

Botanical Remains from
Huachanmanmachay (19H-E7-2)
and Tecliomachay (19H-E8-7):
Preliminary Report

by
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Report 1

Thirteen flotation samples from the Puna, of Peru, were received by the Archaeobotany Lab at the University of Minnesota, headed by Professor Christine Hastorf in December, 1983, from Dr. Michael Malpass. This is a summary of the information obtained from the samples, with some preliminary conclusions.

The samples were from two sites: Tecliomachay (Puna Site 12) and Huachanmanmachay (Puna Site 2) excavated by Dr. Malpass. There were thirteen flotation samples, eight from Tecliomachay and five from Huachanmanmachay. The sizes (weights) ranged from 143.25 grams-623.1 g., with an average of 363.4 g.

Each sample came to us with two fractions, one heavy and one light, except Tecliomachay's lot 14, level 46, 7-VII-81, which had no light fraction. We treated the two fractions slightly differently, only because the heavy fractions were so voluminous, and contained varied size particles. For ease of viewing under a stereoscope (7-30x) the samples (both heavy and light) were separated using geologic screens. This sorting creates smaller subsamples, each of which contains organic matter of the same size. The light fraction of each flot sample was only split into two subsamples, one contained all material that was greater than 2mm (i.e., it did not go through the 2mm mesh screen), the other contained all the material which fell through the 2mm mesh. On the Data Sheets, and on the Content Summaries these are referred to as "light fraction >2mm and <2mm."

The heavy fractions (the part which sank during the flotation process) were treated slightly differently. Because they contained a wider range of particle sizes, we sieved them, through a greater number of geologic screens, with mesh sizes of 2mm, 1.18mm and 500 microns. This resulted in

four subsamples (instead of two, as there were for the light fractions). The first fraction contained all the material which was greater than 2mm, with no upper size limit. This is referred to as Heavy Fraction >2mm on Data Sheets and Content Summaries. The next fraction contained all the material which fell through the 2mm mesh, and not the 1.18mm mesh. This is referred to as >1.18mm on the Data Sheet and Content Summaries, though it does not contain all material that is greater than 1.18mm, it only contains the material which is between 2mm and 1.18mm. The third fraction contains the material which fell through the 1.18mm mesh and not the 500 micron mesh. This subsample is referred to as >500 microns, and contains material between 1.18mm and 500 microns. The last subsample is all the material which is less than 500 microns, with no lower size limit.

Once the fractions had been split into these subsamples, each was examined under a (7-30x) stereoscope. From all fractions carbonized plant material was removed, and uncarbonized material was not removed, as we doubt it is very old, instead it is viewed as modern contamination of some type.

Wood is the most common preserved botanical specimen found in these flotation samples. It occurs in all of the flotation samples in weights which exceed 50 grams in Huachanmanmachay. There are hundreds of small fragments. We extracted only the wood which is greater than 2mm, as pieces smaller than this have very low potential for identification to a level more specific than "wood." All the wood we removed was carbonized, and is simply referred to as "wood" on the Data Sheets and Content Summaries.

All carbonized seeds and soft matter fragments were removed from all sized fractions, both heavy and light. Seeds were identified to Family, or Genus level when possible. Soft matter fragments are called "LUMPS"; they are carbonized plant remains which are too eroded to identify (lacking anatomically identifiable features).

Bone was also recovered in large quantities, but none seems to be charred. It was extracted, even though uncarbonized, as bone is much harder than plants, and can exist in soils for a longer period of time without physical alteration. Many of the bone fragments are nearly as hard as rocks, probably as a result of mineralization.

The bones are generally of two types: 1) Fragments of large bones, mostly of long bone shafts, and one phalanx. These are probably not identifiable. 2) Complete (or nearly so) very small animal bones. These are highly identifiable, the most common elements are vertebrae, humerii, and mandibles. All bones that were greater than 2mm were extracted, and their weights and counts were noted on the Data Sheets and Content Summaries. Not all the bones in the subsamples that are smaller than 2mm were extracted, though they are also noted on the Data Sheets and Content Summaries. Bones of these smaller fractions are often highly identifiable, and should not be ignored if a faunal analysis is done.

Our Data Sheets (the ones that say "Botanical Analysis Forms UMARP 1979-1980" on the top) have been included, in addition to Content Summaries. The Data Sheets are used to tally information while working on a given sample. We put the information which came with the samples on these sheets and in addition each was assigned a University of Minnesota number, e.g., UM1, UM2..., UM13, for ease of discussion, etc., while we had them here in our lab.

Also, we will keep a record of them here, and those numbers will be permanently associated with them. On the top of the Data Sheets are several important things including the provenience (which was found on the sample bags, our "UM" number, who sorted and identified it, and when it was sorted. We have filled in the weight of the total sample, which was both heavy and light fractions together, including all material the weight of the picked sample includes only those items (wood, bone, seed, fruit, lump) which have been extracted (as marked on the Data Sheet and Content Summaries). This does not include wood or bones that are noted, but not extracted. Below this area are a series of boxes. On the right is a check list for the light fraction both >2mm and <2mm. On the right there are four columns for the heavy fraction, marked >2mm, >1.18mm, >500 microns and <500 microns, which correspond to the subsamples explained above. This area is a condensation of the data from the sample, presented for quick reference. Below the boxes, and on the back of the sheet are the actual tallies and/or weights made during analysis. Some seeds are marked only with numbers, like #M1983-1 or #1983-53. These are seeds which we weren't familiar with, and are in the process of being identified. Each has been extracted, and drawn on a 3 x 5 card, for ease of access by ourselves and other ethnobotanists who try to identify these "unknown" seeds. The numbers are of two kinds, those with an "M" preceding them are unique to your site, as far as we know that is, they are unlike any of the Upper Mantaro area unknown seeds (Earle et al 1980, Hastorf 1983). The 1983 is for the 1983-84 academic year when we received the samples. The unique number after the dash indicates which seed it is in sequence. There are 14 seeds which received these types of unknown numbers and you will note that on the Data Sheets they may have other designations

such as "NH 19" or "type 29," these were temporary, and are now subscribed permanently in our records by the M1983-X numbers. There are also unknown seeds without an "M" preceding the numbers. These are unknowns which we have previously found in the Upper Mantaro Valley samples, but have not yet been identified. These are their permanent unknown numbers. In total there were 17 different unknowns including 15 unique to your site, and two which we have also found in the Upper Mantaro material.

Aside from the Data Sheets we have also included Content Summaries which have lists of what was found where, what condition it was in, what types of bone, and the sizes where possible. These summaries are simply abstracted from the Data Sheets, with additional information from a second look at the sorted samples.

RESULTS:

Huachanmanmachay (Puna site 2): 5 samples.

Wood is by far the most common organic material in the flotation samples from this site. Wood occurs in all flots, ranging from 5.9 to 18.5g in the light fractions. Four of the samples are listed as levels 4 through 7, with a fifth, a feature, lying between 4 and 5. All of the flots with level designations have seeds in them, with four seeds in level 4, two in level 5, one in level 6, and three in level 7. Feature 1 contained no seeds.

While wood was common, and fairly evenly distributed in the light fractions of all the flots at this site, such is not the case for the heavy fractions. The heavy fractions from levels 4, 5, 6 and 7 are mostly rock, ranging from 101.8 to 243.7g, while wood weights ranged only from 0.3 to 1.6g (in the >2mm subsample). In feature 1, wood weight 7.1g (again in the > 2mm subsample). This trend continues throughout the

various smaller sized subsamples in the heavy fractions. In short, there is more wood and less seeds in the feature, than within the samples with level designations (the general soil matrix).

There were only 8 seeds recovered from this site. Seven were small, wild herbaceous types, even though some have not yet been identified as specific taxa. The identified specimens included two spurges (Euphorbiaceae) and one small legume (Fabaceae), both are known from the Puna area. The only probable domesticate is from the top (level 4). It has been identified as a bean (Phaseolus sp.). It had to have been grown elsewhere and brought in by humans. In general, seeds were sparse at this site.

From the botanical remains we do not know what feature 1 is. Wood is present, and is far more abundant in the heavy fraction (of feature 7) than it is in the heavy fractions of levels 47. In general, the wood fragments from the feature are slightly larger, (up to .5 x 3cm) than those in the levels (mostly less than .3 x 1cm). Larger fragments may possibly be an indication of primary context of burning. The feature contains only one very small ($\sim 2\text{mm}^2$) fragment of bone which is probably not identifiable. There are no seeds in feature 1.

There were bones in all of these samples, mostly in the samples with level designations. All were fragments of large bones, which may be significantly related to human activities at Huachanmanmachay. Tecliomachay (Puna site 12): 8 samples. Tecliomachay contained the same types of organic remains found at Huachanmanmachay, yet in different amounts and with a less clear distribution pattern. Wood occurs in all the samples, though it is not as abundant as it is in Huachanmanmachay. In general the amount of $> 2\text{mm}$

wood in the light fractions from this site range from 0.1g to 16.2, where Huachanmanmachay's 2mm light fractions averages closer to 16 or 17g. The heavy fractions all have little wood in them, even the features 1 and 1'; the latter being identified as a hearth. All the wood at Teclimachay is quite small and fragmentary, which may be an indication of secondary deposits or poor preservation conditions. Perhaps the lack large sized, and large quantities of wood from the hearth (feature 1) are due to the use of some material for radiocarbon dating.

Seeds are more common in Teclimachay than they are in Huachanmanmachay. They occur in both of the features, as well as the non-feature levels. Feature 1 (level 2a) contains approximately 30 seeds, some which could be identified, others are too eroded. All seeds in this site, except one, are small, herbaceous, wild types. These plant remains may have been brought in on purpose or by random chance. If the plants were indeed selected they may have been fuel, food or industrial. Most of the seeds recovered are very small, and were not likely to have been food. Seeds from the Cyperaceae family occur in three of the eight samples which may indicate a mesic habitat. This family includes sedge (Scirpus) and others which prefer moist growing conditions. Salvia (sage) occurs in two of the samples, but it is known from diverse habitats.

There are also single occurrences of Malvastrum, Fabaceae and Chenopodium. All are probably just random inclusions of common wild species. There is one fragment of what is most likely a domesticated bean (Phaseolus sp.) in level 7. If this level dates to the late initial period (as indicated roughly

by the preliminary report) this would not be unexpected, though it is unlikely it would have been grown at the site, due to the elevation. Instead it probably came from a lower elevation. Overall there are more seeds in more samples from Teclimachay than Huachanmanmachay. This may represent some real difference in site function, or more likely, a problem of differential preservation.

Bones found at Teclimachay are of two types. First, there are lots of fragments of large bones, especially shaft fragments. These are the ones which may be related to human use, but unfortunately, are probably more difficult to identify. These type of fragments occur in all the samples, and are especially numerous in lot 26, feature one, which has a heavy fraction that consists mostly of these bones.

The second type of bones are ones which are very small, often less than one centimeter in length, which are complete, and quite identifiable. While these bones are from animals not necessarily utilized by human beings their analysis may shed light on the local environment and/or environmental change, as such animals often have narrow, well-defined ecological niches. The most common elements were mandibles, vertebrae and humerii. What this means we do not know, though it may have something to do with bone hardness or the way in which they were deposited. Small bones are often introduced into cave sites by raptors.

As mentioned earlier the contents of the features are not like that of feature 1 from Huachanmanmachay, nor are they similar to one another. Feature 1 (described in the preliminary report as an ashy layer) contains many wild carbonized seeds and a fair amount of wood. A hearth could be a

possible interpretation, or a secondary deposit from hearth cleaning. The second interpretation may be more likely due to the small sized wood fragments, and the fact that it "is much more extensive, covering an area considerably greater than the hearth." Another indication that it is not a primary hearth deposit is the inclusion of several ground projectile points (mentioned in report p. 6).

Feature 1 has been reported as a rock-lined hearth, and the organic remains do not conflict with this, though as mentioned above, there was not much wood in the flint. There is a great deal of large animal bone, which might be expected if this was indeed a hunting or herding station.

CONTENT SUMMARIES

Huachanmanmachay - Puna Site 2

Lot 19, Level 5, 20-VI-81 (UM1)

Light Fraction:

- >2mm WOOD (extracted) Weight = 17.4g. Most pieces small, less than 1cm in length.
- >2mm SEEDS (extracted) Weight = 0.2g. Count: 2.
 - 1) Family: Euphorbiaceae (1)
 - 2) Family: Fabaceae (1) probably a wild type, that is, not domesticated
- >2mm BONE (extracted) Weight = 0.69g. Count: 13. All are fragments of large bones.
- <2mm WOOD (not extracted, though it constitutes nearly 100% of this portion of the sample). Weight = 29.6g.

Heavy Fraction:

- >2mm WOOD (extracted) Weight = 1.5g. Mostly small, less than 1cm in diameter.
- >2mm ROCK Weight = 243.7g. This constitutes most of the portion of the sample.
- >1.18mm WOOD AND ROCK (not separated) Weight = 58.05g. Most of this portion is also rock. Very little wood.
- >500 μ REMAINS Weight = 150.2g. Mostly rock, very little carbon.
- <500 μ REMAINS Weight = 121g. Rock, dirt, organics, too small to distinguish.

TOTAL SAMPLE WEIGHT = 622.25g

PICKED SAMPLE WEIGHT = 19.7g

Huachanmanmachay - Puna Site 2

Lot 18, Feature 1, 2-V1-81 (UM2)

Light Fraction:

- >2mm WOOD (extracted Weight = 18.5g. Some to 3cm in length, and .4-.5cm across.
- >2mm BONE (extracted Weight = 0.05g. Count: 1. Small fragment of a large bone.
- <2mm WOOD (not extracted, yet it constitutes nearly 100% of this portion of the sample) Weight = 14.7g.

Heavy Fraction:

- >2mm WOOD (extracted) Weight = 7.1g.
ROCK Weight = 38g.
- >1.18mm WOOD (not extracted, yet constitutes nearly 100% of this portion of the sample) Weight = 11.9g.
- >500 μ WOOD (not extracted, yet consitiutes nearly 100% of this portion of the sample) Weight = 24g.
- <500 μ REMAINS Weight = 29g. Almost entirely carbonized material, too small to identify, probably wood.

TOTAL SAMPLE WEIGHT = 143.25

PICKED SAMPLE WEIGHT = 25.65g.

Huachanmanmachay - Puna Site 2

Lot 33, Level 6, 22-VI-81 (UM3)

Light Fraction:

- >2mm WOOD (extracted) Weight = 17.2g. Mostly long, thin pieces, not good cross sections, 1-2cm long x .2-.3cm wide.
- >2mm SEED (extracted) Weight = 0.1g. Count: 1. Family: Euphorbiaceae (1) Spurge Family
- < 2mm WOOD (extracted) Weight = 25.3g. Very small pieces.

Heavy Fraction:

- >2mm WOOD (extracted) Weight = 1.6g. Mostly small, less than 1cm in length, .2-.3cm across.
- >2mm BONE (extracted) Weight = 0.2g. Count: 7. All are small fragments of large bones.
- >2mm ROCK Weight = 101.89g.
- >1.18mm WOOD, BONE, ROCK (not separated) Weight = 40 g. Mostly rock, yet a substantial amount of organic material.
- >500 μ WOOD, BONE ROCK (not separated) Weight = 58.6g. Mostly rock, yet lots of carbon (organic).
- < 500 μ REMAINS Weight = 59.9g. Mostly small rock, dirt, some carbon. All too small to distinguish.

TOTAL SAMPLE WEIGHT = 299.7g.

PICKED SAMPLE WEIGHT = 44.4g.

Huachanmanmachay - Puna Site 2

Lot 8, Level 4, 19-VI-81 (UM 8)

Light Fraction:

- > 2mm WOOD (extracted) Weight = 17.6 g. Some pieces as large as ca. 1.5cm in diameter.
- > 2mm SEED (extracted) Weight = 0.1g. Count: 1. Family: Fabaceae, Genus: cf. Phaseolus (domesticated bean)
- > 2mm LUMPS (extracted) Weight = 0.1g. Count: 3. These are most likely carbonized plant remains, too eroded to identify.
- > 2mm REMAINS Weight = 0.8g. Noncarbonized roots, dirt.
- < 2mm WOOD (not extracted, though it constitutes nearly 100% of this portion of the sample). Weight = 39.4g.
- < 2mm SEEDS (extracted) Weight = 0.2g. Count: 3.
 - 1) Unknown #1983-53 in process of identification (1).
 - 2) Unknown #M1983-13 in process of identification (1).
 - 3) Unknown #1983-79 in process of identification (1).
- < 2mm FRUITS? (extracted) Weight = 0.1g. Count: 5. Possibly fruits of unknown type.
- < 2mm LUMPS (extracted) Weight = 0.1g. Count: 10. Carbonized plant remains, too eroded to identify.

Heavy Fraction:

- > 2mm WOOD (extracted) Weight = 0.3g. Very small pieces, most < 1cm in diameter.
- > 2mm BONE (extracted) Weight = 0.1g. Count: 3 small fragments of large bones.
- > 2mm ROCK Weight = 144.5g. This makes up most of this fraction.
- > 1.18mm WOOD, BONE, ROCK (not separated). Weight = 43.4g. Most is rock.
- > 1.18mm LUMP (extracted) Weight = 0.1g. Count: 1. Carbonized plant remains too eroded to identify.
- > 500 μ REMAINS Weight = 168.8g. Mostly sand sized rock, soil and possibly silt and clay sized material, both organic and inorganic. Too small to identify.
- < 500 μ REMAINS Weight = 95.2g. Organic and inorganic, too small to identify.

TOTAL SAMPLE WEIGHT = 510.8g.

PICKED SAMPLE WEIGHT = 372 g.

Huachanmanmachay - Puna Site 2

Lot 35, Level 7, 24-VI-81 (UM 12)

Light Fraction:

- > 2mm WOOD (extracted) Weight = 5.9g. Mostly linear in shape, less than 1cm in length.
- > 2mm REMAINS Weight = 0.1g. Noncarbonized material.
- > 2mm SEEDS (extracted) Weight = 0.1g. Count: 3. Unknown #M1983-1 in process of identification. (3)
- < 2mm WOOD (not extracted, though it makes up nearly 100% of this portion of the sample). Weight = 8.8g.

Heavy Fraction:

- > 2mm WOOD (extracted) Weight = 1.3g. Mostly linear in shape, less than 1cm in length.
- > 2mm BONE (extracted) Weight = 0.1g. Count: 9. All fragments of large bones.
- > 2mm REMAINS. Weight = 226.8g. Mostly rock, also some uncarbonized roots and grass.
- > 1.18mm REMAINS Weight = 98.5. Mostly rock, very little wood.
- > 500- μ REMAINS Weight = 192.9g. Mostly sand sized rock, dirt, some organic material.
- < 500- μ REMAINS Weight = 88.6g. Mostly silt sized rock, dirt, some organic material.

TOTAL SAMPLE WEIGHT = 623.1g

PICKED SAMPLE WEIGHT = 16.2g

Tecliomachay - Puna Site 12

Lot 6, Level 2b, 8-VII-81 (UM4)

Light Fraction:

- > 2mm Wood (extracted) Weight = 16.2g. Pieces are linear in shape, to 1.5cm long.
- > 2mm BONE (extracted) Weight = 0.05g. Count: 2. One small, complete humerus, one fragment of a large bone.
- > 2mm REMAINS Weight = 0.6g. Uncarbonized dung, feathers.
- < 2mm WOOD, BONE, REMAINS (unseparated) Weight = 38.5g. Mostly wood, some small, complete bones, many are humerii or vertebrae. Remains are modern dung or roots.

Heavy Fraction:

- > 2mm WOOD (extracted) Weight = 0.7g. Small pieces less than 1cm in length.
- > 2mm BONE (extracted) Weight = 17g.
 - 1) Mostly fragments of large bones
 - 2) Small, complete bones (18) vertebrae, humerii, mandibles, ulna,? pelvis.
- > 2mm ROCK Weight = 105g.
- > 1.18mm ROCK, BONE, WOOD, REMAINS (unseparated) Weight = 6g. Mostly rock, very little carbon, many small, complete bones, teeth, humerii, ulnas, mandibles (some broken)
- > 500 μ REMAINS (unseparated) Weight = 60.2g (unseparated). Mostly small pieces of rock, little carbon. Many very small long bones, nearly complete.
- < 500 μ REMAINS (unseparated) Weight = 53.4g. Too small to identify.

TOTAL SAMPLE WEIGHT = 280.75g.

PICKED SAMPLE WEIGHT = 34.55g.

Tecliomachay - Puna Site 12

Lot 16, Level 5, 8-VII-81 (UM5)

Light Fraction:

- > 2mm WOOD (extracted) Weight = 4.6g. Mostly small, less than 1cm (length or width).
- > 2mm SEED (extracted) Weight = 0.01g. Count: 1. Family - Fabaceae(1), small, wild-type legume.
- > 2mm BONE (extracted) Weight = 0.01g. Count: 1. It is a very small, complete humerus.
- > 2mm REMAINS Weight = 0.5g. Mostly uncarbonized roots.
- < 2mm WOOD, BONE (not separated) Weight = 11.8g. Mostly wood, some very small, complete bones.
- < 2mm SEEDS (extracted) Weight = 0.2g. Count: 4.
 - 1) Family: Lamiaceae, genus: Salvia (1)
 - 2) Family: Cyperaceae, Genus Scirpus (1)
 - 3) Unknown #M1983-12 -- I.D. in progress, possible Asteraceae(1)
 - 4) Unknown #1983-14 -- I.D. in progress, possible Cactaceae (1)
- < 2mm LUMPS (extracted) Weight = 0.05g. Count: 6. Carbonized plant remains, too eroded to identify.

Heavy Fraction:

- > 2mm WOOD (extracted) Weight = 0.2g. Fairly small pieces 1cm x .2cm, mostly linear in shape.
- > 2mm BONE (extracted) Weight = 13g. Count: 216.
 - 1) Fragments of large bones (212)
 - 2) Complete, very small (4) 1 mandible, 1 left humerus, 1 vertebra, 1 unknown
- > 2mm ROCK Weight = 124.7g.
- > 1.18mm SEED (extracted) Weight = .05g. Count: 1. Family, Cyperaceae.
REMAINS, ROCK, BONE, WOOD (not separated) Weight = 27.1g. Is mostly rock, with quite a few very small animals, very little wood.
- > 500 μ SEEDS (extracted) Weight = 0.05g. Count: 2. Family: Cyperaceae (2). "Sedge Family"
- > 500 μ ROCK, BONE, WOOD (not separated) Weight = 49.7g. Mostly rock, very little carbon, many small animal bones.
- < 500 μ REMAINS. Weight = 153.9g. Organic and inorganic silt and clay sized particles, too small to tell which.

TOTAL SAMPLE WEIGHT = 285.9g

PICKED SAMPLE WEIGHT = 18g

Tecliomachay - Puna Site 12

Lot 14, Level 4b, 7-VII-81 (UM6)

This sample came to us with no light fraction.

Heavy Fraction:

- > 2mm WOOD (extracted) Weight = 0.1g. Very small, 2-3mm across.
- > 2mm BONE (extracted) Weight = 6.6g. Mostly fragments of large bones. Three small bones, two small vertebrae and one humerus.
- > 1.18mm ROCK, BONE, REMAINS (unseparated) Weight - 13.1g. Mostly rock, many small animal bones (including vertebrae, humerii, and mandibles.) Virtually no carbon.
- > 1.18mm LUMP (extracted) Weight = 0.1g. Count:1. Carbonized plant material, too eroded to identify.
- > 500 μ ROCK, BONE REMAINS (unseparated) Weight = 26.2g. Mostly rock, some small bones (including mandibles, humerii, vertebrae). Virtually no carbon.
- < 500 μ REMAINS. Weight = 156.7g. Mostly inorganic too small to identify.

TOTAL SAMPLE WEIGHT: 237.55g.

PICKED SAMPLE WEIGHT: 6.85g.

Tecliomachay - Puna Site 12

Lot 21, Level 7, 9-VII-81 (UM7)

Light Fraction:

- > 2mm WOOD (extracted) Weight = 1.8g. Small pieces .5-1cm across.
- > 2mm SEEDS (extracted) Weight = 0.1g. Count: 1. Family: Fabaceae, large domesticated type (1).
- > 2mm LUMPS (extracted) Weight = 0.1g. Count: 4. Carbonized plant material, too eroded to identify.
- > 2mm BONE (extracted) Weight = 0.1g. Count: 8. All small bones, complete (or nearly so) humerii, vertebrae.
- > 2mm REMAINS. Weight = 0.1g. Count: 4. Uncarbonized plant roots.
- < 2mm WOOD, BONE, REMAINS (unseparated) Weight = 7.4g. Mostly very small particles, difficult to tell if organic or inorganic. Some small, complete bones, vertebrae, etc.
- < 2mm SEEDS (extracted) Weight = 0.2g. Count: 3.
 - 1) Unknown #1983-53 identification in progress.
 - 2) Family: Chenopodiaceae, Genus: Chenopodium
 - 3) Family: Cyperaceae
- < 2mm LUMPS (extracted) Weight = 0.1g. Count: 7. Carbonized plant material, too eroded to identify.

Heavy Fraction:

- > 2mm WOOD (extracted) Weight = 0.1g. Very small (2-3mm).
- > 2mm BONE (extracted) Weight = 9.0g. All are fragments of very large bones.
- > 2mm ROCK. Weight = 66g.
- > 1.18mm WOOD, ROCK, BONE, REMAINS (unseparated) Weight: 17.5g. Mostly rock, very little wood or carbon, many complete, small bones (humerii, vertebrae, etc.)
- > 1.18mm LUMP (extracted) Weight = 0.05g. Count: 1. Carbonized plant material, too eroded to identify.
- > 500 μ LUMP (extracted) Weight = 0.05g. Count: 1. Carbonized plant material, too eroded to identify.
- > 500 μ ROCK, WOOD, BONE, REMAINS (unseparated) Weight = 34.3g. Mostly rock, very little carbon. Many small bones, humerii, etc.
- < 500 μ ROCK, REMAINS (unseparated) Weight = 91.4g. Too small to identify, very little carbon.

TOTAL SAMPLE WEIGHT = 228.4g.

PICKED SAMPLE WEIGHT = 11.4g.

Tecliomachay - Puna Site 12

Lot 13, Level 4a, 7-VII-81 (UM9)

Light Fraction:

- > 2mm WOOD (extracted) Weight = 2g. Mostly less than 1cm in length.
- > 2mm REMAINS Weight = .05g, uncarbonized roots.
- > 2mm SEEDS (extracted) Weight = 0.1g. Count: 3.
 - 1) Family: Malvaceae, Genus: Malvastrum (1)
 - 2) Unknown #M1983-11, identification in progress (2)
- < 2mm REMAINS, WOOD, BONE (not separated)
Weight = 5.5g. Mostly wood, a few very small bones.

Heavy Fraction:

- > 2mm WOOD (extracted) Weight = 0.1g. Count: 2. Very small pieces, less than 5mm across.
- > 2mm BONE (extracted) Weight = 7.5g. Count: 59. All fragments of large bones.
- > 2mm ROCK Weight = 181.3g.
- > 1.18mm ROCK, BONE WOOD (not separated) Weight = 34.5g. Mostly rock, a few very small animal bones, a little wood.
- > 500 μ REMAINS. Weight = 71.6g. Dirt, sand, organics, too small to identify.
- < 500 μ REMAINS. Weight = 172g. Dirt, silt, organics, too small to identify.

TOTAL SAMPLE WEIGHT = 475.1g.

PICKED SAMPLE WEIGHT = 10.1g.

Tecliomachay - Puna Site 12

Lot 4, Level 2a, 6-VII-81 (UM10)

Light Fraction:

- > 2mm WOOD (extracted) Weight = 8.5g.
- > 2mm BONE (extracted) Weight = 1.2g.
 - 1) Large Falanx (which is broken)
 - 2) 8 very small, complete bones, 2 humerii, assorted others, probably skull fragments
- > 2mm LUMP (extracted) Weight = 0 1g. Count: 1.
- > 2mm REMAINS. Weight = 3.6g. Uncarbonized dung and rocks.
- < 2mm WOOD, BONE, REMAINS. (Not separated) Weight = 27.6g. Contains wood, many very small animal bones, dirt and uncarbonized plant material.
- < 2mm SEEDS (extracted) Weight = 0.3g. Count: 30
 - 1) Family; Cyperaceae, Genus: Scirpus (j)
 - 2) Family; Lamiaceae, Genus: Salvia (1)
 - 3) Unknown #M1983-2--identification in progress (1)
 - 4) Unknown #M1983-4--identification in progress (2)
 - 5) Unknown #M1983-5--identification in progress (1) possible Asteraceae
 - 6) Unknown #M1983-6--identification in progress (1) possible Cyperaceae
 - 7) Unknown #M1983-7--identification in progress (1) possible Apiaceae
 - 8) Unknown #M1983-8--identification in progress (1) possible Liliaceae
 - 9) Unknown #M1983-9--identification in progress (1)
 - 10) Unknown #M1983-10--identification in progress (1)
 - 11) Unknown #1983-53--identification in progress (4)
 - 12) Fragments of seeds, too eroded to identify (8)
 - 13) Unknown #1983-15--seed smashed but card (drawing) exists (1)
- < 2mm LUMP (extracted) Weight = .05g. Count = 1
Carbonized plant remain, too eroded to identify

Heavy Fraction:

- > 2mm WOOD (extracted) Weight = 0.2g. Count: 6.
Very small fragments.
- > 2mm TUBER (extracted) Weight = 0.1g. Count: 3.
Some type of carbonized "root," more precisely an underground stem, like a potato
- > 2mm BONE (extracted) Weight = 18.3. Count: 378.
 - 1) Fragments of large bones (334)
 - 2) Complete (or nearly so) very small bones, mostly mandibles, humerii, vertebrae (44).
- > 2mm ROCK Weight = 101g.

- > 1.18mm WOOD, BONE, ROCK, REMAINS (not separated) Weight = 29.6g.
Contains mostly rock, many small, complete, animal bones, and very little carbonized remains.
- > 1.18mm LUMPS (extracted) Weight = 0.1g. Count: 10.
Carbonized plant remains, too eroded to identify.
- > 500 μ SEEDS (extracted) Weight = 0.1g. Count: 3.
Family = Cyperaceae, Genus: Scirpus (3)
- > 500 μ REMAINS, BONE, WOOD, ROCK (not separated) Weight = 51.2g.
Mostly rock, very little carbonized plant material (wood), still many complete (or nearly so) small animal bones.
- < 500 μ REMAINS. Weight = 128.7g. Some organic and inorganic too small to identify.

TOTAL SAMPLE WEIGHT = 342.8g.

PICKED SAMPLE WEIGHT = 28.7g.

Tecliomachay - Puna Site 12

Lot 18, Level 6, 8-VII-81 (UM11)

Light Fraction:

- > 2mm WOOD (extracted) Weight = 4.7g. Mostly linear, though some up to 5mm in diameter.
- > 2mm REMAINS Weight = 0.6g. Uncarbonized roots and plant fragments.
- < 2mm WOOD, REMAINS (not separated) Weight = 52g. Mostly so small that they're impossible to identify.

Heavy Fraction:

- > 2mm WOOD (extracted) Weight = 0.2g. Count: 5. Very small pieces (2-3mm wide)
- > 2mm BONE (extracted) Weight = 33g. Almost entirely large fragments of large, long bones (to 4cm in length). One very small humerus.
- > 2mm ROCKS Weight = 107g.
- > 1.18mm ROCK, BONE, WOOD, REMAINS (not separated) Weight = 22.4g. Mostly rock, some pieces of both large and small bone and very little carbon (be it wood or other).
- > 500 μ REMAINS, ROCK, BONE, WOOD (not separated) Weight = 40.1g. Mostly rocks, some small and some large bones. Very little carbon (wood or whatever, it's too small to tell).
- < 500 μ REMAINS Weight = 115.7g. Looks to be mostly inorganic, mostly far too small to tell.

TOTAL SAMPLE WEIGHT = 328.9g.

PICKED SAMPLE WEIGHT = 37.9g.

Tecliomachay - Puna Site 12

Lot 26, Feature 1, 86cm (UM13)

Light Fraction:

- > 2mm WOOD (not extracted) Weight = 0.2g. Count: 37. Mostly small pieces, only 2-3mm across.
- > 2mm SEED (extracted) Weight = .43g. Count: 1. Unknown # 1983-53, is in process of identification.
- > 2mm BONE (extracted) Weight = 0.1g. Count: 3. Two fragments of large bones, one small, complete humerus.
- > 2mm LUMP (extracted) Weight = 0.05g. Carbonized plant material, too eroded to identify.
- > 2mm REMAINS Weight = 0.1g. Uncarbonized material.
- < 2mm WOOD, REMAINS (unsorted) Weight = 1.63g. Mostly wood.
- < 2mm SEED (extracted) Weight = 0.1g. Count: 1. Unknown #1983-53, in process of identification.
- < 2mm BONE (extracted) Count: 23. All small, complete (or nearly so) bones, including humeri, femur, mandible, vertebrae.

Heavy Fraction:

- > 2mm BONE, ROCK (not separated) Weight = 88.5g. Rock, and large fragments of large bones. No carbon.
- > 1.18mm BONE, ROCK (not separated) Weight = 17.4g. Rock, and fragments of large bones.
- > 500 μ BONE (extracted) Weight = .13g. Count: 36. Mostly complete small animal bones, including mandibles, humeri, vertebrae.
- > 500 μ ROCK Weight = 55.2g.
- < 500 μ REMAINS Weight = 83.1g. Silt sized particles, too small to distinguish whether organic or inorganic.

TOTAL SAMPLE WEIGHT = 246.26g.

PICKED SAMPLE WEIGHT = 3.75g.