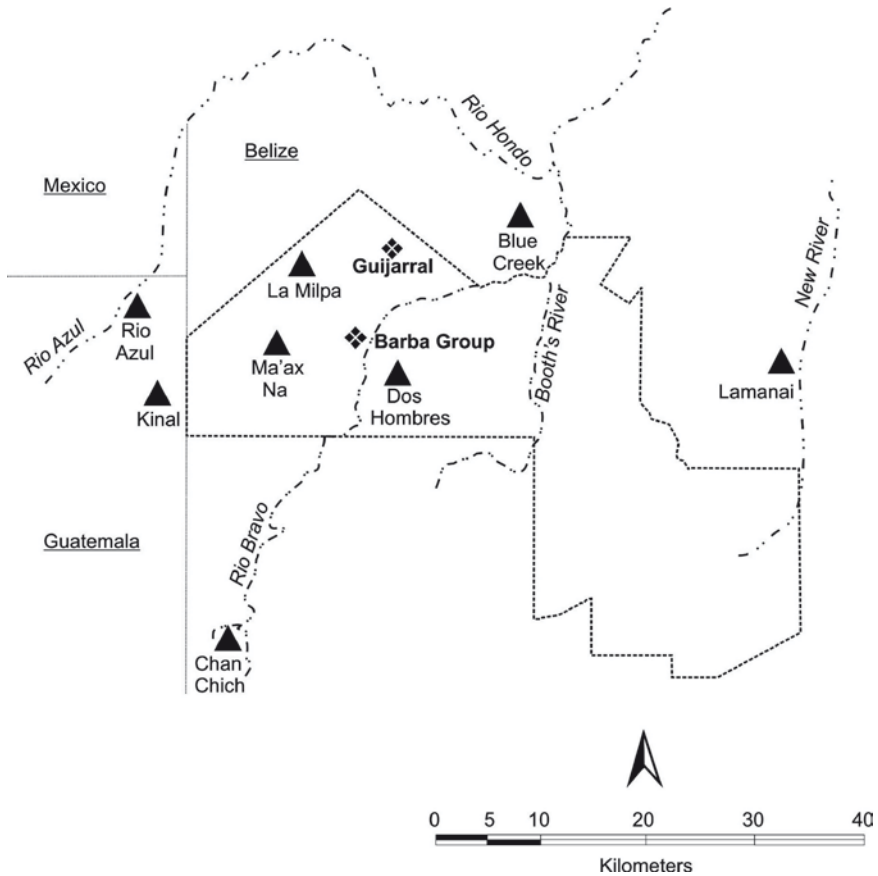


Fig. 1 Map of study area showing location of sites mentioned in the text

the remaining buildings, *plazuela* groups, housemounds, and terraces indicate Late Classic 2 (A.D. 700–850) construction.

In terms of interpreting the local political economy of the site, a lineage-based system best fits the data from the site of Gujarral (see Hageman (2004b) for a more detailed discussion). The area is circumscribed on the west by a *bajo*, to the south by a large drainage, and on the north and east by the Rio Bravo escarpment (Fig. 2). The terraces and shrines reflect the bounded corporate resource of the area and the claim to that resource. The shrines are also located in the largest house in the area, likely the house of the lineage head. The larger, Late Classic shrine has been looted and is dangerously unstable, but the smaller, Early Classic shrine was less damaged and yielded a burial radiocarbon dated to A.D. 732 ± 45 , a Late Classic ancestor interment. Ancestor veneration is further indicated through ceramic evidence of feasting (Table 1), where almost 65% of the ceramics recovered from the site center were from food preparation and serving vessels, compared to 50% from regular

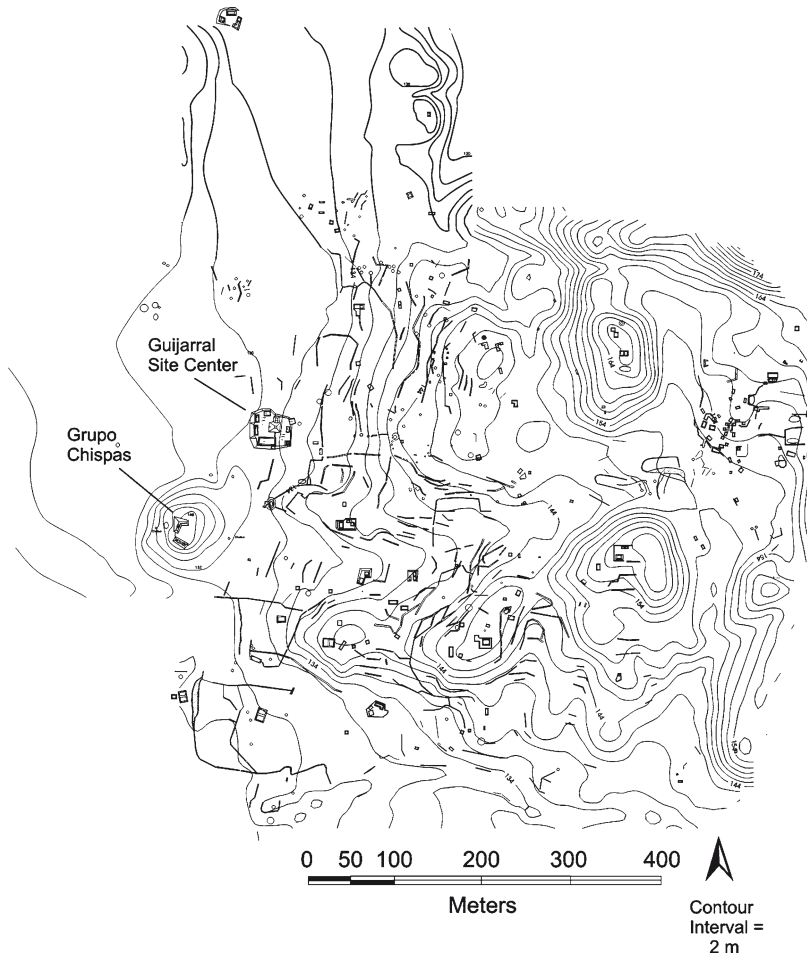


Fig. 2 Map of Guijarral and surrounding area

domestic contexts (Hageman 2004a; see also LeCount 2001). The focus of consumption at the site, however, was only conjecture until recently.

Late Classic Plant Consumption at Guijarral

In 2005, the authors excavated middens in two residential groups at Guijarral: the site center, identified with ancestor veneration and feasting, and Chispas, a small, nonelite residential plaza group atop a nearby hill (Fig. 4). Four square meters of midden was excavated at each site. Digging in 10-cm levels, we collected a minimum of eight liters of soil per level. We used flotation and dry standard series fine screens

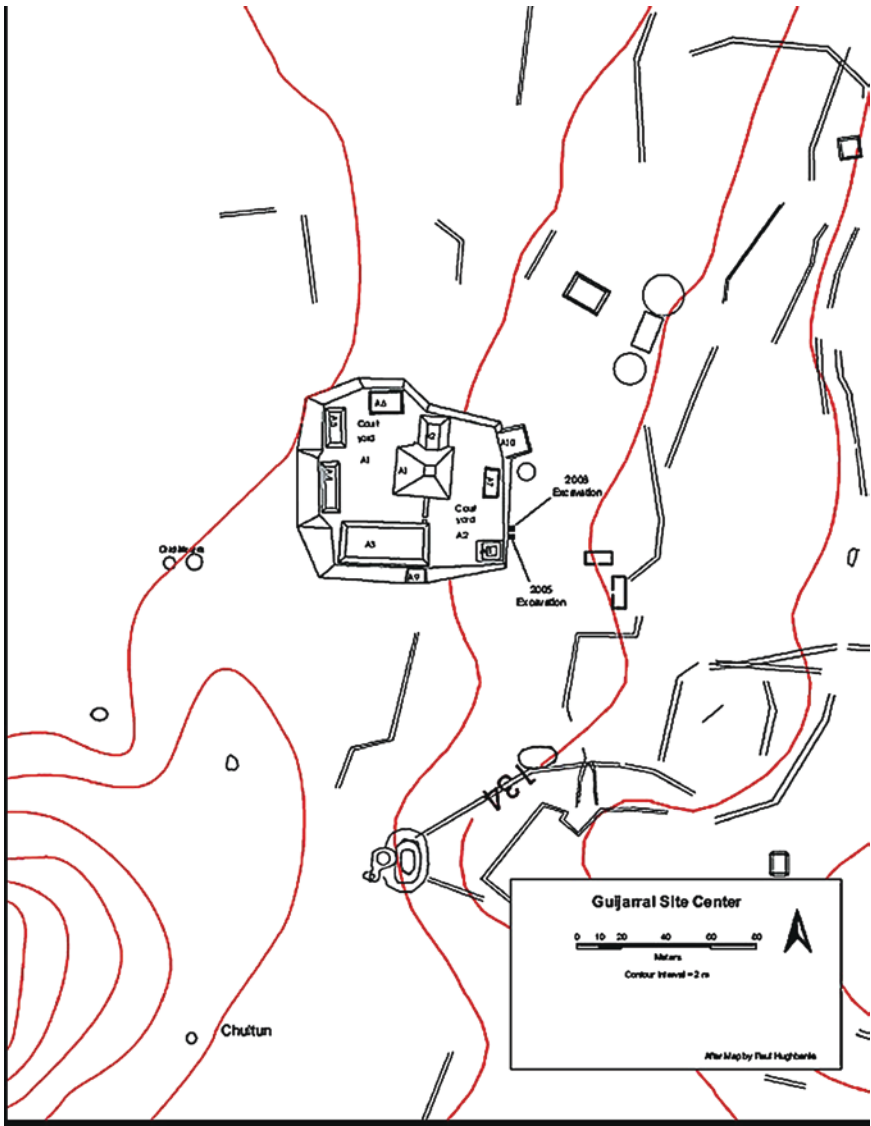


Fig. 3 Map of Gujarral site center showing location of excavations

Table 1 Distribution of ceramic forms at Paco 15 (Fox 1996), Xunantunich (LeCount 2001), and the study area (Hageman 2004a)

	<i>Paco 15</i>	<i>Xunantunich</i>	Xunantunich	<i>Gujarral</i>	Grupo Chispas
	<i>Ballcourt</i>	<i>Group D</i>	Plazas	<i>Center (Op 45)</i>	(Op 46)
Plates	5.36	6.64	3.94	7.59	0
Bowls	58.90	65.81	46.46	56.96	50.00
Total preparation and serving	64.26	72.45	50.40	64.55	50.00
Jars	27.7	26.5	48.82	35.44	50.00

Italicized columns indicate feasting loci

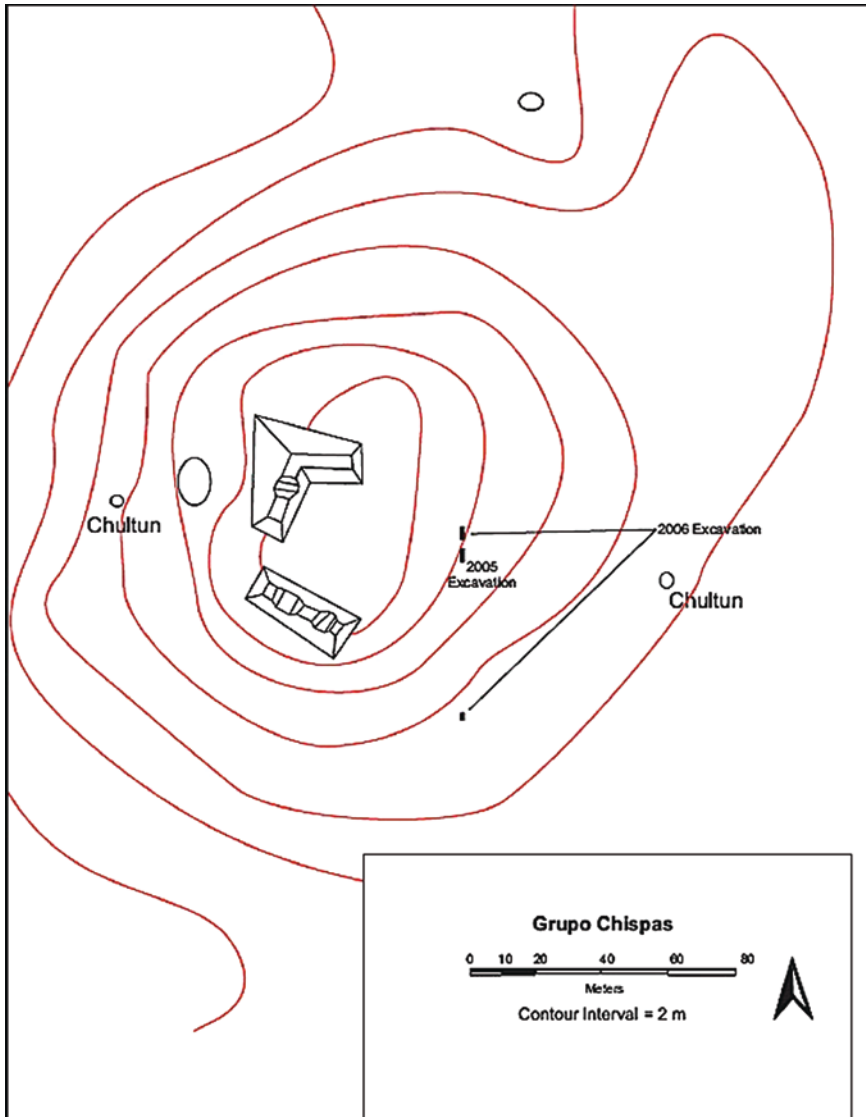


Fig. 4 Map of Grupo Chispas showing location of excavations

for archaeobotanical recovery, with processing alternating by excavated level and by meter square excavation area. The result was a mosaic of coverage where each level of the excavation was half dry sieved and half floated. Each processed sample was then examined under incident light microscopy in the field lab.

Archaeological plant remains were compared with a locally available ethnographic seed collection and modern specimens collected during the field season.

We examined all the soil samples but report only the materials recovered from 21 cm below the ground surface as this material is likely better preserved and bioturbation less evident. Again, the feasting contexts correspond to the settlement at the site center, while our domestic, nonfeasting contexts correspond to Chispas.

The data are presented here in three distinct ways: the actual counts of materials recovered, their ubiquity at each site individually and between the two, and finally as a percentage of each taxon's contribution to the sample diversity reported from each site. Ubiquity was computed as a quotient of the number of lots where a taxon was reported over the total number of lots recorded. Representative diversity was computed as a quotient of the raw count of each taxon divided by the total number of taxa recorded at each site. Both ubiquity and representative diversity are reported as percentages in this presentation.

Overall, we recovered 3,738 individual items (Table 2). Of these, 1,710 were from the site center feasting middens and 2,028 were from Chispas' domestic trash. Between the two contexts 190, or 4.1% of the total individual plant remains, were unidentifiable. This leaves some 20% of other unknown materials (reported in Tables 2–5 as UKN#) that require further research to identify. As can be seen in Table 2, land snails account for over 44% of the material that we recovered. In this instance we are interpreting them as postdepositional phenomena and not consumed by humans. As a result, subsequent tables report findings and quantities minus the land snails. We have since returned to both sites and continue to develop a more extensive excavation strategy designed to test and expand our ideas regarding food use at the site; these results are forthcoming. Our analyses of the 2005 data demonstrate that certain genera are limited to feasting loci, others to domestic use, while still others are common to both contexts.

Plants Associated with Feasting: Site Center

We have assigned seven different plants taxonomic determinations restricted to the feasting context at the site center, with an additional 12 that require more work in determining their related taxa (Table 3). We found fruit and seed remains common to ethnographic and ethnohistoric feasts, including *Zuelania* sp. ($n=2$), *Psidium* sp. ($n=2$), *Guazuma* sp. ($n=5$), *Amaranthus* sp., ($n=3$), *Malva* sp. ($n=1$), and *Orbignya* sp. ($n=1$).

Zuelania sp. ($n=2$) may be *Zuelania guidonia*, commonly found in contemporary forests of northwestern Belize. Modern Yucatec Maya grind the leaves of this plant into a paste for use as a diuretic and for relief from general body pains. As far as feasting is concerned the bole of the tree *Zuelania* serves as a game where people are invited to climb a greased tree trunk during certain festivals, e.g. carnival (Atran et al. 2004; Roys 1931). While *Psidium* sp. is known for its fruits, and may represent guava (*P. guajava*), *Guazuma* sp. fruits, some of which are called *pixoy* (Yucatec; *G. polybotria*) or bastard cedar (*G. ulmifolia*) are and have been used in the Maya lowlands for producing a ritual fermented beverage, and being potential

Table 2 Recovered taxa by operation 2005

Family	Determination	Chispas raw count	Chispas ubiquity (n=9 lots)	Guijarral raw count	Guijarral ubiquity (n=11 lots)	Total raw data	Overall ubiquity (n=20 lots)	Overall rep. diversity
Alismataceae	<i>Potamogeton</i> sp.	3	11%	0	0%	3	5%	0.1%
Amaranthaceae	<i>Amaranthus</i> sp.	0	0%	3	18%	3	10%	0.1%
Araceae	<i>Orbignya</i> sp.	0	0%	1	9%	1	5%	0.0%
Asclepiadaceae	<i>Asclepias</i> sp.	0	0%	191	82%	191	45%	5.1%
Asteraceae	cf. Asteraceae	1	11%	3	18%	4	15%	0.1%
Burseraeae	UKN #195-FS4	0	0%	1	9%	1	5%	0.0%
Cecropiaceae	<i>Cecropia</i> sp.	1	11%	1	9%	2	10%	0.1%
Fabaceae	cf. Fabaceae	2	22%	2	18%	4	20%	0.1%
	Pinnac	165	89%	6	18%	171	50%	4.6%
	UKN #6-FS1	27	22%	0	0%	27	10%	0.7%
Flacourtiaceae	<i>Zuelania</i> sp.	0	0%	2	18%	2	10%	0.1%
Malpighiaceae	<i>Byrsonima</i> sp.	12	33%	11	18%	13	25%	2.0%
Malvaceae	<i>Malva</i> sp.	0	0%	1	9%	1	5%	0.0%
Myrtaceae	<i>Psidium</i> sp.	0	0%	2	18%	2	10%	0.1%
Onagraceae	<i>Oenothera</i> sp.	43	78%	24	82%	67	80%	1.8%
Poaceae	cf. Poaceae	1	11%	5	27%	6	20%	0.2%
	cf. <i>Chusquea</i>	1	11%	4	18%	5	15%	0.1%
	UKN #37-FS19	6	22%	9	55%	15	40%	0.4%
	<i>Zea mays</i>	2	11%	9	9%	11	10%	0.3%
Solanaceae	UKN #4-FS1	2	22%	1	9%	3	15%	0.1%
Sterculiaceae	<i>Guazuma</i> sp.	0	0%	5	18%	5	10%	0.1%
Verbenaceae	UKN #5-FS1	4	11%	0	0%	4	5%	0.1%

Table 3 Taxa associated with feasting at Guijarral

Family	Determination	Guijarral raw data	Guijarral ubiquity ($n=11$ lots)	Guijarral rep. diversity	Overall ubiquity ($n=20$ lots)	Overall rep. diversity
Asclepidaceae	<i>Asclepias</i> sp.	191	81.8%	15.9%	45.0%	9.2%
Undetermined	UKN #35-FS19	45	45.5%	3.7%	25.0%	2.2%
Undetermined	UKN #28-FS7	28	27.3%	2.3%	15.0%	1.3%
Undetermined	UKN #34-FS19	6	27.3%	0.5%	15.0%	0.3%
Amaranthaceae	<i>Amaranthus</i> sp.	3	18.2%	0.2%	10.0%	0.1%
Flacourtiaceae	<i>Zuelania</i> sp.	2	18.2%	0.2%	10.0%	0.1%
Myrtaceae	<i>Psidium</i> sp.	2	18.2%	0.2%	10.0%	0.1%
Sterculiaceae	<i>Guazuma</i> sp.	5	18.2%	0.4%	10.0%	0.2%
Undetermined	UKN #39-FS19	4	18.2%	0.3%	10.0%	0.2%
Undetermined	UKN #44-FS20	3	18.2%	0.2%	10.0%	0.1%
Arecaceae	<i>Orbignya</i> sp.	1	9.1%	0.1%	5.0%	0.0%
Burseraceae	UKN #195-FS4	1	9.1%	0.1%	5.0%	0.0%
Malvaceae	<i>Malva</i> sp.	1	9.1%	0.1%	5.0%	0.0%
Undetermined	UKN #24-FS7	3	9.1%	0.2%	5.0%	0.1%
Undetermined	UKN #38-FS19	2	9.1%	0.2%	5.0%	0.1%
Undetermined	UKN #45-FS20	7	9.1%	0.6%	5.0%	0.3%
Undetermined	UKN #49-FS20	3	9.1%	0.2%	5.0%	0.1%
Undetermined	UKN #50-FS20	4	9.1%	0.3%	5.0%	0.2%
Undetermined	UKN #56-FS29	3	9.1%	0.2%	5.0%	0.1%

Table 4 Taxa exclusive to the Chispas domestic context

Family	Determination	Chispas raw count	Chispas ubiquity ($n=9$ lots)	Chispas rep. diversity	Overall ubiquity ($n=20$ lots)	Overall rep. diversity
Undetermined	UKN #11-FS1	5	33.3%	0.6%	15.0%	0.2%
Fabaceae	UKN #6-FS1	27	22.2%	3.1%	10.0%	1.3%
Undetermined	UKN #14-FS1	3	22.2%	0.3%	10.0%	0.1%
Alismataceae	<i>Potamogeton</i> sp.	3	11.1%	0.3%	5.0%	0.1%
Verbenaceae	UKN #5-FS1	4	11.1%	0.5%	5.0%	0.2%
Pleuroceridae	<i>Pachychylus</i> sp.	2	11.1%	0.2%	5.0%	0.1%
Undetermined	UKN #26-FS7	3	11.1%	0.3%	5.0%	0.1%
Undetermined	UKN #31-FS7	3	11.1%	0.3%	5.0%	0.1%
Undetermined	UKN #32-FS7	11	11.1%	1.3%	5.0%	0.5%
Undetermined	UKN #51-FS13	13	11.1%	1.5%	5.0%	0.6%

parts of ritual feasts (Roys 1931; Atran et al. 2004). We also have a piece of what might be *Protium* sp. or *Bursera* sp. in our feasting context, UKN #195-F.S.4. Both generally come from the family Burseraceae from which various types of incense, *copal* (Yucatec; e.g. *Protium copal*), are made. The incenses are made from the sap, fruit, bark, and leaves of these genera (Atran et al. 2004; Roys 1931; Stross 1997).

Table 5 Taxa from both feasting and domestic contexts

Family	Determination	Domestic				Feasting				Overall raw count	Overall ubiquity (n=20 lots)	Overall rep. diversity
		Chispas		Chispas		Gujarral		Gujarral				
		raw count	Chispas ubiquity (n=9 lots)	rep. diversity	raw data	ubiquity (n=11 lots)	rep. diversity	raw count	ubiquity (n=20 lots)			
Onagraceae	<i>Oenothera</i> sp.	43	77.8%	4.9%	24	81.8%	2.0%	67	80.0%	3.2%		
Undetermined	UKN #20-FS7	51	77.8%	5.8%	10	27.3%	0.8%	61	50.0%	2.9%		
Poaceae	UKN #37-FS19	6	22.2%	0.7%	9	54.5%	0.7%	15	40.0%	0.7%		
Undetermined	UKN #13-FS1	22	44.4%	2.5%	15	27.3%	1.2%	37	35.0%	1.8%		
Malphiaceae	<i>Byrsonima</i> sp.	12	33.3%	1.4%	11	18.2%	0.9%	23	25.0%	1.1%		
Fabaceae	cf. Fabaceae	2	22.2%	0.2%	2	18.2%	0.2%	4	20.0%	0.2%		
Poaceae	cf. Poaceae	1	11.1%	0.1%	5	27.3%	0.4%	6	20.0%	0.3%		
Asteraceae	cf. Asteraceae	1	11.1%	0.1%	3	18.2%	0.2%	4	15.0%	0.2%		
Poaceae	cf. <i>Chusquea</i>	1	11.1%	0.1%	4	18.2%	0.3%	5	15.0%	0.2%		
Solanaceae	UKN #4-FS1	2	22.2%	0.2%	1	9.1%	0.1%	3	15.0%	0.1%		
Undetermined	UKN #7-FS1	3	22.2%	0.3%	27	9.1%	2.2%	30	15.0%	1.4%		
Cecropiaceae	<i>Cecropia</i> sp.	1	11.1%	0.1%	1	9.1%	0.1%	2	10.0%	0.1%		
Poaceae	<i>Zea mays</i>	2	11.1%	0.2%	9	9.1%	0.7%	11	10.0%	0.5%		
Undetermined	UKN #33-FS23	1	11.1%	0.1%	1	9.1%	0.1%	2	10.0%	0.1%		
Undetermined	Lithics	79	66.7%	9.0%	232	100.0%	19.3%	311	100.0%	15.0%		
Undetermined	Unid	69	100.0%	7.9%	125	100.0%	10.3%	194	100.0%	7.5%		

Orbignya sp. probably relates to one of the most useful successional trees in the forests of Northwestern Belize, *Orbignya cohune*, the *cohune* palm.

Zuelania sp., *Psidium* sp., *Guazuma* sp., and *Orbignya* sp. (Atran et al. 2004) are all successional trees, most of which have predictable and consistent fruiting seasons. Aside from their incidence here, lowland rainforest agriculture commonly recognized in South America notes the agricultural importance of these types of species and some of the same ones that we have recovered (Denevan 2007). They regenerate quickly; they also provide shade cover, timber, renewable and sustainably harvested fuel resources, protection from erosion, and would stand to survive in terrace-based agricultural systems such as those at Guijarral (Clement 2007). Trees are invaluable resources as they offer their products even when the field systems directly associated with them are not undergoing active cultivation (Atran 1993).

Additional species include *Amaranthus* sp., a leafy green that can be eaten as an important source of fiber and iron. They are known generally in Central America as *quelites* (Bye 1981) and more generally in the area under this genus by Yucatec names *Ezen*, *X-tez*, *Tez-mucuy*, and *Chac-tez* (Roys 1931). *Amaranthus* is associated with agricultural and specifically human disturbance activity, as weeds growing in open areas and fields. *Malva* sp. is a plant of nominal medicinal and comestible purpose. Most importantly it grows in plowed or on continuously disturbed land surfaces, often demonstrating the human intervention in an agricultural landscape (DeWet and Harlan 1975). Closely allied with the genus *Abutilon*, whose seeds are very similar, for which we have two species that grown in the area and are known medicinal/leafy greens *A. trisulcatum* (Yucatec: *Zac-mizbil* and *Zac-xiu*) and *A. gaumeri* (Yucatec: *Yaax-hol-che*).

Additionally, we have some plants whose presence we cannot yet explain. The most ubiquitous taxon present ($n=191$) in feasting contexts are seeds from *Asclepias* sp. *Asclepias curassavica* (Yucatec: *Anal*, *Anal-kak*, or *Anal-xiu*) and *Asclepias longicornu* (Yucatec: *Cabal-kun-che*) are used in treating intestinal worms, inducing sneezing, relieving toothaches, and treating the bites of many poisonous animals (Atran et al. 2004; Roys 1931). These plants thrive in open as well as wet or seasonally inundated areas and are found in and around the swampy margins of Guijarral. There is no apparent ethnographic precedent for their association with feasting contexts. The presence of this plant, however, indicates that while under production, the surrounding seasonal wetland potentially sustained areas of standing water year round where plants like *Asclepias* sp. grow and be available to residents in the area.

Plants Associated with Domestic Consumption: Chispas

Nine taxa occur only in the domestic midden, of which we have so far identified one: *Potamogeton* sp. (English: duckweed; Table 4) *Potamogeton* sp., comes from areas of standing water, perhaps growing in the bajos during the rainy season

(Atran et al. 2004; Roys 1931). Its presence complements the presence of *Asclepias* sp., at Guijarral. It does appear that both sites were extracting resources from standing wetlands, and at the same time the resources that they are exploiting in food production are somewhat different; daily food using *Potamogeton* sp., and communal events *Asclepias* sp.

Lastly, we have eight other taxa whose seeds are present only at Chispas. These taxa, including one from the Fabaceae, are potential indicators for daily use materials. Unknown numbers #11 and #6 both show up in several different units, potentially signifying that their presence is not a chance occurrence and is instead related to activities at the site. #11 is likely a tree legume, many of which are native to the area.

Plants Found in Both Contexts

Fourteen taxa appear in both feasting and nonfeasting middens (Table 5). These include *Byrsonima* sp., *Cecropia* sp, cf. *Chusquea*, *Z. mays* and unknown seeds from the families Fabaceae, Asteraceae, and Solanaceae. Additionally, we recovered *Oenothera* sp. (Onagraceae) seeds. *Oenothera* sp. ($n=67$; English: evening primrose), in its modern extension, does not appear to be present in the region, though it is the most common seed occurring in both contexts. This plant has been suggested as being part of the Pre-Hispanic ceremonial snuff traditions of the Caribbean and South America (Newsom and Wing 2004). If *Oenothera* seeds are associated with ritual snuff use among the Maya, its production or even use may be just as prevalent in domestic settings as in ritual affairs.

Byrsonima sp. (English: nance or craboo) is a tree that produces edible fruits that can be used to make fermented beverages and are often preserved as a jam or confit. *Cecropia* sp. ($n=2$) (trumpet tree) is common in house gardens, abandoned fields, fallow areas, and any disturbed area of the forest, and is not surprisingly a tree with many uses, mostly to cure common ailments (Atran et al. 2004; Roys 1931). Cf. *Chusquea* represents the presence of a grass; generally, in the lowland areas of Central America their presence is common to human disturbed or otherwise open areas, especially those that practice agriculture, similar to the case as of *Amaranthus* sp.. It is likely that cf. *Chusquea* is getting into the sample as an incidence of weeds that accompany other processes related to activities at Chispas, not necessarily eating.

In general, plants associated with both feasting and domestic contexts may indicate similar patterns of consumption across all houses in the area, or perhaps overlap between daily and festal foods. This is especially so in the case of *Z. mays*. We only recovered seed fragments from the site center, whereas we recovered cupules and cob fragments from contexts at Chispas. While the *Z. mays* remains are few, it may well have been a common denominator between the foods at both sites, instead of being restricted to the activities of one site or the other.

Discussion: Ecological, Subsistence, and Social Implications

Plants from these middens are related to smallholding agriculture typical of contemporary regional farming systems as well as broader Neotropical rainforest subsistence patterns (Baleé and Erickson 2007; Clement 2007; Denevan 2007; Fedick 1994). Often Mayanists engage in the ideal presented by authors like Rice (1990) and Reina (1967), that infield and outfield agroecologies play the only significant role in traditional agriculture. Yet, the data from Guijarral and Chispas indicate that something else was happening in the immediate area: In addition to gardens and fields in production, the entire human disturbed landscape was exploited for subsistence means. The overall catchment of food resources included species from fallow fields, weeds tolerated around settlements, and even plants obtained from the nearby *bajo*.

The idea that tree crops were important in both modern and ancient agricultural systems has been relegated to house gardens rather than farming in recent years (Fedick 1996). Instead of considering gardens as potent areas of catchment in times of scarcity (Killion 1992), pressure or sheer adaptive management of the local ecology at Guijarral relied on the integration of successional forest species into local foodways. This situation is the present understanding of Lowland South American food systems in both the prehistoric and colonial periods (Denevan 2007). Given the ecological similarity between the two regions and the potential for human-induced ecological pressures to be similarly received in two similar tropical ecosystems, it seems that the Late Classic Maya of Guijarral chose a similar subsistence strategy in light of compromised resource availability.

Our data indicate plant resource use was extensified, thereby increasing the breadth of the diet base (Winterhalder and Goland 1997). The overall catchment of food resources included plants from fallow terrace agriculture where weeds tolerated around settlements and fruits hanging from successional trees were common aspects of the dietary and medicinal repertoire. Some of these were also integrated into marked food preferences. Moreover, some of these items were seasonal fruits, suggesting a schedule of feasts. It is likely that, within our developing dataset, the plant remains will point to groups of genera or species that have similar flowering or fruiting periods that can be used to indicate seasonality of the use of particular midden deposits. To better understand the potential for food residues to indicate social activity, we continue to process remains from subsequent seasons and pursue the identification of our unknowns. Surely, more data will enhance our developing impression of both daily and festival food production.

As Douglas (1970) proposed, we clearly see processes of distinction operating through foodstuff selection at both Guijarral and Chispas. Archaeologically, we believe that the middens investigated at both sites represent discrete events of food production/consumption detritus deposition, perhaps being reused between two and six times. Historically and ethnographically the use of discrete middens away from but adjacent to the feasting or food preparation/consumption event has precedence.

Given their proximity (300 m) archaeological and historic context, it is clear that these two sites were socially linked.

Yet it appears that similar middens produced both distinct and complementary remains. The presence of fruits and seeds from successional species at both sites demonstrated that they shared some coded food practice that incorporated gathered species from potentially fallow terraces. Their production and consumption residues signal that processes of choice and selection of foodstuffs also encoded differential information; identified by the discrete incidence of certain species at each site. Kalcik (1997:46) refines the set of codes outlined by Douglas and makes them concrete by stating that food preferences are some of our best indicators of cultural identity. The commonalities that exist between the two residences are potential signs of taste and flavor held in common between the residents of both groups. These may represent components that coded as daily food or daily use plants for the Late Classic Maya at these sites.

That successional trees and what non-Maya might consider “wild foods” formed a potentially significant part of the subsistence base taken from the generalized ecology around the site defines that bond even further. On the other hand, the clear distinctions between foodstuffs from the same catchment base deployed in each locale under different circumstances (e.g., *Asclepias* at the site center and *Potamogeton* at Chispas) clearly demonstrate how distinction was asserted or controlled during the Late Classic. Again, Kalcik (1997:48) offers that these patterns of inclusion and exclusion of foodstuffs, especially when centered around kinship and lineage ties, are clear indicators of within-group social difference. The uses we refer to here are the feasting activities that distinguished everyday consumption from more auspicious occasions. The fact that commonalities exist between the archaeobotanical remains from both sites allows us to posit that the differences between the two datasets are in fact significant socially and not due to differential preservation alone. In this case, we are looking at the remains of foodways that code for the ties that bound the residents of both sites during the Late Classic.

The application of Douglas’s ideas of food codes is not particularly astonishing when it comes to the Late Classic Maya. Surely codes of differential food use existed. Douglas’s ideas apply to complex societies, where there are site hierarchies, kinship ties, and differential access to material goods. The Late Classic Maya of what is now Northwestern Belize had all these structures in place and was surely no exception. What is enticing, however, is that if we move beyond considering the staple production of these Maya, (e.g., maize beans and squash), we can see that some foodstuffs were related directly to the agricultural projects developed during this period. Successional tree arboreal species, wetland plants, and weeds related to the normative Late Classic Maya agricultural technology provided critical resources. Beyond what may have been timber, fuel, or fruit resources, we see that certain taxa were employed differentially in feasting. It is here, with these foodstuffs and their archaeobotanical remains, that we can begin to discuss what these food codes were, and how these resources contributed to social differentiation and status relationships.

Conclusions

In the face of increasing population pressure and decreasing availability of land after A.D. 700, the residents of Gujarral transformed their social organization and their environment to safeguard their resource base and to produce larger quantities of food. As the number of northwestern Belize inhabitants increased, so did the need to delineate and control agricultural land. Many wild and successional plants were not only utilized as part of the day-to-day diet, but also may have been employed to address the effects of likely decreasing qualities of health and concomitant diseases and pathologies.

Gujarraleños appear to have organized themselves into a lineage, a landholding corporation grounded and legitimized in the ancestral past. Feasts held as part of lineage activities incorporated not only domesticated plants used by Maya in early twentieth century feasts and tree crops, but also plants associated with fallow field and swamp contexts. Plants found exclusively at the site center were implicated in negotiating the status of the lineage head through feasting, thereby creating and maintaining power and status within a small, rural, nonelite population in Late Classic Maya society. In contrast, the more humble settlement of Chispas, while sharing the use of some of these same resources, depended on similar agricultural niches, but did not employ the same species on the occasion of large-scale food production. We believe that inherent to these differences exists the potential to decipher social practices that dealt with negotiation of power and inequality between these sites based on the rituals that their use encoded. In our estimation these foods were ancient codes transmitting the messages regarding social power, legitimized in the shadow of their ancestors.

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