UCB Paleoethnobotany Lab Report #61
Analysis of Macrobotanical Remains from Structure 13M-2 at the Site of T'isil
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Introduction:

This report summarizes the results of the macrobotanical analysis of flotation samples recovered from excavation at the archaeological site of T'isil (TS), Quintana Roo. The samples analyzed include all 6 levels of Excavation Unit 4, from Structure 13M-2, carried out during the Yalahau Regional Human Ecology Project 2002 field season. Bulk sediment samples were recovered from the excavation units and floated during the 2003 field season. The floated ("Light Fraction") materials were sorted at the University of California at Berkeley Paleoethnobotany Lab. Unfortunately, few taxa recovered in the sorting process could be identified, due to the generally poor preservation of the macrobotanical materials. Botanical materials were classified into general categories of Wood, Lumps (mostly parenchymous tissue), Seeds, Other (including *Zea mays* cupules), and Unidentifiable. Taxa in the *Poaceae, Asteraceae, Onagraceae, Verbenaceae, Solanaceae, Papaveraceae, Amaranthaceae, Rubiaceae, Fabaceae,* and *Arecaceae* families were tentatively identified at the family, genus, or species level. The counts and weights of the suite of recovered botanical materials are here analyzed in relation to Structure 13M-2.

The following pages summarize the field methods, laboratory methods, results, and conclusions of the paleoethnobotanical analysis.

Methods:

Field methods:

13M-STR2 lies within 100 m of the large, central cenote T'isil, which is surrounded by an array of monumental architecture. The basal area of the built architecture is 1,052 square meters, with a total volume of 465 cubic meters. The structure was chosen for excavation because in the course of surface collections, the largest number of ceramic varieties was recovered from this location. During excavations, artifact classes including ceramic, shell, obsidian, bone, and "miscellaneous" were recovered. It is posited, based on the general architectural morphology and suite of artifacts recovered that structure 13M-2 was used primarily for residential purposes.

Test excavations of the structure proceeded according to the standard methodology employed by the Yalahau Regional Human Ecology Project, and were conducted by Kathy Sorensen and Helen Neylan. Four 1 x 2 m units were excavated at 13M-STR2, and bulk sediment samples were recovered from the six loci of excavated Unit 4. In this unit, sediment samples were taken from each arbitrary 10-cm excavated level and bagged. The volume of each of these sediment samples varied from 5.8 to 8.0 liters.

After excavations, the bulk sediment samples were floated in a modified SMAP machine during the following (2003) field season by Shanti Morell-Hart. In the course of this process, each sample was divided into Light and Heavy Fractions. A Flotation Log was maintained for this procedure. After flotation, each sample was thoroughly dried in

chiffon netting, then labeled and inserted into a plastic bag. The bags were labeled with provenance (Site-Grid Location-Structure Number-Unit Number- Level Number), contents (Heavy Fraction or Light Fraction), and the date of excavation.

The Light and Heavy fractions were both eventually removed to the University of California at Berkeley Paleoethnobotany Lab, although only the Light Fraction has been analyzed at this time.

Laboratory methods:

Once in the laboratory, the Light Fraction samples were weighed. The samples varied in weight from 4.12 to 35.25 grams. Each of the 6 Light Fraction samples was then assigned a flotation and sort number, in each case as a single Site-Grid Location-Structure Number-Unit Number- Level Number. In every case, the Sample, Flotation, and Sort numbers were the same. The Light Fraction samples (hereafter simply referred to as the "samples") were divided with the use of brass geological screens into four particle sizes: >2mm, 1-2 mm, 0.5-1 mm, and <0.5 mm. This partitioning of the samples allowed for faster sorting, through the need for only a single magnification setting for the entirety of a fraction.

The samples were sorted under a low-power boom-mounted stereo microscope with a fiber optic illuminator. Only charred botanical remains were considered to be archaeological, and these carbonized materials were removed and classified as Wood, Lumps (mostly parenchymous tissue), Seeds, or Other (including *Zea mays* cupules). Wood less than 2.0 mm was not removed, and Lumps less than 1.0 mm without visible surfaces were not removed, as fragments of the materials smaller than these sizes are virtually impossible to identify even by specialists. Non-archaeological or botanical materials such as snails, bone, modern macrobotanical materials, ceramic, shell, other non-botanical charred materials, and other miscellaneous materials were not removed. All materials, however, were recorded as present or absent in each fraction size on the sorting form. Recorded as well were comments regarding the condition and contents of the sample as a whole.

Once removed, the carbonized materials were further divided into similar subclasses, where possible. Wood and Lumps were counted and weighed, and seeds and other materials were identified to the smallest possible subset. All of the recovered carbonized materials were counted, weighed, and recorded on the identification form, along with comments specific to the class or sub-class. Each class of carbonized materials was then placed in a gelcap containing a label with the class and sample number, and the combined gelcaps were placed in a larger clear plastic box. All of the remaining non-carbonized sorted materials were placed in plastic bags containing provenance information. The sorted samples were then stored in a larger cardboard box with visibly marked provenance information.

The data from the flotation, sorting, and recording forms were transferred to an Access database spreadsheet. The information from this database was then imported into Excel, for ease of analysis and visual presentation.

Results:

The sediment samples contained cupules, seeds, wood, "lumps", and various other non-botanical remains. Recovery rates of seeds and lumps were meager, overall, although a fair amount of wood emerged in the sorting process. Moreover, the identification of various taxa proved difficult due to the poor preservation of the materials and in many cases the lack of identifiable morphology or surface features. However, taxa in the *Poaceae, Asteraceae, Onagraceae, Verbenaceae, Solanaceae, Papaveraceae, Amaranthaceae, Rubiaceae, Fabaceae,* and *Arecaceae* families were tentatively identified to the family, genus, or species level.

Interestingly, the recovery rates of carbonized materials appeared to vary not according to the volume of soil recovered but rather to the corresponding level of the cultural deposit. The levels with the greatest initial sample volume (Levels 1 and 4, with 8.0 L respectively) had recovery rates in the middle range, relative to the other levels. The level with the smallest initial sample volume (Level 3, with 5.8 L) had the highest recovery rate. The other three level samples, of mid-range volume (between 6 and 7.5 L), had mid-range to low recovery rates. Although these figures represent the data from only a single excavated unit, it is apparent that the recovery rates of archaeobotanical materials did not correspond with pre-floated volume alone. Recovery rates calculated by weight of the floated sample further support a hypothesis that other factors more directly affect the rate of recovery in each level. The highest recovery rate in this instance was again from Level 3, which had only a mid-range sized total sample weight. In short, it is possible that the rate of recovery at this location had more to do with varying densities of episodes of the actual cultural deposit, rather than the pre-flotation volume or post-flotation weight of the sample.

Wood fragments were by far the most commonly recovered items, in every level. There were 1681 wood fragments recovered in total from this excavation unit (87 % of the sample), with a combined weight of 12.24 g. Fewer lumps were recovered from the archaeological deposit, although were still ubiquitous in the unit as a whole. 97 lumps were recovered in total from this sample (5%), for a combined weight of 0.22 g. Seeds numbered 161 total (8% of the sample), and 5 ***Zea mays*** cupules were also recovered. The cupules were rather poorly preserved but still identifiable. Many other carbonized remains were recovered, but were identifiable only as charred botanical materials due to the poor preservation of their surfaces and morphology.

Charts 1-4 visually detail the total recovered items, recovery rates, weight and counts of material classes, and specific taxa counts, all by level. Chart 5 details the total percentage of wood, lumps, and seeds recovered in relation to each other.

Analysis:

Contextual information:

Due to the relatively shallow depth of the deposit, and the mixed chronology of the associated ceramic sherds, it is difficult to assign a time period to these particular archaeobotanical remains by level. Radiometric or AMS dating of selected archaeobotanical remains could perhaps serve to pinpoint within a few hundred years the temporal context of each arbitrary level from which they come. In the current study, however, no comparisons can be drawn between the sub-assemblage of each level and potential differences over time.

The variety of artifact classes recovered in the course of excavations appears to be typical of residential trash. The recovered archaeobotanical materials, as well, appear to indicate typical residential food species as well as several species that may have been used as fuel. None of the economic taxa recovered appear to reflect anything unique about this residential unit as compared to other ethnographically and ethnohistorically described households of the Maya area. Although there are several uncommon species present in the assemblage, as these species are not currently known to have specific economic uses, it is likely that they simply served as tinder or fuel.

All of the materials appear to have been charred at a medium-high temperature, as they are uniformly carbonized with fairly clear morphology where the surfaces have not been distorted. The many carbonized remains which were rendered unidentifiable or almost so appear to have been subject to mechanical or biochemical processes after carbonization, that distorted surface features and eroded distinguishing morphological characteristics. The large quantity of carbonized wood fragments at each level is consistent with hearth detritus. It is likely that the side of Structure 13M-2 where Unit 4 was placed once served either formally or informally as a disposal area for materials cleaned from the hearth.

Taxa information:

What follows is a summary of the archaeobotanical taxa recovered, their corresponding family with typical representatives, the known uses for the smallest identified subset, the areas where the taxa are found, the known archaeological recoveries of the taxa, the specific number recovered at T'isil, select literature where the taxa are referenced, and the likely locations from where the taxa were obtained.

1. *Zea mays:* Maize
Poaceae family.
Used as edible grain for tortilla, tamal, atole, horneado (pib'il); feed for pigs, dogs, and chickens; leaves used as cooking wrapper.
Found throughout the Americas.
Archaeologically recovered from Actun Chapat (cob fragments), Actun Chechem Ha (cobs and kernel fragments; starch grains), Barton Creek Cave (cobs, kernels, stems, husks); Cueva de las Pinturas, Naj Tunich, Mayahak Cab Pek (cobs), and Copan (cupule, kernel). 5 cupules, 10 seeds, and one stalk were recovered from the T'isil sample.
Referenced in Atran 1993; Morehart 2002; Brady 1997; Brady 1989; Brady 1995; Goldstein 1999; Lentz 1991; Lentz 2001; Doebley 1990… and many more.
Grown in the *milpa*.

2. *Poaceae: Panicoid* and *Pooid* varieties, various unknown genera
Large family of grasses and grains. Family of *Zea mays* (maize).
Found throughout the Americas.
Paspalum sp. and *Setaria* sp. are other weedy species in this family, recorded as used for matting, bedding, and other purposes.
Archaeologically recovered from everywhere that *Zea mays* has been found, among other species. Three representatives of two distinct *Panicoid* species were recovered from the T'isil sample, as well as three representatives of two *Pooid* varieties.

The *Poaceae* spp. recovered from samples at T'isil did not match any of the above species (*Zea, Paspalum, Setaria)*, nor any *Poaceae* species currently housed in the UCB reference collection. But as *Poaceae* is a very large family, comprised of thousands of species (with new ones occasionally recorded), this is unsurprising.
Poaceae species grow in almost every sort of ecological condition.

3. *Asteraceae*: various unknown genera
Large family of various weedy species. Family of *Helianthus annus* (sunflower).
Found throughout the Americas.
Recorded uses for other species in this family include digestive tranquilizer (*Artemesia sp.*) and edible seed (*Helianthus annus)*.
Species from this family have not previously been recovered archaeologically in the Maya area. 16 representatives of the *Asteraceae* family were recovered from the T'isil sample, all of the same species.
Referenced in Lentz 2001 and at the CICY Jardin Botanico.
The *Asteraceae* sp. recovered from samples at T'isil did not match either of the above species *(Artemesia, Helianthus)*, nor any *Asteraceae* species currently housed in reference collection. But as this is a very large family, comprised of thousands of species (with new ones occasionally recorded), this is unsurprising.
Asteraceae species grow in almost every sort of ecological condition.

4. *cf. Oenothera* sp.: unknown species
Onagraceae family. Family of evening primrose.
No specific recorded uses of this family in Central America. Flowers recorded as "fragrant" in South America.
Species from this family have not previously been recovered archaeologically in the Maya area. 8 likely seeds were recovered from the T'isil sample (morphologically a close match to other species in this genus.)
This is a fairly common weedy species which grows in a variety of ecological conditions.

5. *Verbenaceae*: unknown genus
Large family of various weedy and woody species. Family of verbena.
Found throughout the Americas.
Recorded uses include housewood (*Rehdera penninervia)*; housewood, inner bark applied to flesh wounds (*Vitex gaumeri*); and medicine for dermatological purposes (*Lantana camara)*.
Recovered archaeologically from Copan (charcoal). Only one *Verbenaceae* sp. seed was recovered from the T'isil sample.
Referenced in Atran 1993; Lentz 1991; and CICY Jardin Botanico.
This is a fairly common family of weedy species which grow in a variety of ecological conditions.

6. *cf. Capsicum* sp.: Chile pepper
Solanaceae family.
Edible fruit consumed, as food, medicine, and condiment.
Found throughout South Mexico to Colombia, West Indies.

Archaeologically recovered from Barton Creek Cave (calyxes/fruit bases) and Cerros (seed). One likely seed recovered from the T'isil sample (morphologically matches *Capsicum* but is significantly smaller).
Referenced in Atran 1993; Morehart 2002; McLeod et al. 1982; Lentz 2001; Andrews 1995; Pickersgill 1971; Eshbaugh et al. 1983; Heiser 1976; and Cliff and Crane 1989.
Grown primarily in house gardens.

7. *Solanaceae* sp.: unknown species
Family of potato, tomato, and chile pepper. An economically important family.
Species from this family have been recovered archaeologically everywhere that chile, tomato, and potato have been found. The single seed recovered from the T'isil sample did not match any known economic species nor any species housed in the UCB reference collection.
This is a fairly common family of wild and domesticated species that grow in a variety of ecological conditions.

8. *Papaver* sp.: unknown species
Papaveraceae family. Family of the poppy.
Hundreds of uses recorded for species of this genus, from medicinal to dyes to oil extracted from seeds. However, no specific recorded uses of even the *Papaveraceae* family in the Maya area.
Species from this family have not previously been recovered archaeologically in the Maya area. 3 seeds were recovered from the T'isil sample.
Over 100 species of this genus exist throughout the world. This is a fairly common family of weedy species which grow in a variety of ecological conditions.

9. Cheno-am: Amaranth, goosefoot, etc.
Chenopodiaceae or *Amaranthaceae* family.
Leaves used for condiment, and sometimes used as vermifuge when mixed with garlic infusion; also used as an edible grain.
The seeds of these families appear very similar. Many species recorded in the Americas.
Archaeologically recovered from Copan (*Chenopodium* sp. seed). 12 seeds were recovered from the T'isil sample.
Referenced in Lentz 1991; Lentz 2001 (Chenopodiaceae); Lentz 2001 and Atran 1993 (Amaranthaceae).
Species of both families are found wild throughout Mexico and Central America in a variety of ecological conditions.

10. *Gallium* sp.: unknown species
Rubiaceae family. Family of madder.
No recorded uses in Maya area—a common weedy and woody species. Other species in the Rubiaceae family have been recorded as used primarily for housewood and medicine.
Species from this family have not previously been recovered archaeologically in the Maya area. 6 seeds were recovered from the T'isil sample.
Found wild throughout Mexico and Central America in a variety of ecological conditions.

11. *Fabaceae*: unknown genus
Large family of *Phaseolus vulgaris (*domesticated beans) and various woody leguminous species and weedy alfalfa.
Recorded uses for various species of the family include wood, medicine, edible fruit, edible seed, adhesive, and edible root.
Archaeologically recovered from Actun Chapat (legumes), Copan (seed), El Salvador (*Phaseolus sp.);* Copan (charcoal) (*Dalbergia* sp. and *Pterocarpus* sp.); Copan (seed) (*Cassia* sp., *Crotalaria* sp., *Vigna* sp.). Only a single seed was recovered from the T'isil sample.
Various genera referenced in Atran 1993; Lentz 1991; Lentz 2001, Morehart 2002, Lentz 1989, Zier 1980
The Fabaceae sp. recovered from samples at T'isil is not a domesticated species, and did not match any of the above species nor any Fabaceae species currently housed in reference collection. Most closely matches other taxa from the subtribe *Papiloinoidae* of the family (i.e. such as alfalfa). This is a very large family, comprised of thousands of species (with new ones occasionally recorded).
Found wild throughout the Americas in a wide variety of ecological conditions.

12. *cf. Arecaceae*: unkown genus
Family of palms, including *Attalea cohune* (cohune palm).
Found throughout Mexico and Central America.
Recorded uses for various species of the family include fruit, edible kernels, edible heart, medicine, construction, leaves used in roofing, fermented resin used as beverage, wood for utensils and construction.
Archaeologically recovered from Actun Nak Beh (endocarps) (*Attalea cohune);* Copan (endocarps, exocarps), Cerros, El Cajon region, Cerro Palenque, Colha (*Acrocomia mexicana)*; Copan (endocarps) (*Bactris sp.*). 29 fragments were recovered from a single level (2) of the T'isil sample. The mesocarp and endocarp fragments are very small, and it is difficult to tell morphology at this fragment size. Some morphologically similar fragments may actually be from another unidentified botanical part.
Various genera referenced in Morehart 2002; Lentz 2001; Lentz 1991; Roys 1931; Tozzer 1941; Alcorn 1984; Cliff and Crane 1989; Crane 1986; Lentz 1989; Joyce 1985; Caldwell 1980; Lentz 2001; Lentz 1990; Henderson et al. 1995.
Economic species of palms are often grown in house gardens.

13. UNKN: various unknown species
These appear to be predominantly weedy non-domesticate species. May have been used in everything from medicine to animal fodder to fuel, but do not match any seeds currently contained in reference collection. Numbered to differentiate between distinct species. (e.g.: UNKN 1, UNKN 25, etc.)

14. Lumps: various unknown species
These are large lumps of parenchymous root or tuber tissue, or stem storage tissue. May be from *Manioc esculenta* (manioc), *Ipomoea batatas* (sweet potato), or similar, but remain unidentified at this time.

15. Wood: various unknown species
Charred wood fragments. May be from a large variety of wood species, or only a few, but remain unidentified at this time.

Conclusions

Although a wide variety of taxa was recovered from the excavated Unit 4 of Structure 13M-2, the exact uses of these various botanical remains in most cases are difficult to ascertain. However, a few general statements may be made about the materials recovered.

The lone representative of *Fabaceae* is not one of the known domesticated species, and has characteristics more closely matching those of the subtribe *Papilionoidae.* There are no recorded uses for the seeds of any genus of this subfamily. However, wood and bark materials from this subtribe are commonly recorded as utilized (primarily as fuel), so the charred seed portion may be the result of detritus remaining from timber or bark collection that was subsequently used as fuel.

Various *Arecaceae* species are recorded as being used for edible fruit, edible kernels, and potentially medicinally. As *Arecaceae* species have been recovered from many other archaeological sites, have a multitude of recorded uses, and present an extremely durable endocarp, it is no surprise that fragments were recovered from the excavation unit.

Zea mays, considered the staple crop of the Maya area, was also recovered. As both the cupules and the seeds have been recovered from the excavation unit, this indicates that the processing of the cobs (removal of the kernels) likely took place nearby. The charred fragments may indicate that the empty cobs were cast into the fire once the kernels had been removed.

The likely *Capsicum* sp. (chile pepper) seed, though tentatively identified, would be another unsurprising element of the cultural deposit. *Capsicum* sp. fruits have been recovered archaeologically throughout the Maya area, and, like maize, are considered to be one of the common crops of Prehispanic Mesoamerica. *Capsicum* fruits are recorded as being used as seasoning, condiment, and also medicinally.

The *Gallium, Poaceae (*aside from *Zea mays), Papaver,* and *Oenothera* species recovered at T'isil do not match known economic species. Although it is possible that these taxa served unknown ritual, medicinal, or dietary purposes, any assignation beyond "fuel" would be pure speculation. The Cheno-am species did not closely match any economic *Amaranthaceae* or *Chenopodiaceae* species housed in the reference collection.

All other recovered seed species are unknown at this time, and do not match examples in the botanical reference collection at UCB.

In terms of procurement, two of the taxon classes may have come from a house garden—the possible chile (*Capsicum* sp.) and the palm fruits (*Arecaceae* sp.). The maize (*Zea mays*) is most likely a product of *milpa* production. The presence of maize, chile, and palm fruits suggest a concordance with ethnographically and ethnohistorically recorded common food species. The rest of the species may have been obtained from almost any location, and either opportunistically gathered or deliberately grown. The various taxa represented may represent the exploitation of a wide range of ecological

niches, but the wide range of ecological conditions in which many of the recovered taxa survive makes this statement difficult to verify.

The relatively high archaeobotanical recovery rates of Level 3 may correspond with a period of increased activity, as compared to the other levels. However, it is difficult to speculate with any certainty, as only a single excavated unit is represented by this study.

The previous results suggest a few potential directions for future research. First, although sediment sample volume was not a reliable indicator of eventual recovery rates, in general a greater volume of sediment would lead to a much higher recovery rate of archaeobotanical remains. Second, the flotation method may be improved through the heavy use of a deflocculant such as sodium bicarbonate, or, in the case of materials with strong potential for dating, the deflocculant sodium hexametaphosphate. Third, the current results would be much improved by an analysis of the recovered wood fragments by a specialist in this field, as the large quantities of wood recovered would likely have much to say about local ecology and use of tree species. Finally, a micro analysis of the starch grains, phytoliths, and/or oxalic crystals potentially present in the charred "lumps" would serve to elucidate the role of root species in the cuisine of the Prehispanic occupants of this site.

Level	Volflot	Flotsize	Family	Taxon	Part	Count	Total wt
1	8	34	Poaceae	Zea mays	seed	10	0.0605
1	8	34	Poaceae	Zea mays	cupule	3	0.0264
1	8	34	Solanaceae	Capsicum sp. (?)	seed	1	0.0001
1	8	34	Poaceae	Zea mays (?)	stalk	2	0.0403
1	8	34	Papaveraceae	Papaver sp. 1	seed	1	0.0006
1	8	34	UNIDENT	UNIDENT	seed	2	0.0014
1	8	34	UNKN	UNKN 27	seed	1	0.0004
1	8	34	Solanaceae	Solanaceae sp. 1	seed	1	0.0005
1	8	34	UNKN	UNKN	seed	3	0.0099
1	8	34	WOOD	UNKN	wood	399	2.1947
1	8	34	LUMPS	UNKN	lumps	12	0.0385
1	8	34	UNKN	UNKN 7	seed	5	0.0016
1	8	34	Amaranthaceae	Cheno-am sp. 1	seed	1	0.0005
2	7.5	35.25	Poaceae	Poaceae sp. 3	seed	2	0.0002
2	7.5	35.25	Fabaceae	UNKN	seed	1	0.0008
2	7.5	35.25	Amaranthaceae	Cheno-am sp. 1	seed	1	0.0017
2	7.5	35.25	UNIDENT	UNIDENT	seed	49	0.0103
2	7.5	35.25	Poaceae	Panicoid 1	seed	1	0.003
2	7.5	35.25	UNIDENT	UNIDENT	seed	1	0.0035
2	7.5	35.25	Poaceae	Poaceae sp. 1	seed	1	0.0002
2	7.5	35.25	UNKN	UNKN	unkn	6	0.0014
2	7.5	35.25	Asteraceae	Asteraceae sp. 1	seed	1	0.0001
2	7.5	35.25	Papaveraceae	Papaver sp. 1	seed	1	0.0002
2	7.5	35.25	Oenoaceae	Oenothera sp. (?)	seed	8	0.0011
2	7.5	35.25	Poaceae	Zea mays	cupule	1	0.0028
2	7.5	35.25	LUMPS	UNKN	lumps	52	0.0845
2	7.5	35.25	UNIDENT	UNIDENT	unident	105	0.0315
2	7.5	35.25	WOOD	UNKN	wood	397	3.2726

2	7.5	35.25	UNKN	UNKN7	seed	2	0.0011
2	7.5	35.25	UNKN	UNKN 1	seed	14	0.0023
2	7.5	35.25	Verbenaceae	Verbenaceae sp. 1	seed	1	0.0001
2	7.5	35.25	Poaceae	Panicoid sp. 2	seed	2	0.0001
2	7.5	35.25	Rubiaceae	Gallium sp. 1	seed	5	0.0003
2	7.5	35.25	Arecaceae (?)	UNIDENT	seed	29	0.3547
3	5.8	18.05	LUMPS	UNKN	lumps	18	0.0282
3	5.8	18.05	WOOD	UNKN	wood	383	3.0167
3	5.8	18.05	Amaranthaceae	Cheno-am sp. 1	seed	9	0.0065
3	5.8	18.05	UNIDENT	UNIDENT	unident	180	0.1757
3	5.8	18.05	Papaveraceae	Papaver sp. 2	seed	2	0.0004
3	5.8	18.05	Papaveraceae	Papaver sp. 1	seed	1	0.0002
3	5.8	18.05	UNKN	UNKN 1	seed	4	0.0007
3	5.8	18.05	UNIDENT	UNIDENT	seed	5	0.0014
3	5.8	18.05	Asteraceae	Asteraceae sp. 1	seed	15	0.0029
3	5.8	18.05	Poaceae	Zea mays	cupule	1	0.0042
3	5.8	18.05	Rubiaceae	Gallium sp. 1	seed	1	0.0016
4	8	11.85	WOOD	UNKN	wood	254	1.8471
4	8	11.85	LUMPS	UNKN	lumps	8	0.0265
4	8	11.85	Amaranthaceae	Cheno-am sp. 1	seed	1	0.0009
4	8	11.85	UNIDENT	UNKN	seed	1	0.0002
4	8	11.85	UNKN	UNKN 25	seed	1	0.0004
5	6.2	12.5	WOOD	UNKN	wood	228	1.8104
5	6.2	12.5	LUMPS	UNKN	lumps	6	0.0365
6	6	4.12	WOOD	UNKN	wood	20	0.0943
6	6	4.12	LUMPS	UNKN	lumps	1	0.0098
6	6	4.12	UNKN	UNKN	unkn	1	0.0019
6	6	4.12	UNIDENT	UNIDENT	seed	3	0.0018