Morphological analysis of Prehispanic lithics from La Pachona, Chontales, Nicaragua

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Cover image: Lithics from La Pachona, Nicaragua (Danny Pothuizen, 2016).

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1. INTRODUCTION

To contribute to the growing knowledge about archaeological sites in the Chontales region in Nicaragua, this research proposes different methods and techniques to analyze lithic assemblages, which can give information about human behavior in the past. A literature study on previous lithic studies in this region will be used to complement the proposed methodology and to provide more background information on this subject.

In the fieldwork season of 2015, at the site of La Pachona, a trench was excavated as part of a Ph.D. research by Roosmarie Vlaskamp. During the excavations, lithic material was retrieved from this trench. After the excavation, an analysis of the lithic material from a single unit of the trench was performed to gain more insights about the activities on the site La Pachona. However, due limited amount of time and unforeseen circumstances, the analysis could not be completed during the fieldwork season. The intention was to finish the analysis and use the results as a case study for this research. Unfortunately, due to problems with the permission of exporting the material out of Nicaragua, the analysis could not be completed. Therefore, the small amount of data that is analyzed will be used to demonstrate the potential of lithic analysis, which can be useful for further research in the Chontales region.

The studies that will be used to compare and complement the data were carried out by Gerstle (1976) and Rigat (1992). Both archaeologists conducted a study on the lithic materials from the Chontales region.

1.1 Research Objectives

The objective of this research is to explain and propose the different possibilities of lithic analysis and to provide a better understanding of lithic material in the Chontales region. This will include a general description of the various methods and techniques that can be used to retrieve information of lithic assemblages. A literature study will be carried out to give more background information on the lithic assemblage from La Pachona and complement the proposed methodology. Furthermore, this research emphasizes the need for more studies on lithic material in this region to produce inferences about the human behavior and their activities through lithic technology.

The recovery of these artefacts has allowed archaeologists to establish a better understanding of various aspects of past societies, including technological change, subsistence and economy, trade and exchange, raw material procurement, movement and settlement patterns, and even the evolution and development of human cognitive processes. The recovery of artefacts alone only tells us that people were present, not what they were doing. Through careful analysis, lithics can provide a whole range of information, including crucial dating evidence, what activities were undertaken on site, and raw material procurement (www.wa-archaeology.com).

1.2 Research problems

At present, most of the available information about Prehispanic Nicaraguan cultures derives from only one class of artefact, ceramics. Most analyses concentrate on the ceramic assemblages since these artefacts are used as chronological indicators for the time sequence constructed for Nicaraguan prehistory (Finlayson 1998, 1). In contrast, lithic artefacts are undervalued in Nicaraguan archaeological studies. As for the Chontales region, there is practically no information at all on chipped stone artefacts or chipping techniques used in this area (Strong 1948, 129 in Gerstle 1976, 7). This is probably due to biased recovery techniques of archaeologists rather than actual lack of chipped stone remains (Gerstle 1976, 7).

1.3 Research questions

Lithic analysis can be applied to various ends, although the approach here is to propose a methodology on how lithic analysis can give researchers valuable information about human behavior in the past.

The main research question is:

- *What methodology can be used to retrieve information of lithic material from the site La Pachona in the Chontales region?*

The following sub-questions are fundamental in attempting to answer that research question:

- *What methods can be used to identify the raw materials from a lithic assemblage?*
- *How can the data be recorded?*
- *Which attributes are useful for a lithic analysis?*
- *What methods can provide information about activities on a site?*

The other part of this research will deal with the previous studies on lithic material, which will be summarized, to provide fundamental knowledge about the lithic material in this region. This will lead to the secondary research question:

- *What is already written/studied about the lithic material from the site La Pachona in the Chontales region?*

Although, this question seems aberrant to the previous questions, the information that could be retrieved from previous studies could be very useful to complement the new proposed methodology.

2. BACKGROUND

2.1 Research region

Nicaragua is situated between the countries Honduras to the north and Costa Rica to the south. The Chontales region is one of the fifteen departments that Nicaragua has. The region is located on the eastern side of the largest freshwater lake in Central America called Lake Nicaragua which provides a means of transportation and a source of food for present day peoples (fig 1.). The capital city of this department is Juigalpa, which has nowadays a population of more than 70,000 people with its surrounding areas included. The city lies in the valley of a mountain range that forms the Central Nicaraguan region, which separates the Atlantic coast from the Pacific coast of the country (Vlaskamp 2014, 7). Most of the archaeological research on the material culture of this region correlate with studies in the Pacific region since this is the area where most of the archaeological research is conducted in Nicaragua.

Figure 1: Location of the Chontales Department (www.commons.wikimedia.org).

2.1.1 Geography of Chontales

The Central Nicaraguan landscape is not a homogenous ecological unit, but it is marked by a high degree of geographical diveristy (Geurds 2011, 4). The research area is located in a valley in the Amerrisque Mountains. These mountains contain a rich variety of flora and fauna due to their latitude and altitude. The viewpoints from the hills in this area provide an overview of almost the entire valley. This means that the Pre-Hispanic sites would have been visible from many locations and that regular contact between them should be assumed for this region (Vlaskamp 2014, 11). The sites that are studied in this research are located around the capital town Juigalpa. Rigat (1992, 11-18) gives a detailed description of the geology and geomorphology of this region. The shape of the landscape was formed in the late Oligocene, 25 million years ago, while most of the recent changes occurred during the Quaternary (2.58 Ma – now). The mountainous region contains volcanic igneous rocks like basalt, rhyolite, andesite and several types of chert, which are used as a material for artefacts that are encountered in the archaeological context. One of the most important rivers in this region is the Mayales River, which is connected to Lake Nicaragua. The river does not only provide fresh water but also contains chert pebbles which could have served as raw material for creating artefacts by the local inhabitants (fig. 2).

Figure 2: Chert cobbles from the Mayales River nearby the site La Pachona.

2.2 Previous research in Chontales

Archaeological research in Chontales is quite sparse, since the early 20th century only a handful of archaeologists conducted their studies in this region. The first research was done by David Sequiera in the 1930s, followed by Richard Magnus in the 1970's, Franck Gorin and Dominique Rigat in the 1980s, and most recent studies are done in the 21st century by Laura van Broekhoven and Alexander Geurds. The first archaeological studies have different complications since most of the studies remain unpublished and as a consequence of that, interpretations of the encountered material culture are missing. Another issue with earlier archaeological research is that it is focused on the research paradigm on finding direct connections between the Prehispanic people from Nicaragua and the peoples from Meso- and South America; this approach left little room for studying local developments (Vlaskamp 2014, 12). Because of the limited scope of this research, this sub-chapter will only focus on the previous research that was conducted on the lithic material of this region.

In 1976 Andrea Gerstle analyzed lithic artefacts from the site Sabana Grande as part of her Master's thesis. It remains the most thorough lithic analysis for any site in Nicaragua (Lange et al. 1992, 172). The assemblage has been analyzed to (or "intending to") identifying patterns in tool manufacturing behavior and tool use. A behavioral model of tool manufacture was outlined and then tested and verified by a statistical analysis of complete debitage flakes. Tools were categorized by a microscopic examination of use-wear. From her use-wear analysis on the biface tools, she concluded that most of them were used as knives, and not as projectile points. Only one of them could have served as a projectile point, probably a spear point (ibid.). As a result of her analysis, she proposed that the inhabitants of Sabana Grande were, at least, semi-sedentary agriculturalists. The recovery of large amounts of ceramics and the presence of architectural remains on the site corroborates this conclusion (Gerstle 1976, 63).

In 1983, a survey was conducted in several zones in Nicaragua (fig.3) by Frederick W. Lange and Payson D. Sheets. The zones contain similar ecological systems with only some minor differences among them and are likewise to represent ethnically separated socio-political units with fluctuating boundaries through time (Lange et al. 1992). All the zones are considered to be part of Pacific Nicaragua. Zone 4 is located on the east side of Lake Nicaragua, where five sites were surveyed near the town of Juigalpa, in the department of Chontales. This research resulted in a book titled *Archaeology of Pacific Nicaragua* (Lange et al, 1992). Lange et al. (1992) describe that this zone has virtually no obsidian, which is supported by the analysis of Gerstle (1976). The lack of obsidian may be explained by cultural preference and technological experience (Lange et al. 1992, 160). The tool set they encountered mainly consisted out of bifacial knives or spear points, thick ovate bifaces, and scrapers. Compared to the other zones that were surveyed, much andesite was flaked into axes or wedges. Andesite is the toughest of the available material in western Nicaragua, and would have been favored for the severest pounding-wedging-chopping uses (Lange et al. 1992, 159).

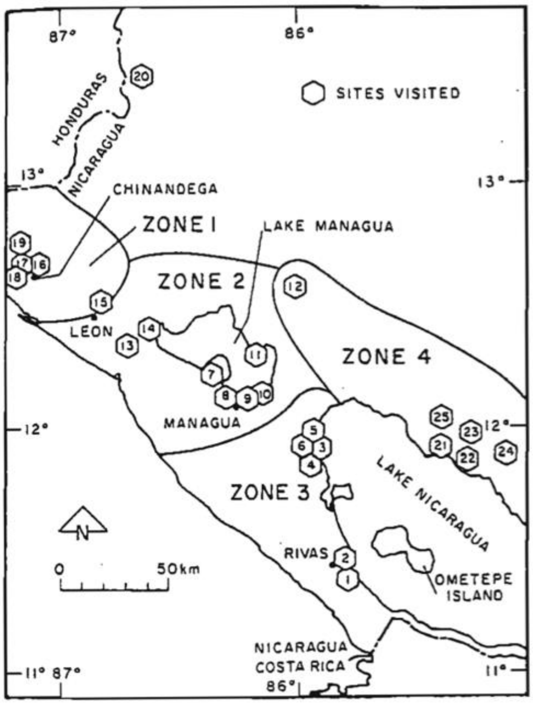

Figure 3: Lithic zones of Pacific Nicaragua (Lange et al. 1992, 161).

In the 1980s Dominique Rigat and Franck Gorin started their research in the Chontales region. They did some small excavations and several regional surveys at different sites in the area. During the systematic surveys, they collected the surface materials and noted the archaeological remains they found at the sites. The sites were interpreted in two categories: sites with visible architecture were construed as permanent settlements, and sites without visible architecture were interpreted as temporary camps (Gorin 1989, 136). However, this hypothesis was not further explored (Vlaskamp 2014, 19). The sites, El Cóbano, La Pachona, El Tamarindo and San Jacinto, were investigated with test pits and stratigraphic excavations. As a result of this, a chronological ceramic sequence for Central Nicaragua (tab. 1) was made by Gorin (1990). Rigat who analyzed the lithic artefacts concluded that the cores from both the Mayales phases are much smaller than the later phases, although, the samples from these two phases are so little there is no real certainty about this. Furthermore, the presence of bifacial tools and ground stone tools could indicate the presence of agricultural activities (Rigat 1992, 408). Overall the lithic assemblage does not show any substantial differences or variation over time in the region. Except for the Cuapa phase (A.D. 1400 - 1600), where there is an absence of bifacial tools. This sudden change in combination with the absence Greater Nicoya ceramic material could correspond with the idea that a well-organized group of Matagalpa speakers invaded the Chontales region (Rigat 1992, 408).

Greater Nicoya	Date	Central Nicaragua	Date
Ometepe	A.D. 1350 – 1550	Cuapa	A.D. 1400 – 1600
Sapoá	A.D. 800 – 1350	Monota	A.D. 1200 – 1500
		Potrero	A.D. 800 – 1200
Bagaces	A.D. 300 – 800	Cuisalá	A.D. 400 – 800
Tempisque	500 B.C. – A.D. 300	Mayales II	200 B.C. – A.D. 400
		Mayales I	500 – 200 B.C.
Orosí	2000 – 500 B.C.		

Table 1: Ceramic Sequence of Great Nicoya area and Central Nicaragua (based on Vázquez et al. 1994, 248; Gorin 1990 in Geurds 2013 with modifications).

2.3 Current research

During the field season of 2015, archaeological investigations at the site of La Pachona took place between the 10th of June and the 8th of August. The excavations are part of the *Proyecto Arquelogico Centro de Nicaragua,* which is led by Dr. Alexander Geurds. The goal of the investigations at this site is to form a better understanding of its spatial development through time. More specifically, the excavations are aimed to understand how the mounds were used and constructed and the different areas around the mounds. The material that will be utilized in this research is retrieved from a trench measuring 5x1 meters, which was placed on the edge of an open area in between the mounds. The location of the trench was chosen in order to investigate if there is a difference in use between that open area and the spaces between the mounds. One of the research goals for the lithic analysis is to gain a better understanding of the change of practices through time at the site of La Pachona.

3. LITERATURE REVIEW

This chapter will provide a summary of the site La Pachona, since the analyzed data in Chapter 5 was retrieved from this specific site. Not all of the data from the previous studies in this region has been taken into account, due the fact that this research mainly focus itself on the lithic assemblage from the site La Pachona.

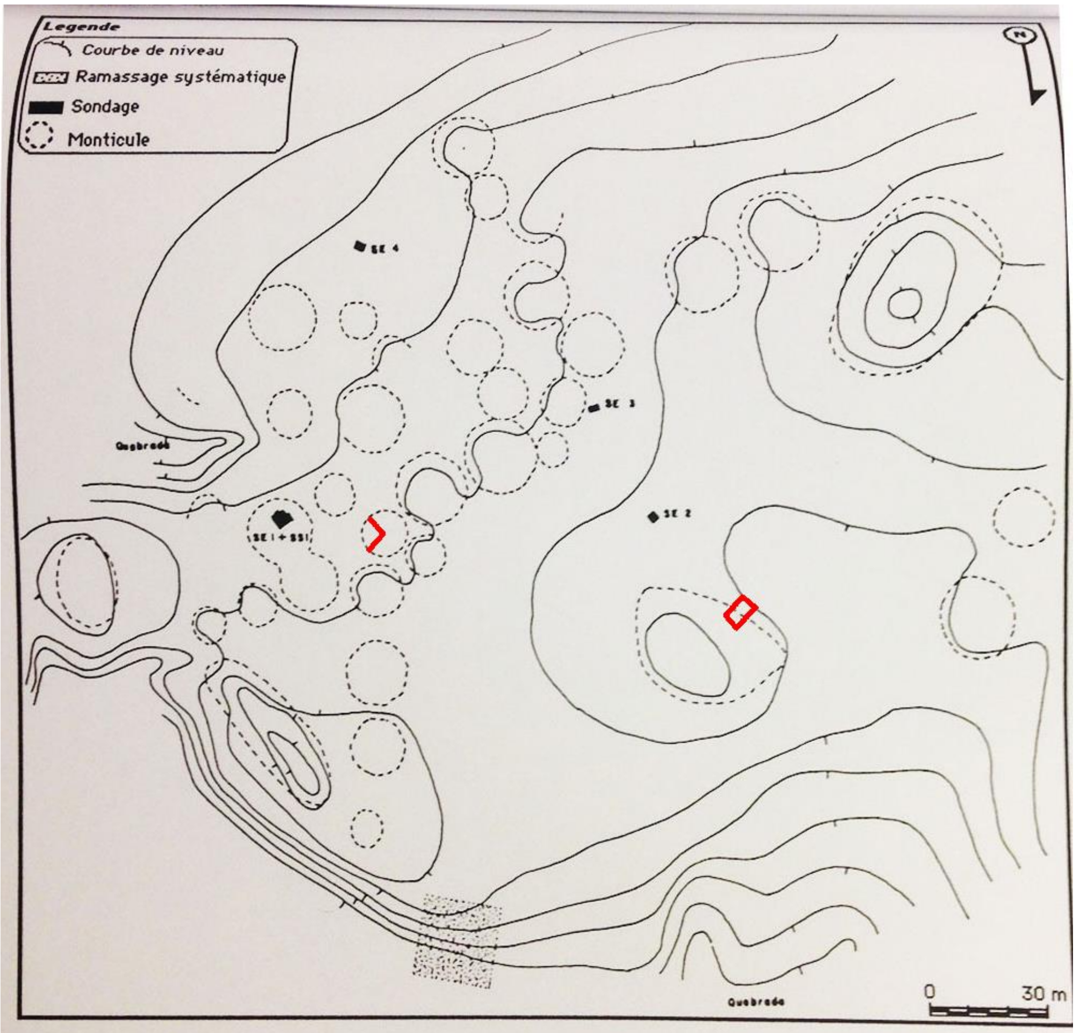

Figure 4: Map of La Pachona with the excavations of the fieldwork season 2015 in red (Rigat 1992, 94 with modifications)

3.1 La Pachona

The site of La Pachona (fig. 4) is located south of the town Juigalpa and covers an area of 4 hectares. Around 30 to 36 mounds have been mapped by Gorin (1989) and Rigat (1992). Due to the high density of surface material in combination with a lot of mounds, the site has been identified as a permanent habitation site (Rigat 1992, 61). A systematic survey, together with multiple excavations have been carried out by Gorin and Rigat.

Survey results

As a result of a survey, a total of 9572 lithics and 1462 ceramic sherds were collected and analyzed (Rigat 1992, 61). Most of the materials were encountered in the eastern part of the site, where the surface level drops and material is easily washed down the slope (Vlaskamp 2014, 77). The lithics and ceramics that were collected from the surface are dated to the Monota phase (A.D. 1200 - 1500) with the help of the ceramic sequence made by Gorin (1990). A broad variety of tools were encountered which could indicate that multiple activities were being carried out on the site during that period. A table with different tools and lithic industries that were classified by Rigat (1992) can be found in Appendix 2. The high amount of biface industry tools together with the ground stone artefacts is remarkable, as no other site has yielded that many types of lithic material in the region.

Excavation results

Multiple test pits were excavated to verify the depth of the ceramic deposits, and several stone piles were excavated to test if they indicate burials (Rigat 1992, 95). Only one test pit (SE1) was excavated on a mound, and this pit has been expanded with a stratigraphic excavation (SS1) due to the encounter of human remains.

Excavation SE1 and SS1

Test pit (SE1) measured 1x1 meter and was placed on a mound in the eastern part of the site. This pit was extended because 70 centimeters below the surface human remains were encountered. This discovery led to an expansion of the test pit with the stratigraphic excavation SS1. The final size of the pit was around 12,8m^3 (Rigat 1992, 95). A layer of bedrock turned up at a varying depth between 1,6 to 1,83 meter. Five different layers of soil were encountered in the mound while the upper four layers of soil contained the burials and a specific assemblage of materials while the lowest layer contained a different ceramic assemblage (Vlaskamp 2014, 78). The material was collected in artificial levels of 20 centimeters. The lower levels (7,8,9) contained material from the Mayales I (500 – 200 B.C.) and II (200 B.C. – A.D. 400) phase, however, a carbon-14 date from level 8 shows a non-corresponding date (A.D. 1190 +/- 135). This sample is interpreted as being intrusive or contaminated due to their inconsistency with the ceramic sequence (Gorin 1989). The upper six levels (1 - 6) from the pit contained material from the Monota phase (A.D. 1200 - 1500), although the carbon-14 dating shows that level 6 is dated to A.D. 865 +/- 185, and level 1 is dated to A.D. 1485 +/- 140 (Gorin, 1989). The ceramic material from the pit indicates that there is a large occupation gap of 800 years on this site. However, the carbon-14 dating shows something different. Therefore, it is questionable if the ceramic sequence by Gorin (1989) is correct or that the Carbon-14 dates are invalid. The lithic material indicates that there are some differences between the two periods. The cores from the Mayales I and II phases are much smaller than the cores from the later Monota phase, and also, the use of different raw material also indicates some differences between the phases (Rigat 1992, 128). A total of 12.191 lithic artefacts were retrieved from this pit. The high amount of tools (Appendix 2) recovered from this mound could give some interpretations for the activities that were performed on or around this mound.

Test pits (SE2, 3 and 4)

The 3 test pits were all excavated to investigate if the piles of rock could be used to mark burials (Rigat 1992, 97). No burials were encountered, only ceramics, lithics, and some animal bones. The lithic material from these pits contains a small amount of tools (Appendix 2) and 285 debitage artefacts. Furthermore, no extra information is given on the lithic assemblage of these test pits, except for that the material is dated to the Monota phase (A.D. 1200 - 1550) (Gorin 1989).

3.2 Discussion

The literature study has given more insights into the lithic assemblage from La Pachona, although the original data set lacks valuable information. First of all, Rigat (1992) his study is quite comprehensive, but it also shows some minor problems. The typology that is used to classify the different lithic tools is based on the typology that is employed in North-West Europe except for the classification of the lithic points which are compared with lithic tools from Central America. The extent to which this is a good method for classifying the tools is debatable, it is not likely that the prehistoric people in Nicaragua used the same toolset as the prehistoric people from North-West Europe. Another issue is the lack of data from the debitage category, an analysis on the debitage could give more information about quarrying activities, tool manufacturing and other activities that were performed on the site. Leaving out the debitage analysis is presumably done due to the large amount of lithics that were retrieved. Furthermore, the study lacks a detailed documentation and analysis of the artefacts, but it can still be used to give more information about the site. The site La Pachona is classified as a permanent habitation site, but variations can be seen within the lithic assemblages of other permanent habitation sites in the region such as El Cóbano, El Tamarindo and San Jacinto (Rigat 1992). La Pachona and El Cóbano contained much lithic material on both the surface and sub-surface while the sites El Tamarindo and San Jacinto contains a considerably lower amount of lithics. The largest amount of surface material was encountered at La Pachona, with a significant amount of biface blanks and bifacial tools. This could suggest that much bifacial tool manufacturing occurred at the site. The high amount of surface material could also indicate that the residents of La Pachona left the site in a hurry. It can be speculated on for what reason the site was abandoned, some suggestions are an enemy invasion, an outbreak of a disease or a natural disaster. The site of El Cóbano contains an extensive toolset which shares some similarities to the one of La Pachona (Rigat 1992). In one of the excavated pits Rigat encountered a so-called lithic workshop based on a significant amount of lithics (Rigat 1992, 92). The definition of the term lithic workshop is debatable in this context since a total amount of 5.056 ceramic sherds were also retrieved from this pit (Gorin 1989, 199). If this area at the site was indeed a lithic workshop why are there so many ceramic sherds in this area? The logical explanation would be that this area is not a lithic workshop but a workshop dump, a place where craftsmen dumped their trash such as lithic and ceramic waste products (Moholy-Nagy 1990). This high concentration of lithic and ceramic material is also found in the excavated trench at La Pachona during the fieldwork season of 2015. A possible suggestion is that this area could also have functioned as a dump for waste products such as lithic debitage and broken ceramic vessels. La Pachona contains many indicators of human activity. Therefore, it is likely that this site is a permanent habitation site were Prehispanic people practiced different activities.

4. METHODOLOGY

This chapter will discuss and propose the methodology that can be used to analyse lithic assemblages. As a general introduction to lithic studies, a detailed description of the flaking technology and classification will be given, to provide a better understanding of some terms that are used in this research.

4.1 Flaking technology

The first step of manufacturing a lithic tool starts with the acquisition of a suitable raw material like chert or flint. The raw material is often shaped into a core to create flake tools or a blank, which will be later modified into a specific type of tool. Flakes are removed from the material with the help of different techniques, direct percussion with a hard or soft hammer, bipolar percussion, or indirect percussion (fig. 5). Percussion flaking is the removal of a flake by striking the core with a hard or soft hammer. Hard hammers can be cobbles or pebbles, which are called hammer stones, and soft hammers may be made out of bone, antler, or wood. In bipolar percussion, the core is placed on an anvil or hard surface and struck from above with a hard hammer (Goodyear 1993). Bipolar flakes may appear with two points of applied force such as two bulbs of force. Indirect percussion is where a soft hammer is used to strike a punch that is placed on the surface of the core. The steps involved in the manufacture of expedient flakes are very simple and do not require exceptional skill or extreme cognitive planning (Parry and Kelly 1987, 299 in Finlayson 1998, 37). The flakes can be used in a variety of tasks with little or no modification; this modification is called retouch. Retouch will produce scars on the edge of the flake to make it into a functional tool, or to reshape a used tool. This effect is carried out by striking the edge with a hammer, or by pressure flaking. Pressure flaking is the removal of a flake or chip by applying pressure to the objective piece without striking (Andrefsky 1998, 12). When the cores cannot produce any more functional flakes, it is exhausted, and at this stage, it can also be modified into a tool. The process of manufacturing a tool produces much debitage, which may consist of whole flakes, broken pieces of flakes, and cultural shatter. The dimensions and characteristics of these flakes vary depending on the stage of modification (Gerstle 1976, 12). The first stage also known as the primary reduction stage produces large flakes with irregular shapes, and may have cortex on the dorsal surface. Later steps in the manufacturing process often produce smaller flakes with more dorsal scars and no cortex. By analysing the complete collection of debitage, cores and tools it is possible to reconstruct the manufacturing processes for the tools. Analysis of the debitage could provide some more insights into the activities that were performed on a site, for example, a high amount of primary flakes on a site indicates that raw materials were modified on site and not at a quarry or another source before they were transported to the site.

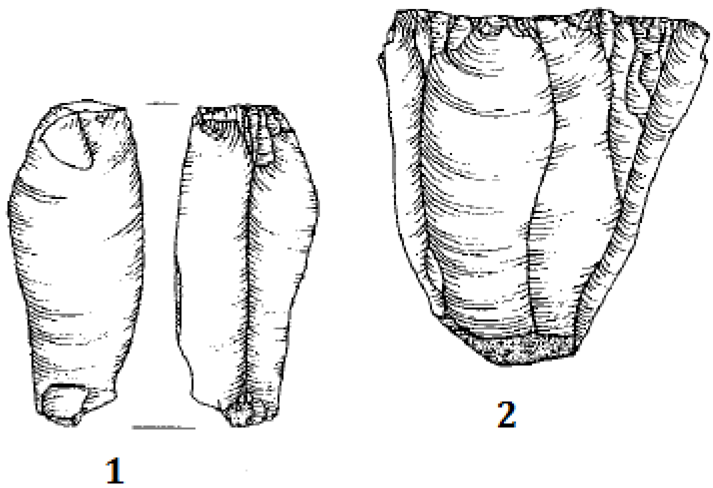

Figure 5: Flake (1) that is removed from the core (2), which is typical for the flake industry (based on Andrefsky 2005, 13 with modifications)

4.2 Classification of lithic industries and typologies

For this research, the lithic tools were divided into the following categories: flake industry (including cores), biface industry, and the ground-stone industry based on Rigat (1992) his classification. All of the non-tools artefacts (debitage) will be categorised as flakes and non-flakes (fig. 6). The term industry is defined as, "manufacturing or productive enterprise focusing on a raw material and involving certain common means of processing that material" (Sheets 1975, 372). As for the classification of the different tool types that are encountered in the Chontales region, a method is proposed to create a typology which is based on the results of the previous studies by Rigat (1992) and Gerstle (1976). A lot of different tools are encountered throughout the region. Rigat (1992) described an extensive tool set which is divided into various industries. As discussed in Chapter 3.2 most of his typologies are based on the European lithic assemblages and morphological characteristics. Therefore, the results are not very reliable. This can be seen in the study of Gerstle (1976) where she concluded that certain tool types could be used for multiple activities (multi-tools). For this reason, it is difficult to categorize tools into different typologies based on visual appearance. This is especially the case with the thin biface tools, based on their appearance most of them look like spearheads, projectile points or other point types, but as shown in Gerstle (1976) her study most of them were used as knives or saws. As a result of this, I want to propose to classify the tools based on their function with the help of use-wear analysis instead of looking at the morphological characteristics. This can only be achieved by recording and analysing the attributes explained in chapter 4.7. Further studies are required to create a typology of the different tools in the region.

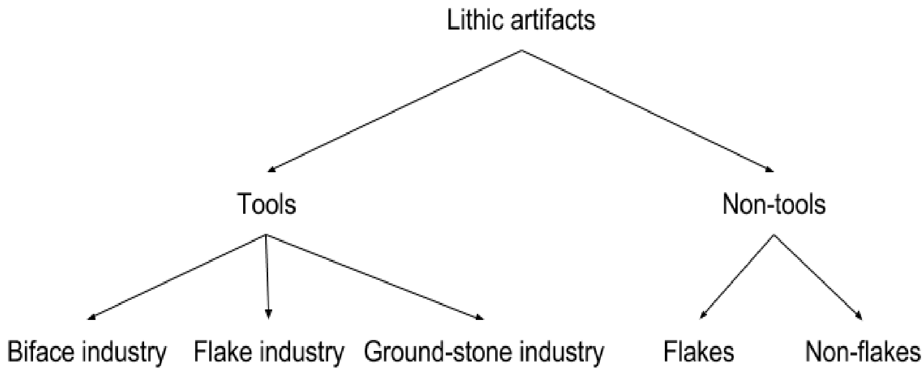

Figure 6: Lithic classification scheme.

4.3 Raw material classification

Lithic raw material identification by the archaeological community is poorly developed, as a result of the lack of consistent lithic material definitions used by geologists and archaeologists, and due to the different variations of terms of terminology (Luedtke 1994, 13-15; Luedtke 1992, 5 in Andrefsky 2005, 41). The raw material classification in the Chontales region is very unclear, as different studies provide different names for the type of rocks. There are two basic categories in the area; cryptocrystalline silicates and igneous or volcanic rocks. Cryptocrystalline Silica is a stone composed of extremely fine silica crystals and is known by a variety of different names. It is probably one of the most frequently used raw material for the production of chipped stone tools (Andrefsky 2001, 53). The problem for this region is that this specific type of raw material has been called chalcedony, chert, jasper, porphyry, petrified wood and opal (Gerstle 1796; Lange *et al.* 1992; Rigat 1992). There is no clear distinction made by previous studies, Rigat identified more than 90% of the material as chalcedony, while Gerstle classified more than 90% of the material as chert. The scheme in figure 7 provides a better understanding of the classification of the silica group. However, the differences between the raw materials are difficult to recognise with an isolated rock specimen like the artefacts from the assemblage. The problem with raw material classification also occurs with the volcanic igneous rocks. Rigat (1992) and Gerstle (1976) identified only basalt as a volcanic igneous rock, although Lange *et al.* use the term andesite to classify this type of rock. Both types of raw material occur in the Chontales region due to the presence of volcanic igneous rocks in the mountains.

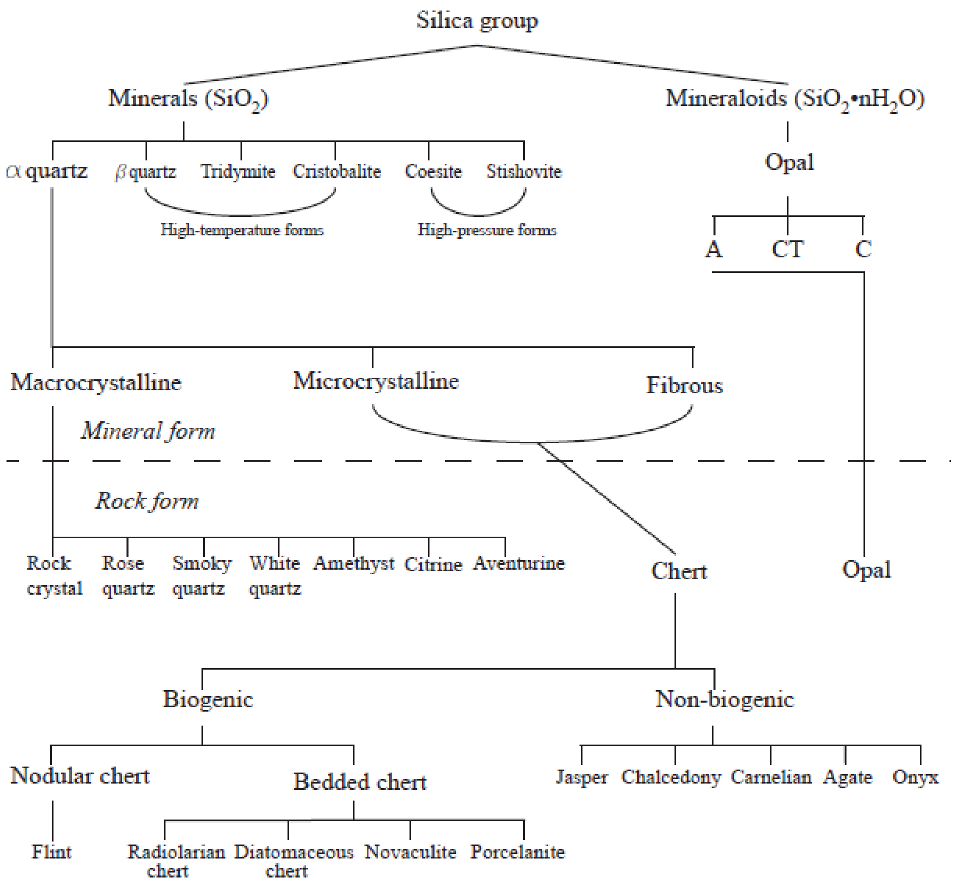

Figure 7: Varieties of silica minerals (based on Leudkte 1992 with modifications by Knippenberg 2006, 32).

4.3.1 Raw material definitions

For the analysis, the term chert is used for all the varieties of fine crystalline siliceous rock, and chalcedony is used for all the translucent silica varieties. Raw materials like jasper will be defined as chert since the classification is based on visual appearance and without chemical or physical analyses it is challenging to define the classification in more subdivisions. Both raw materials have a conchoidal fracture which is ideal for making stone tools. Chert occurs in a range of colours and textures which are influenced by the trace elements and impurities. The texture is overall very smooth compared to clastic rocks. The material is homogeneous and individual crystals are not visible without a microscope. Chert is formed in deep-sea environments and often occurs as nodules or bubbles in a parent rock. Although Luedtke (1992 in Andresfky 2001, 55) discusses the formation of different sources of chert, she claims that chert is not only formed in a deep-sea environment, but also in shallow waters, and may form as an indirect result of volcanic activity.

Igneous rocks can be classified by characteristics of texture, composition, and colour. The problem with the classification of igneous rock material is that most of the retrieved artefacts from the assemblages have a layer of patina on them due to weathering. This layer of patina has changed the colour of the raw material, which makes it difficult to classify the material. Most of the igneous rock artefacts have aphanitic texture (fine-grained) which can be classified as rhyolite, andesite, or basalt. One of the differences between them lies within the colour range; rhyolite appears to be the lightest, and basalt is the darkest of them. The mineral composition of these rock types can only be seen with a microscope, due to the microcrystalline structure. Since the first determinations are based on visual appearance, colour is the only attribute which can be used to classify the material. The term igneous rock will be utilized for rhyolite, andesite, and basalt. Other raw materials that are encountered in this region are quartz, petrified wood, and obsidian. Since these raw materials have their clear characteristics, it is not difficult to classify them under the correct name.

4.3.2 Future research on raw materials

As stated in the previous sub-chapters classification of raw materials is problematic in this region. No consistent terminology has been used in previous studies and therefore it is difficult to compare the datasets based on raw materials. Most archaeologists only analyse the technological features of the artefact instead of looking at the colour, texture and composition of the material. These characteristics can give relevant information on provenance studies and should always be recorded for future studies on the lithic material. With the help of a USB-microscope different raw materials could not only be analysed but also recorded via an image (fig. 8) which can be used to create a raw material profile for each site. With the help of a database, these images could be saved together with other information like the hardness and colour of the material. The images could be sent to geologists to identify the raw materials to create a correct terminology. The profiles of different raw materials could then be compared with other site profiles with a view to see if the same material is used. This way it is also possible to test if the chert that is encountered around Managua and Santa Isabel comes from the Chontales region (Lange 1997 in Finlayson 1998, 45; McCafferty 2010, 9). Since this research is complex and time-consuming, it should be approached as a research project on itself to create an extensive database which can be used for different regions in Nicaragua.

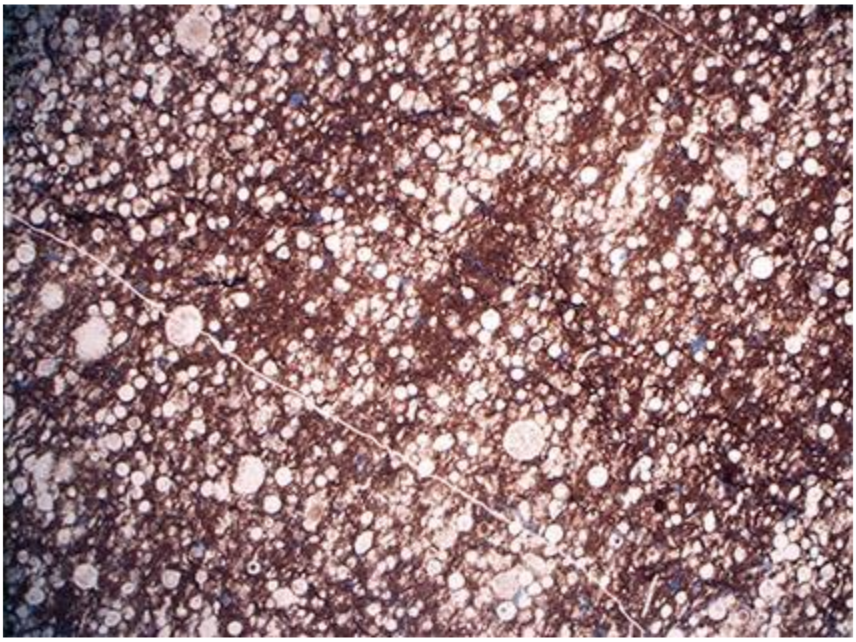

Figure 8: Example of a microscopic image on red chert PPL x 100 (http://www.ucl.ac.uk)

4.4 Sampling strategy

Since the sampling has been carried out during the fieldwork, I will provide a detailed description of the strategy that is used to reduce the size of the lithic assemblage. The assemblage from the site La Pachona was first divided into several categories based on the different characteristics of the lithic artefacts. The first category is called debitage or non-tools, which is subdivided into complete flakes, broken flakes, and unidentified fragments. The other category contains tools, pre-forms/blanks, and cores. Complete flakes are flakes with a proximal, medial, and distal end together with the presence of a striking platform and a bulb of force (fig. 9). Broken flakes are flakes that are missing one or more parts of the proximal, medial, or distal end, but still possess enough identifiable elements to classify it as a flake. The unidentified fragments do not possess any evident flake characteristics to identify the fragment. This category is also seen in others studies as being referred to cultural shatter.

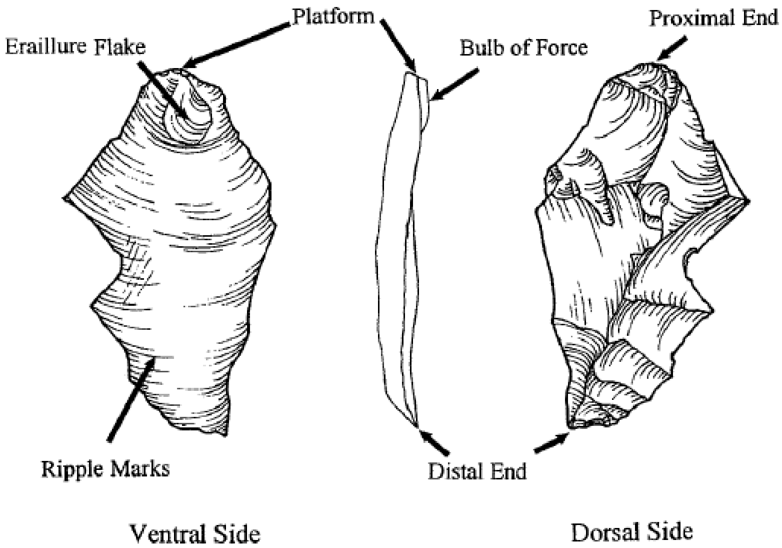

Figure 9: Complete flake with common elements and terminology (Andrefsky 2005, 19).

All of the lithic artefacts were counted per excavation level (10cm), and per category to create a sampling strategy due to the large quantity of the assemblage. The results were recorded into a Microsoft Excel file called ''Lithic amount table" (Appendix 3). All of the six excavated levels were included in the sample to investigate if there are any notable changes within the lithic assemblage from the different excavation levels. After the complete assemblage was counted and sorted, a sampling strategy was made based on the limited amount of time. Since the unidentified fragments or cultural shatter can only give a slight amount of information, it was decided to leave that category out of the sample. Only 20% of the total of 2457 broken flakes were included in the sample since this category also provides little information. All of the complete flakes and all of the category tools/preforms/cores were included in the sample since this category provides the most valuable information. The total sample size is 917 artefacts which is

11,7% of the total amount of 7818 artefacts. This sampling strategy only applies to this unit since other units, and excavations will probably yield a different quantity of material of categories. This method shows that some of the proposed categories can be left out of the analysis or can be sampled in lower numbers since the information that can be derived from them is very limited.

4.5 The database

During the fieldwork season, a database was created in Microsoft Access to record all the data from the lithic sample. This database was based on the one that the Laboratory for Artefact Studies of the Faculty of Archaeology at Leiden University uses. Modifications were made to the database to adapt to the lithic assemblage. A lithic sample should never adjust to the database, but the database should adapt to the sample. The results of the analysis can be found in Chapter 5 are based on this database. As a result of the literature study, a new and more complete database (fig. 10) was created to give information about the activities and practices performed on a specific site. Besides all the attributes which will be discussed in the next sub-chapter, there are also some fields which provide general information about the excavation like the site name, unit number, level number, etcetera. There is also room for remarks since specific artefacts could contain useful information which is not specified by an attribute. A list of all the input fields with the codes linked to it can be found in Appendix 1. One of the advantages of this database is that it can easily be modified. The input fields could be added or removed without creating a whole new database. Microsoft Access saves every data entry as a record which can be exported into a Microsoft Excel file (Appendix 4) or an SPSS file for further statistical analysis.

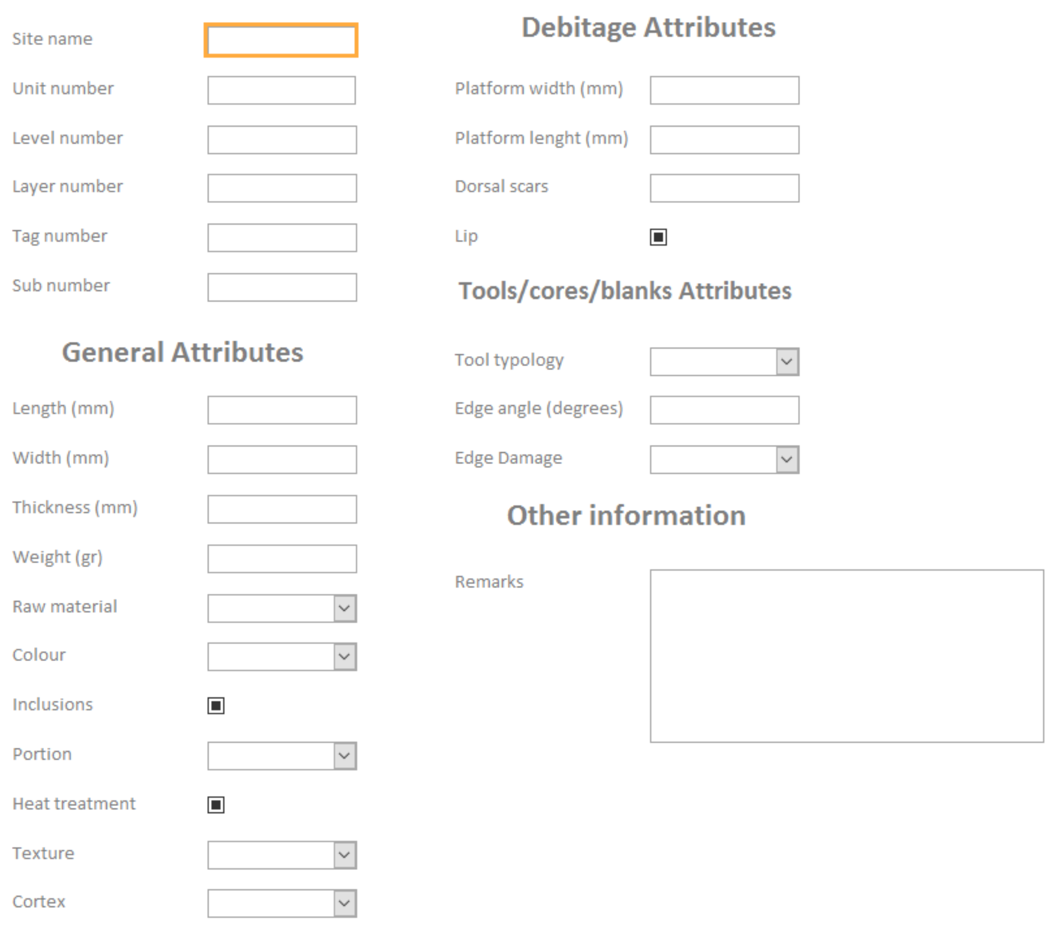

Figure 10: Screenshot of the lithic database input screen

4.6 Attribute analysis

The attributes that can be recorded on lithic artefacts often depends on the research questions by the archaeologist. The number of attributes that can be recorded is almost endless, and a selection have to be made which are believed to be relevant for the research. Some of the described attributes have been registered during the fieldwork season while other were added afterwards due to new insights based on the literature study. Therefore, not all the attributes that are described in this chapter are processed into the analysis in Chapter 5.

4.6.1 Attributes for all artefacts

Size

This attribute can be divided into three different attributes: length, width, and thickness. All of the variables are measured in 0,1 millimetres with a digital calliper to get a better accuracy for later analysis. As for the debitage, these attributes can help to determine the stage of reduction in tool manufacturing, since the flakes will become progressively smaller in later stages of reduction (Andrefsky 2001, 3). The length can be measured in a straight line from the proximal to the distal end for complete flakes and complete tools. The width of an artefact can be measured as a straight line distance perpendicular to the flake length line, or measure the maximum width (Andrefsky 2001, 99). I prefer to use the maximum width of an artefact to make the measurements quite consistently. The thickness can be measured in the same manner as the width; the maximum thickness can be measured to create consistent results. Some researchers measure the thickness at the bulb of percussion of flakes to determine the type of technology used to detach the flake (Andrefsky 2001, 101). As for this research, another attribute was used to retrieve more information about the type of technology (see: Lip attribute). The size of raw materials has been shown to be an important factor related to the kind of technology by prehistoric tools makers (Bar-Yosef 1991; Dibble 1991; Kuhn 1992; Lothrop 1989 in Andrefsky 2005, 151). It is important to measure the size of every artefact except for shatter and broken flakes since these two categories provide only a limited amount of information.

Weight

The weight of all the artefacts is recorded in 0,1 grams using a digital scale for a better accuracy. The weight attribute can be recorded to verify the weight of lithics before and after the analysis. This method was used to check if nothing went missing during the analysis. Before sorting and counting every bag was carefully weighed on a scale and the weight was noted in the lithic amount table for verification. After the analysis, the bag was being weighed once more to see if the weight is still the same. To check if every artefact was analysed the individual weight of every artefact was being summed up to check on the total weight of the bag.

Raw material

The raw material categories included the different materials related to previous studies by Gerstle (1976) and Rigat (1992). As discussed in chapter 4.1 the identification is problematic in this region. Therefore, this attribute must be used with caution. As I proposed before, the terms chert, chalcedony, and igneous rock can be used if they are carefully described. Analysis of the raw material attribute can give interpretations about the preferred raw material for certain tool types or the availably of raw material sources, and also observe if there are any non-local materials are found within the assemblage which can be linked to trade networks.

Colour

This attribute can give indications that different colours within the assemblage may represent different sources locations of the raw materials. To do so, a Munsell Soil Color Chart can be used to determine the colour of the lithic material. The analysis of the colour attribute could provide information if the sources of raw material are changed over time by analysing the different variations of colour between the various excavated levels.

Inclusions

By recording the absence or presence of mineral conclusions within the material, general conclusions could be made about the quality of the materials on a site. Mineral inclusions within the raw material could make the material more brittle, and therefore, the quality will be lower than raw material without any inclusions.

Portion

This attribute refers to the part of the artefact that was recovered and is recorded for every single artefact. Previous studies have shown that the information which could be retrieved from this attribute gives little information on tool production or core reduction (Sullivan and Rozen 1985; Tomka 1989; Odell 1989 in Wambach 2014, 43). It can, however, provide information about the duration of the occupation on a site as a high proportion of broken tools may suggest long-term occupation (Wambach 2014, 36). Binford (1979) and Keeley (1982) support the idea that different portions of tools recovered from different areas may indicate differences in site activities (ibid.). It can be difficult for some tools to determine the proximal or distal end, which is why the term fragmented should be used for all broken tools. For the debitage, some factors can cause a flake to break including trampling and other post-depositional processes. Therefore, it is difficult to retrieve any conclusions from fragmented debitage artefacts.

Heat treatment

Heat treatment can be defined as the use of heat to modify the raw material. This process improves the fracture mechanics and control available to the knapper

(Mercieca 2000, 40). Identifying and recording the presence of heat treatment on raw material can give better insights in lithic reduction strategy since lower quality material can be heat treated to improve the flaking. Different experimental studies have identified common characteristics of heat treatment on chert. One of the features is a colour change which also have been tested and validated by an experiment during the fieldwork season (fig. 11). Other features are ripple marks, luster, the presence of potlids and excessive fracturing.

Figure 11: Colour changed from bright orange to red as a result of heat treatment.

Texture

The attribute texture can be recorded to gain more insight in the quality of the available raw materials. Although, it is subjective to identify the differences between a fine texture and a coarse texture. The finer the texture of the material the more predictable the fracture will be when force is applied to it (Sliva 1997, 14 in Wambach 2004, 40).

Cortex

The percentage of cortex on cores and tools can be useful in determining reduction efficiency in addition to determining tool expediency (Wambach 2014, 41). The presence or absence of cortex on debitage relates to the stage of reduction; it is likely that the presence of cortex on a flake results from early stage reduction. This attribute was not recorded for broken flakes, as the missing section may have cortex on it

(Sullivan and Rozen 1985, 756). From personal observations, it has to be noted that some of the chert cobbles that were retrieved from the Mayales River did not have any cortex on them. Instead, the edges were rounded by fluvial processes and the outside of the material differed slightly in colour than the inside. A few flakes of this type were recognized in the assemblage; I want to propose to identify these flakes also as primary reduction flakes, the same term that is used to determine flakes with cortex on them.

4.6.2 Attributes for debitage

Striking platform size

The striking platform morphology can indicate the type of force that was applied to remove a flake. The size of the platform is measured with a digital calliper in 0,1 mm. Both the width and thickness are recorded from complete, and proximal flakes. The striking platform size can be useful in determining the stage of reduction (Pokotyolo 1978). It has been shown that striking platform width and thickness are good overall discriminators of reduction trajectories (Odell 1989, 185).

Dorsal scars

Dorsal flake scars are the result of the removal of previous flakes before the objective piece (Andrefsky 2005, 106). The number of dorsal scars increases with the level of reduction, in other words, more dorsal scars will appear on an objective piece in later stages of reduction. Gerstle (1976) used this attribute of one of the factors to categorize the debitage into a flake typology. However, Andrefksy (2005, 107) argues that the amount of dorsal scars on an object can be influenced by the size of the material. Therefore, the dorsal scar count alone may not act as a tangible representation of reduction stage (Wambach 2014, 46). The dorsal scar count can be cross-referenced with for example the size of the flake to give a correct interpretation.

Lip

A lip (fig. 12) is a projection of the platform on the ventral face of a flake (Wambach 2014, 45). Lipping is caused by bending forces, which is the result of soft hammer percussion or pressure flaking (Andrefsky 2005, 118). The presence of a lip on a flake shows that a soft hammer is used which is often associated with the bifacial reduction and later stages of tool reduction. The presence or absence of a lip should be recorded for all complete and proximal flakes.

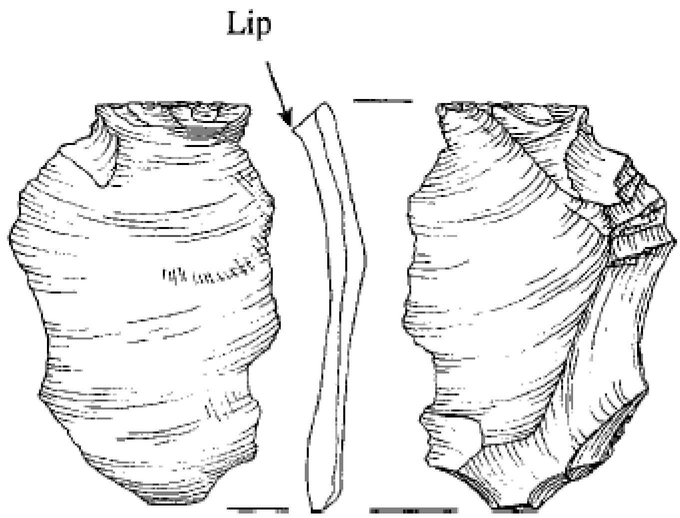

Figure 12: The location of the lip on a flake (Andrefsky 2005, 124 with modifications).

4.6.3 Attributes for tools, cores, and blanks/preforms

Tool Typology

Artefacts in this category can be identified based on shared morphological attributes. The category tools can be further categorized into the following specific categories: utilized flakes, retouched flakes, bifaces, celts, and ground stone tools. The category cores and blanks/preforms is divided into normal cores, blade cores, and blanks/preforms. With the help of the edge angle attribute these tools can be further categorized in specific tools such as knives, axes, scrapers, and multi-tools.

Edge angle

This attribute only applies to tools. It should be recorded with the use of a goniometer to obtain objective angle measurements. The edge angles of a tool can give information about the tasks that were carried out by the artefact. Tools with a more acute or sharp edge angle are more efficient for cutting soft material, as opposed to tools with a wider edge angle which can be pulled or pushed over a surface with little chance of destroying the worked material (Andrefsky 2005, 160). Gerstle (1976) created a table (tab. 2) with wear categories and tool uses based on the lithic assemblage from the site Sabana Grande. This table shows that the edge angle attribute together with edge damage could give information about the tool use which could be linked to the activities that were performed on a site.

Edge damage

The damage of the working edge is considered as essential for retrieving information about tool use. This attribute can be divided into five types of edge damage: unifacial edge scarring, bifacial edge scarring, edge attrition, edge impact fracture and battering (Gerstle 1976, 53). Edge damage can be identified by the use of a 10x hand lens. This attribute should only be used in combination with the edge angle attribute in order give any conclusions about tool use.

EDGE DAMAGE	EDGE ANGLE	USE	FREQUENCY
bifacial scarring	less than 52.5 degrees	cutting, sawing: resistant material	6
bifacial scarring	greater than 52.5 degrees	chopping, bi-directional scraping; resistant material	16
unifacial scarring	less than 57.5 degrees	adzing, planing, shaving resistant material	35
unifacial scarring	greater than 57.5 degrees	scraping; resistant material	28
attrition	less than 50 degrees	cutting, sawing soft material	15
attrition	greater than 50 degrees	scraping; soft material	17
impact fracture		chopping, wedging; resistant material	5
battering		pounding, very resistant material	5

Table 2: Wear categories and tool use (Gerstle 1976, 56).

5. Results

This chapter shows the results of the proposed methodologies from chapter 4. The data was recorded during the field season of 2015, and therefore, not all of the proposed attributes can be found in this chapter. Some additional attributes were later added to the methodology as a result of the literature study. Since the analysis could not be completed the results in this chapter should only be used as an example to show the possibilities of a lithic analysis.

Quantities

Of the total of 7.018 artefacts, a total of 317 were analysed and recorded. The largest part (88,96%) of the sample consists of flakes, and 9,46% were classified as blades (tab. 3). Three artefacts could not be identified, and one core, and a fragment of a ground stone tool were identified in the sample. These amounts and percentages could be compared to the different excavation levels (10cm) to see if there are any sudden changes which could indicate a shift in practice, especially if the assemblage contains a lot of tools.

Primary class	Amount	Percentage
Flakes	282	88,96%
Blades	30	9,46%
Unknown	3	0,95%
Cores	1	0,32%
Ground stone	1	0,32%
Total	**317**	**100,00%**

Table 3: Amount of different artefact classes

Portion

Of all the 317 artefacts the portion was recorded (fig. 13). Less than half (44,48%) of the sample are complete artefacts. If the artefacts were broken after deposition by for example trampling processes the amount of proximal and distal parts should be around the same amount. In this case, the number of proximal parts (32,81%) is three times higher than the distal parts (9,15%). This could probably be explained by the fact that distal parts of flakes are difficult to recognize for an untrained eye and that most of the time they will be classified as shatter/unidentified. The same goes for the medial part of flakes. In that way, it is better not to record the portion for flakes, but only for the category tools, cores, and blanks since no valuable information can be retrieved from flake portion in this case.

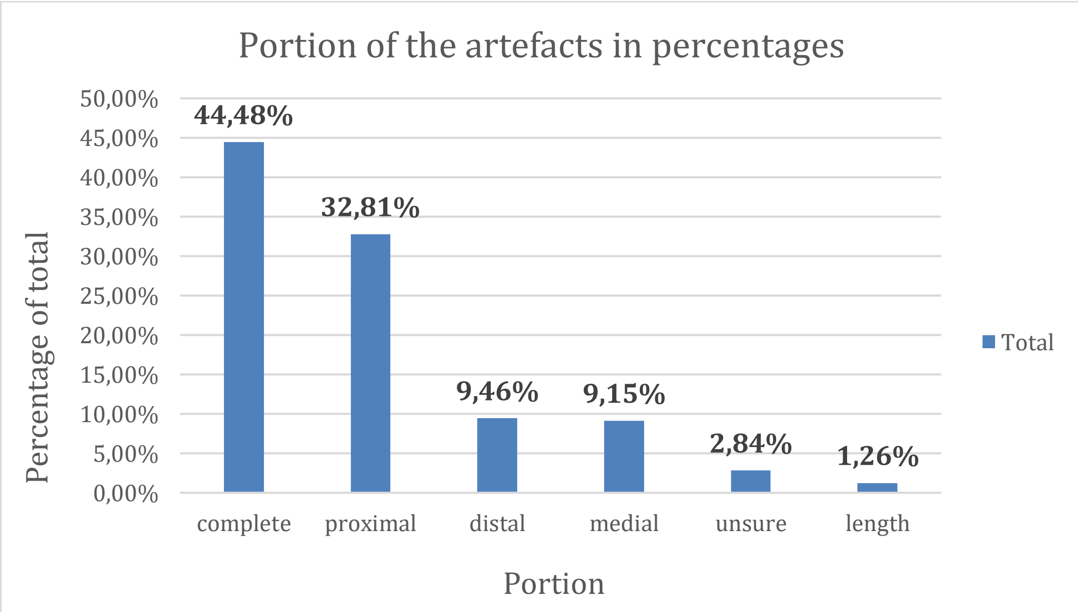

Figure 13: Portion of the artefacts in percentages.

Flake size

The length, width, and thickness of all the 57 complete flakes were recorded. The average, minimum and maximum size can be found in Table 4. These results could be calculated per excavation level (10cm) to compare them to see if there are any sudden changes which could indicate a shift in practice. Also, the size differences between sites or locations at the site could be investigated with these results.

Flake size	Average	Min.	Max.
Length	25,67	7,55	56,74
Width	22,27	7,98	54,21
Thickness	2,44	0,98	17,75

Table 4: Flake size measurements.

A scatter diagram (fig.14) was created from the length and width measurements to see if patterns could be recognized. The expected result was to see some clear clusters within this diagram that would represent primary and thinning/trimming flakes. The primary flakes are larger than thinning/trimming flakes, and the location of those flakes would be somewhere in the top right corner of the diagram. The thinning/trimming flakes would be smaller than the primary ones should be positioned in the bottom left corner of the chart. The diagram shows a large cluster of flakes in the bottom left corner and some flakes in the top right corners. This could indicate that a difference in flake types is seen in the diagram. However, any suggestions about the flake types based on the size only should be carefully made as more attributes are needed to strengthen any interpretation. The dense cluster of small flakes could also indicate that when creating a tool, the amount of thinning/trimming flakes is larger than the primary flakes.

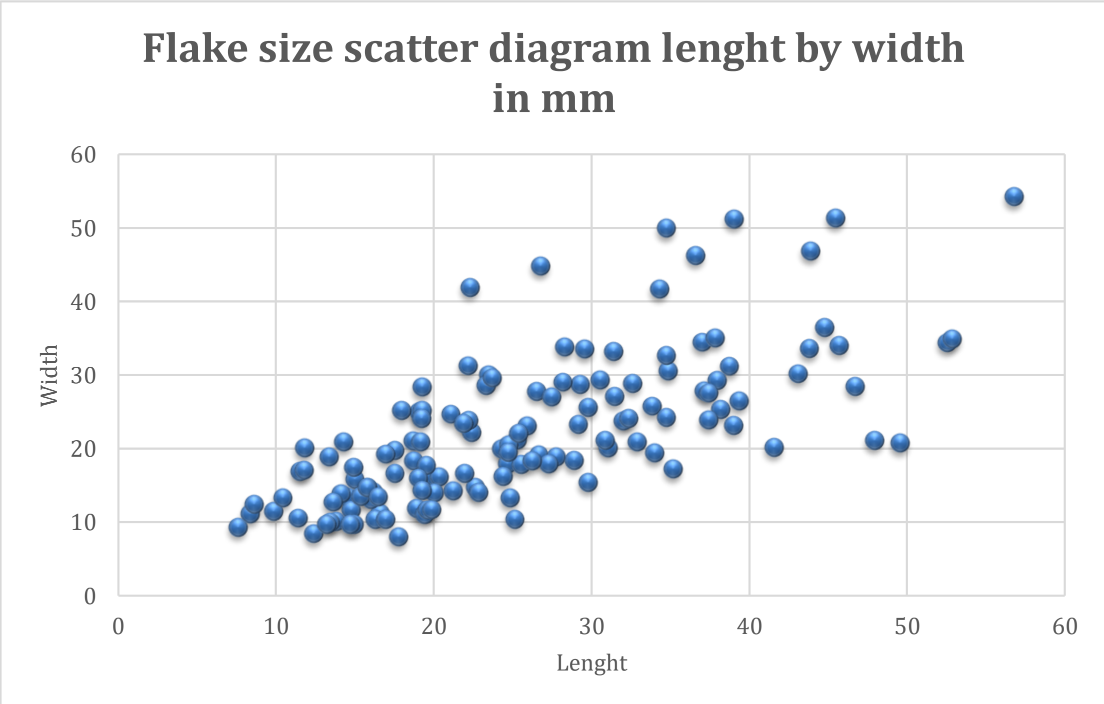

Figure 14: Scatter diagram flake size length by width.

Striking platform size

The length and width of the striking platforms were recorded of all the 245 complete proximal flakes/blades. From the data a scatter diagram (fig. 15) was created to identify patterns in clusters for the same reason as with the flake size. Larger striking platforms indicate primary flakes or early stages in tool manufacturing while smaller striking platforms represent trimming/thinning flakes from a later stage in tool manufacturing. The same cluster as with the flake size could be seen in the bottom left corner. There is a possible relation between the flake size and platform size. The average, minimum and maximum size could also be calculated for this attribute in order to compare different excavation levels (10 cm) with each other to see if there are sudden changes.

This diagram shows a cluster of small striking platforms which could represent the thinning/trimming flakes from the assemblage. While the flakes outside the cluster could represent the primary flakes.

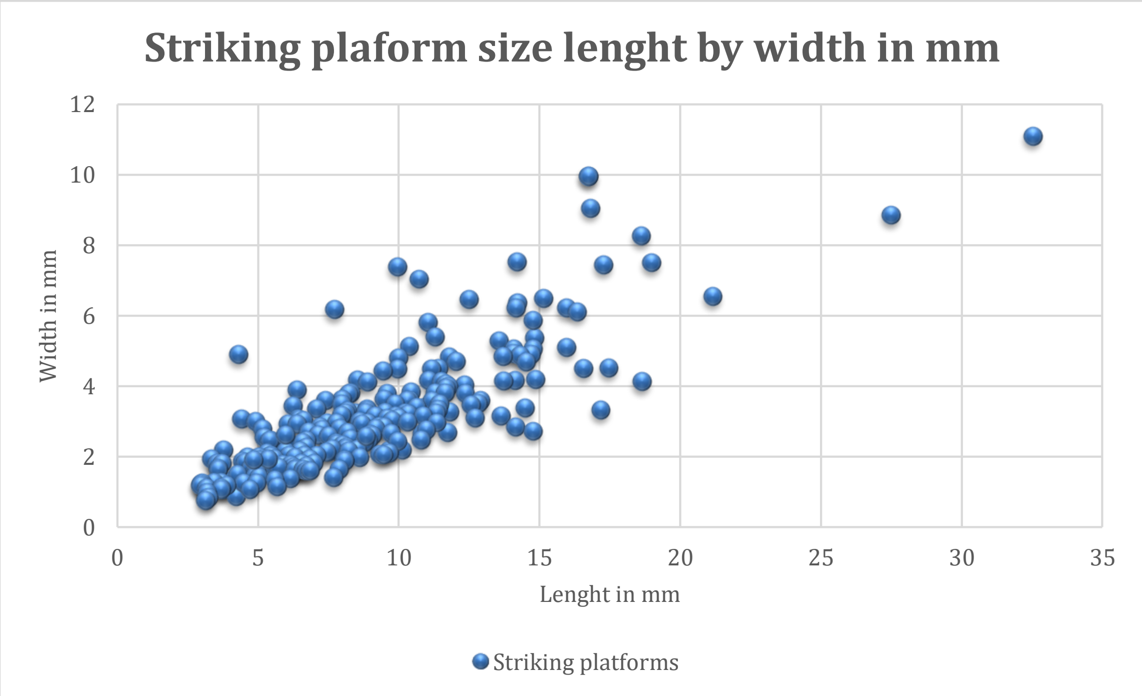

Figure 15: Striking platform size length by width in mm.

Cortex

The amount of cortex (tab. 5) was recorded for all 317 artefacts. More than 90% of the artefacts contained no cortex. The high percentage artefacts without cortex could indicate that the raw materials were already modified at another place as for example at the quarry. The means that the raw materials were stripped from their cortex and reduced in size to make the cores/blanks more suitable for transport to the site. The large quantity of biface blanks (Appendix 2) which were identified from the surface by Rigat (1992) could suggest that these were the products that were made at the quarry and at La Pachona they were manufactured into bifacial tools.

Amount of cortex	Percentage
Absent	92,97%
On dorsal less than 50%	3,83%
On dorsal more than 50%	1,60%
Platform/dorsal less than 50%	1,28%
Platform/dorsal more than 50%	0,32%
Total	**100,00%**

Table 5: Amount of cortex in percentages.

Heat treatment

Traces of heat treatment were recorded for all 317 artefacts. Table 6 shows that only 6,94% of the assemblage showed traces of heat treatment. This suggests that the quality of the material was high. This corresponds with the mention by Rigat (1992, 93) that the material of La Pachona is of high quality. Materials of lower qualities are usually treated with heat to increase the quality of the raw material.

Burned	Percentage
Yes	6,94%
No	93,06%
Total	**100,00%**

Table 6: Presence of heat treatment in percentages.

Raw materials

As stated in Chapter 4 the classification of raw materials is problematic in this region. The broad variety of raw materials makes it even more complicated. The classification of the raw materials from the assemblage has been simplified, and the different encountered materials can be seen in Table 7. The biggest part (91.80%) of the assemblage consist of chert type materials. Only one artefact has been classified as chalcedony, and 6,62% were classified as igneous rocks. For four artefacts no classification could be made, which often occurred with burned artefacts. Different tables could be made to compare the different excavation levels (10cm), to study any changes. More important is the correct classification of the raw materials so more useful interpretations could be made. The igneous rock artefacts could be debitage from creating the andesite axes/wedges which were described by Lange *et al. (1992, 152).*

Raw material	Amount	Percentage
Chert	291	91,80%
Igneous rock	21	6,62%
Unknown	4	1,26%
Chalcedony	1	0,32%
Grand Total	**317**	**100,00%**

Table 7: Amount of raw materials

Colour

The lithic sample showed a broad variety of colours (fig. 16). More than nine colours were encountered in different varieties of saturation. Yellow was the most common colour in the assemblage followed by brown and white. As with most other attributes these results could be calculated per excavation level (10cm) to study any changes in practices. The colours yellow and red are both very common colours for jasper. Since it was decided to classify most of the siliceous minerals as chert or chalcedony, this result could still suggest that the assemblage also contained some jasper. The preference for certain colours shows that they may have a better quality of other colours, or the source was easier to access.

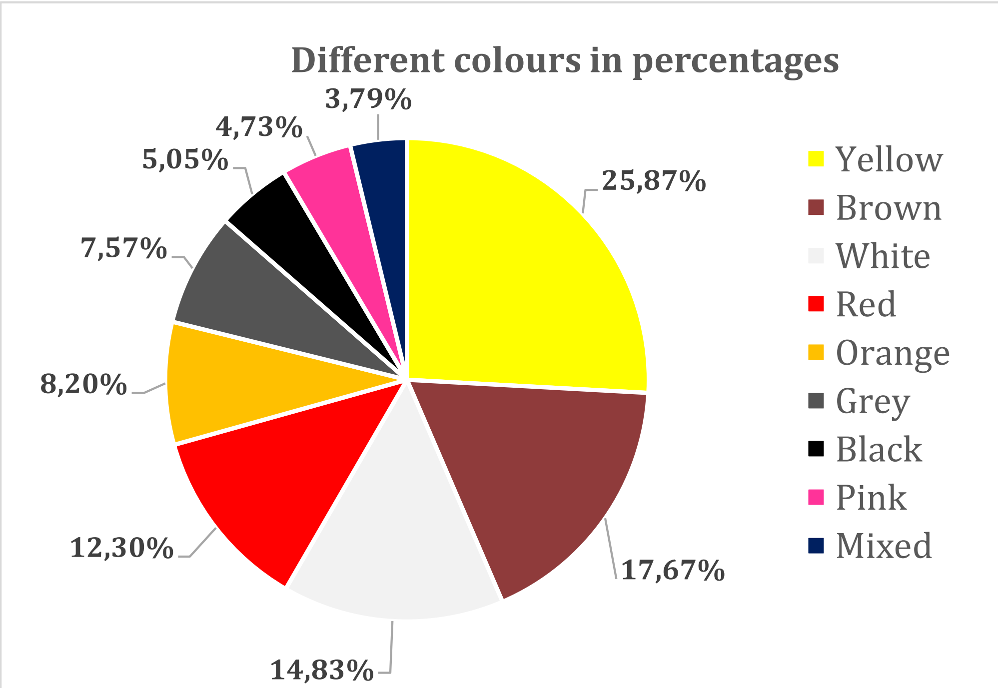

Figure 16: Different colours of the artefacts.

6. Conclusion

Lithic studies are undervalued in Nicaraguan archaeology, as for the Chontales region only two extensive studies have been carried out on this material in the 20th century. This also applies to other areas in Nicaragua were most of the focus lies on ceramics which are used as chronological indicators. The information that can be derived from lithic artefacts could support different research questions. Based on the literature study there are indications that the four sites which were excavated by Rigat and Gorin may differ from each other if we look at the lithic assemblage. Different activities could be linked to the various tool types which are encountered throughout the whole region. Gerstle (1976) showed with her use-wear analysis that the bifaces from Sabana Grande were used for multiple activities like cutting, sawing and scraping. It is not likely that only the bifaces from Sabana Grande were used as multi-tools, but this could also apply to other biface tools which are encountered in large number at the site La Pachona. The large number of biface blanks what were encountered by Rigat (1992) at La Pachona could suggest that La Pachona had a sort of craft specialisation in biface tools. Literature studies based on previous research in a specific region could not only provide information on certain aspects of archaeology, but it could also help to complement a foundation for new research. A problem that could be seen after the literature study was that there is no clear classification for the raw materials in this region. Further research needs to be done to solve this issue, as this can be useful for future provenance studies on the material. The attributes that are described in chapter 4 should be recorded in a database which should also be easily accessible by other researchers so that the data could be used for other studies. An advantage of the database programme Microsoft Access is that it easily can be edited by adding or removing attributes. Besides that, the data could also effortlessly be exported into other programs like Microsoft Excel and IBM SPSS, which can be used for statistical analysis. As for the attribute analysis, different attributes can be measured and recorded depending on the research questions. The method proposed in this research applies to the current research that is carried out on the site of La Pachona. When all of the proposed attributes are measured carefully, interpretations and conclusions could be made about the different activities and change of practices on the site. Useful methods which could provide this information are comparing attributes at various excavated levels (10cm) and combining the edge angle of tools with the edge damage to see for what sort activities the tool has been used. This research shows that lithic analysis could be useful for most archaeological research. Methods and techniques do not have to be comprehensive and difficult to retrieve information from the lithic assemblage. Therefore, this research is not only a proposal of particular methods for lithic analysis but also a proposal to incorporate more lithic analysis in archaeological studies in Nicaragua. Many lithics that were excavated were never analysed and in some cases only counted, valuable information about the prehistoric people of Nicaragua is now stored in museums and depots, which is, in my opinion, is a big issue in Nicaraguan archaeology.

Abstract

Archaeological research on material culture in Nicaragua is mainly focussed on ceramics since this artefact class could be used as chronological indicators. Research on lithics is undervalued, and only a handful studies are published about this subject. This research is focussed on the lithic artefacts from the Chontales region in Central Nicaragua. Limited information about this topic is available from this region. Therefore, a proposal of methods and techniques will be made to show the possibilities of lithic analysis. A literature study will be used to complement the methods and to create an overview of the site La Pachona based on the available data retrieved from lithic artefacts. The proposed methodology is based on an attribute analysis which is for some part used to study lithic artefacts from the site La Pachona during the fieldwork season of 2015 of the PACEN project. Results of this analysis will be used to show the possibilities and outcomes of the lithic analysis.

Abstract (Nederlands)

Archeologisch onderzoek op materiele cultuur in Nicaragua is voornamelijk gefocust op keramiek omdat deze artefact klasse word gebruikt als chronologische indicatoren. Onderzoek naar lithische artefacten is ondergewaardeerd en alleen een handjevol studies zijn gepubliceerd over dit onderwerp. Dit onderzoek richt zich op de lithische artefacten uit de Chontales regio in Centraal Nicaragua. Beperkte informatie over dit onderwerp is beschikbaar uit deze regio, daarvoor zal er een voorstel worden gemaakt om de mogelijkheden te laten zien van een lithische analyse. Een literatuur studie zal gebruikt worden om deze methodes aan te vullen en om een overzicht van de site La Pachona te maken aan de hand van de beschikbare lithische data. De voorgestelde methodologie is gebaseerd op een attribuutanalyse welke voor een deel gebruikt is om het lithische materiaal te bestuderen van de site La Pachona tijdens het veldwerk seizoen 2015 van het PACEN project. Resultaten van deze analyse zullen worden gebruikt om de mogelijkheden en resultaten te laten zien van lithische analyse.

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Appendix 1: Data input fields with codes

Induvidual lithic analysis:
La Pachona
Data input fields with codes

Site name =	**Name of the site**
Unit number =	**Number of the unit**
Level number =	**Excation level (10cm) number**
Layer number =	**Stratigraphic layer number**
Tag number =	**Number of the bag**
Sub number =	**Number of the artefact**
Lenght =	**Size in 0,1 millimeters**
Width =	**Size in 0,1 millimeters**
Thickness =	**Size in 0,1 millimeters**
Weight =	**Weight in 0,1 grams**
Raw material =	**Type of raw material**
Ande =	Andesite
Basalt =	Basalt
Chalce =	Chalcedony
Chert =	Chert
Igneous =	Igneous rock
Obsi =	Obsidian
Petri =	Petrified wood
Quartz =	Quartz
Rhyo =	Rhyolite
Unknown =	Unknown type
Colour =	**Colour of the artefact**
	Black
	Blue
	Brown
	Green
	Grey
	Mixed
	Orange
	Pink
	Purple
	Red
	White
	Yellow
Inclusions =	**Mineral inclusions in the material**
	Yes/No
Portion =	**Fragment of the artefact**
compl =	complete
dist =	distal
frag =	fragmented
med =	medial
prox =	proximal
uns =	unsure

Heat treatment =	**Heat treatment of the material**
	Yes/No
Texture =	**Texture of the material**
	Coarse
	Fine
Cortex =	**Amount of cortex on the material**
abs =	absent
dl50 =	on dorsal less than 50%
dm50 =	on dorsal more than 50%
plat =	on platform
pldl50 =	on platform and dorsal less than 50%
pldm50 =	on platform and dorsal more than 50%
Platform width =	**Size in 0,1 millimeters**
Platform lenght =	**Size in 0,1 millimeters**
Dorsal scars =	**amount of dorsal scars on the flake**
Lip =	**Lip on the flake**
	Yes/No
Tool typology =	**Type of tool/artefact**
Biface =	Bifacial tool
Bladeco =	Blade core
Blank =	Blank/preform
Celt =	Celt
Core =	Core
Ground =	Gound stone tool
Retflak =	Retouched flake
Unkown =	Unknown type of tool
Utflake =	Utilized flake
Edge angle =	**Angle in 0,1 degrees from the edge of the tool**
Edge damage =	**Type of damge on the edge of the tool**
Attr =	Attrition
Batt =	Battering
Biscar =	Bifacial scarring
Impact =	Impact fractures
Uniscar =	Unifacial scarring
Remarks =	**Any additional remarks on the artefact**

Appendix 2: Lithic industries at La Pachona (After Rigat 1992)

La Pachona - Flake industry	**Surface**	**SS1**	**SE2**	**SE2-4**
Flake points		3		
Borers	8	1		
Backed knifes	1	1		
Notched tools	17	2	1	
Denticulated tools	44	33		2
Scrapers	31	24		
Tranchets	21	2		6
Diverse		4		
Total	**122**	**70**	**1**	**8**

La Pachona - Biface industry	**Surface**	**SS1**	**SE**	**SE1**	**SE2**	**SE3**	**SE4**	**PP4**
Biface blanks/preforms	68	11	9					
Biface fragments	121	14	11					
Bifaces (thin)	41	1					1	
Bifaces (thick)	177	6			4	1	3	
Chopping tools	1							
Cleaver	4							
Biface scraper	4							
Pics	1							
Burins	5							
Axe tools fragments		1					1	
Axe tools	29	4					2	
Adze tools	18						4	
(Projectile) Point fragments	98	23	10					
(Projectile) Points	137	16	2	2	5		4	1
Total	**704**	**76**	**32**	**2**	**9**	**1**	**15**	**1**

La Pachona - Polished Stones industry	**Surface**	**SS1**
Axe fragments	6	2
Axe tools	19	1
Chisel tools	1	1
Total	**26**	**4**

La pachona - Ground stone industry	**Surface**	**SS1**	**SE**	**SE3**
Manos	21	9	8	
Pestles	4	3		1
Milling tools	3			
Metates	41	2		
Mortars	2			
Total	**71**	**14**	**8**	**1**

Appendix 3: Lithic amount list from La Pachona, trench unit 01

Site	Unit	Level	Layer	Tagnumber	Class	Weight in gr.	Total amount
La Pachona	1	1	1	2	Broken flakes	395,5	486
La Pachona	1	1	1	2	Complete flakes	137,2	50
La Pachona	1	1	1	2	Groundstone artifact		1
La Pachona	1	1	1	2	Cores/tools/preforms		7
La Pachona	1	1	1	2	Unidentified	309	799
La Pachona	**1**	**1**	**1**	**2**	**Total**	**841,7**	**1343**
La Pachona	1	2	1	20	Unidentified	210,8	440
La Pachona	1	2	1	20	Broken flakes	211	204
La Pachona	1	2	1	20	Cores/tools/preforms		3
La Pachona	1	2	1	20	Complete flakes		9
La Pachona	**1**	**2**	**1**	**20**	**Total**	**465,2**	**656**
La Pachona	1	2 Ras6002	1	24	Broken flakes		892
La Pachona	1	2 Ras6002	1	24	Unidentified	1165,3	1883
La Pachona	1	2 Ras6002	1	24	Complete flakes		74
La Pachona	1	2 Ras6002	1	24	Cores/tools/preforms		12
La Pachona	**1**	**2 Ras6002**	**1**	**24**	**Total**	**2824**	**2861**
La Pachona	1	3 RAS6002	1	94	Broken flakes	414,2	362
La Pachona	1	3 RAS6002	1	94	Unidentified	648,4	925
La Pachona	1	3 RAS6002	1	94	Complete flakes	254,7	81
La Pachona	1	3 RAS6002	1	94	Cores/tools/preforms		25
La Pachona	**1**	**3 RAS6002**	**1**	**94**	**Total**	**1752,9**	**1393**
La Pachona	1	3 RAS6002	1	94	Unidentified S	187,1	396
La Pachona	1	3 RAS6002	1	94	Broken flakes	133,3	191
La Pachona	1	3 RAS6002	1	94	Complete flakes	55,7	56
La Pachona	1	3 RAS6002	1	94	Cores/tools/preforms		13
La Pachona	**1**	**3 RAS6002**	**1**	**94**	**Total**	**712**	**656**
La Pachona	1	4	1	218	Unidentified	286,4	401
La Pachona	1	4	1	218	Broken flakes	247,4	286
La Pachona	1	4	1	218	Complete flakes	184,8	59
La Pachona	1	4	1	218	Cores/tools/preforms		15
La Pachona	**1**	**4**	**1**	**218**	**Total**	**1125,5**	**761**
La Pachona	1	4	3	258	Complete flakes		2
La Pachona	1	4	3	258	Unidentified		2
La Pachona	1	4	3	258	Broken flakes		1
La Pachona	**1**	**4**	**3**	**258**	**Total**		**5**
La Pachona	1	5	3	270	Unidentified	82,9	93
La Pachona	1	5	3	270	Complete flakes		5
La Pachona	1	5	3	270	Broken flakes		30
La Pachona	1	5	3	270	Cores/tools/preforms		3
La Pachona	**1**	**5**	**3**	**270**	**Total**	**166**	**131**
La Pachona	1	5	4	264	unidentified S		6
La Pachona	1	5	4	264	Broken flakes		3
La Pachona	1	5	4	264	cores/tools/preforms		1
La Pachona	**1**	**5**	**4**	**264**	**TOTAL**	**24,3**	**10**
La Pachona	1	6	4	262	Broken flakes		2
La Pachona	**1**	**6**	**4**	**262**	**TOTAL**	**12,6**	**2**

Appendix 4: Original data set from La Pachona, trench unit 01

Site	Unit	Level	Layer	Tagnr	Subnr	Lenght	Width	Thickness	Weight	Primeclass	Tooltype	Rawmat	Texture	Fragment	Color	Cortex	Burned	Strikelenght	Strikewidth
La Pachona	1	1	1	2	1	29,11	23,26	3,68	1,8	flake	unmod	chert	fine	compl	White	abs	No	9,29	2,06
La Pachona	1	1	1	2	2	19,03	24,95	3,45	1,4	flake	unmod	chert	coarse	compl	Brown	abs	No	9,71	2,66
La Pachona	1	1	1	2	3	37,1	27,86	5,13	3,9	flake	unmod	chert	coarse	compl	Yellow	abs	No	11,01	5,80
La Pachona	1	1	1	2	4	33,97	19,35	2,04	1,7	flake	unkn	chert	fine	compl	Orange	abs	No	7,61	2,21
La Pachona	1	1	1	2	5	19,98	16,06	3,35	1,1	flake	unmod	chert	coarse	compl	Yellow	abs	No	8,87	4,11
La Pachona	1	1	1	2	6	17,48	19,71	4,31	1,5	flake	unmod	Igneous	coarse	compl	Grey	abs	No	8,59	2,99
La Pachona	1	1	1	2	7	17,94	25,16	4,27	1,8	flake	unmod	chert	fine	compl	Mixed	abs	No	14,07	5,05
La Pachona	1	1	1	2	8	18,69	18,31	5,05	1,9	flake	unmod	chert	fine	compl	Brown	abs	Yes	12,47	6,45
La Pachona	1	1	1	2	9	22,37	22,16	2,86	1,3	flake	unmod	chert	fine	compl	Brown	abs	No	8,06	1,87
La Pachona	1	1	1	2	10	34,81	30,52	9,98	7,7	flake	unmod	chert	fine	compl	White	dl50	No	9,75	3,02
La Pachona	1	1	1	2	11	33,79	25,77	2,64	2,6	flake	unmod	chert	fine	compl	Mixed	dl50	No	17,16	3,32
La Pachona	1	1	1	2	12	41,55	20,15	7,95	3,8	flake	unmod	chert	fine	compl	Brown	abs	No	7,70	6,17
La Pachona	1	1	1	2	13	14,5	13,35	4,13	0,6	flake	unmod	Igneous	coarse	compl	Grey	abs	No	8,26	3,8
La Pachona	1	1	1	2	14	26,49	27,75	5,69	3,4	flake	unmod	chert	fine	compl	Pink	abs	No	11,27	5,39
La Pachona	1	1	1	2	15	21,05	24,66	2,79	0,7	flake	unmod	chert	fine	compl	White	abs	No	5,71	1,68
La Pachona	1	1	1	2	16	43,77	33,59	6,13	8,3	flake	unmod	Igneous	coarse	compl	Grey		No	21,13	6,55
La Pachona	1	1	1	2	17	26,63	19,15	2,81	1,6	flake	unmod	chert	fine	compl	White	abs	No	8,5	2,2
La Pachona	1	1	1	2	18	18,64	21,02	2,66	0,7	flake	unmod	chert	fine	compl	Black	abs	No	8,89	2,46
La Pachona	1	1	1	2	19	20,29	16,07	3,55	0,8	flake	unmod	chert	fine	compl	Red	abs	No	11,26	3,81
La Pachona	1	1	1	2	20	13,78	10,06	2,18	0,3	flake	unmod	chert	fine	compl	Red	abs	No	5,57	2,27
La Pachona	1	1	1	2	21	21,26	7,19	1,61	0,2	blade	unmod	chert	fine	compl	Brown	abs	No	3,56	1,62
La Pachona	1	1	1	2	22	36,58	46,23	9,49	9,9	flake	unmod	chert	coarse	compl	White	abs	No	8,8	3,25
La Pachona	1	1	1	2	23	28,26	33,81	6,26	4	flake	unmod	chert	coarse	compl	White	abs	No	8,88	2,96
La Pachona	1	1	1	2	24	45,66	34	9,09	14,6	flake	unmod	chert	coarse	compl	Mixed	abs	No	16,32	6,1
La Pachona	1	1	1	2	25	19,2	25,19	3,48	1,7	flake	unmod	chert	fine	compl	Pink	abs	No	11,62	3,8
La Pachona	1	1	1	2	26	23,46	30,04	7,44	3,8	flake	unmod	chert	coarse	compl	White	dm50	No	14,29	4,86
La Pachona	1	1	1	2	27	14,73	11,61	3,27	0,4	flake	unmod	chert	fine	compl	Red	abs	Yes	6,37	2,92
La Pachona	1	1	1	2	28	22,15	23,77	3,29	1,8	flake	unmod	chert	fine	compl	Yellow	abs	No	11,77	4,82
La Pachona	1	1	1	2	29	31,44	27,02	5,31	3,2	flake	unmod	chert	fine	compl	Yellow	abs	No	7,77	2,35
La Pachona	1	1	1	2	30	34,7	32,64	3,31	5,1	flake	unmod	chert	coarse	compl	White	abs	Yes	32,51	11,09
La Pachona	1	1	1	2	31	49,5	20,75	5,68	5,5	flake	unmod	Igneous	coarse	compl	Grey	abs	No	3,75	2,18
La Pachona	1	1	1	2	32	19,49	17,69	2,62	0,9	flake	unmod	chert	fine	compl	Red	abs	No	6,43	3,05
La Pachona	1	1	1	2	33	16,54	11,18	11,63	0,4	flake	unmod	chert	fine	compl	Red	abs	No	7,66	1,39
La Pachona	1	1	1	2	34	16,12	14,06	1,59	0,4	flake	unmod	chert	coarse	compl	White	abs	No	9,84	3,49
La Pachona	1	1	1	2	35	14,92	9,67	3,64	0,4	flake	unmod	chert	fine	compl	Brown	abs	No	4,52	1,83
La Pachona	1	1	1	2	36	14,95	15,82	2,89	0,9	flake	unmod	chert	fine	compl	Orange	pldl50	No	14,68	4,89
La Pachona	1	1	1	2	37	13,41	9,93	2,31	0,3	flake	unmod	chert	fine	compl	Orange	abs	No	8,16	2,69
La Pachona	1	1	1	2	38	15,98	13,05	3,69	0,6	flake	unmod	chert	fine	compl	White	abs	No	10,42	3,83
La Pachona	1	1	1	2	39	18,99	15,95	2,2	0,8	flake	unmod	chert	coarse	compl	Brown	abs	Yes	5,95	2,61
La Pachona	1	1	1	2	40	11,77	20,1	3,2	0,6	flake	unmod	chert	fine	compl	Orange	abs	No	8,11	2,27
La Pachona	1	1	1	2	41	9,8	11,49	1,72	0,2	flake	unmod	chert	fine	compl	Brown	abs	No	11,44	3,49
La Pachona	1	1	1	2	42	10,4	13,27	2,14	0,2	flake	unmod	chert	fine	compl	Brown	abs	No	4,73	1,68

La Pachona	1	1	1	2	43	7,55	9,29	1,8	0,1	flake	unmod	chert	fine	compl	Red	dl50	No	5,95	2,14
La Pachona	1	1	1	2	44	15,78	14,75	2,44	0,5	flake	unmod	chert	coarse	compl	White	abs	No	10,1	2,18
La Pachona	1	1	1	2	45	12,35	8,39	1,27	0,2	flake	unmod	chert	fine	compl	Orange	abs	No	2,97	1,21
La Pachona	1	1	1	2	46	16,24	10,37	1,82	0,4	flake	unmod	chert	fine	compl	Pink	abs	No	6	2,46
La Pachona	1	1	1	2	47	14,06	13,85	3,05	0,6	flake	unmod	chert	coarse	compl	Grey	abs	No	8,51	4,17
La Pachona	1	1	1	2	48	11,38	10,52	0,98	0,3	flake	unmod	chert	fine	compl	Orange	abs	No	10,61	3,39
La Pachona	1	1	1	2	49	8,33	11,07	0,98	0,1	flake	unmod	chert	fine	compl	Black	abs	No	9,03	2,6
La Pachona	1	1	1	2	50	8,55	12,37	1,41	0,2	flake	unmod	chert	fine	compl	Pink	abs	No	5,33	1,91
La Pachona	1	1	1	2	51				8,3	flake	unmod	chert	fine	dist	Brown	abs	Yes		
La Pachona	1	1	1	2	52				2,7	flake	unmod	chert	fine	length	Black	abs	No		
La Pachona	1	1	1	2	53				2,6	flake	unmod	chert	coarse	med	White	abs	No		
La Pachona	1	1	1	2	54				1,6	flake	unmod	chert	fine	dist	Red	abs	No		
La Pachona	1	1	1	2	55				4,5	flake	unmod	chert	coarse	dist	White	abs	No		
La Pachona	1	1	1	2	56				2,2	flake	unmod	chert	fine	med	Orange	abs	No		
La Pachona	1	1	1	2	57				0,8	flake	unmod	Igneous	coarse	prox	Grey		No	4,81	1,90
La Pachona	1	1	1	2	58				1,5	flake	unmod	chert	fine	med	White	dl50	No		
La Pachona	1	1	1	2	59				1,5	flake	unmod	Igneous	coarse	dist	Grey	abs	No		
La Pachona	1	1	1	2	60				0,4	flake	unmod	chert	fine	Prox	Black	abs	No	6,13	1,37
La Pachona	1	1	1	2	61				0,4	flake	unmod	chert	fine	med	Brown	abs	No		
La Pachona	1	1	1	2	62				0,7	flake	unmod	chert	coarse	prox	White	abs	No	3,53	1,81
La Pachona	1	1	1	2	63				0,3	flake	unmod	chert	fine	prox	Orange	abs	No	6,83	1,59
La Pachona	1	1	1	2	64				0,4	flake	unmod	chert	coarse	med	White	abs	No		
La Pachona	1	1	1	2	65				1,5	flake	unmod	chert	coarse	prox	White	abs	No	6,26	2,25
La Pachona	1	1	1	2	66				0,2	flake	unmod	chert	coarse	prox	Pink	abs	No	3,66	1,07
La Pachona	1	1	1	2	67				0,6	flake	unmod	chert	coarse	prox	White	abs	No	10,21	3,23
La Pachona	1	1	1	2	68				1,2	flake	unmod	Igneous	coarse	prox	Grey	abs	No	3,32	1,92
La Pachona	1	1	1	2	69				0,4	flake	unmod	chert	fine	med	Black	abs	No		
La Pachona	1	1	1	2	70				0,2	flake	unmod	chert	fine	dist	Orange	abs	No		
La Pachona	1	1	1	2	71				0,9	flake	unkn	chert	fine	med	Orange	abs	No		
La Pachona	1	1	1	2	72				0,9	flake	unmod	chert	fine	prox	Red	abs	No	7,76	2,38
La Pachona	1	1	1	2	73				0,7	flake	unmod	chert	fine	prox	Black	abs	No	6,38	3,88
La Pachona	1	1	1	2	74				0,2	flake	unmod	chert	fine	dist	Red	abs	No		
La Pachona	1	1	1	2	75				0,3	blade	unmod	chert	fine	dist	Red	abs	No		
La Pachona	1	1	1	2	76				3,6	flake	unkn	chert	fine	uns	White	abs	No		
La Pachona	1	1	1	2	77				4,5	flake	unkn	chert	fine	uns	Red	abs	No		
La Pachona	1	1	1	2	78				0,7	flake	unmod	chert	fine	prox	White	abs	No	6,29	1,97
La Pachona	1	1	1	2	79				2,5	flake	unmod	chert	coarse	med	Yellow	abs	No		
La Pachona	1	1	1	2	80				0,9	flake	unmod	chert	coarse	prox	Brown	abs	Yes	7,43	2,96
La Pachona	1	1	1	2	81				0,7	flake	unkn	chert	fine	prox	Red	abs	No	3,22	0,83
La Pachona	1	1	1	2	82				0,3	flake	unmod	chert	fine	prox	Orange	abs	No	6,36	1,63
La Pachona	1	1	1	2	83				0,8	flake	unkn	chert	coarse	prox	White	abs	No	8,85	3,35
La Pachona	1	1	1	2	84				0,4	blade	unkn	chert	coarse	prox	Yellow	abs	No	4,61	1,99
La Pachona	1	1	1	2	85				0,3	flake	unmod	chert	fine	prox	Red	abs	No	7,06	2,04

La Pachona	1	1	1	2	86				0,2	flake	unkn	chert	fine	prox	White	abs	No	9,15	3,15
La Pachona	1	1	1	2	87				0,5	flake	unkn	chert	fine	med	Red	abs	No		
La Pachona	1	1	1	2	88				0,8	blade	unkn	chert	fine	prox	Brown	abs	No	4,68	1,06
La Pachona	1	1	1	2	89				0,3	flake	unkn	chert	fine	prox	Red	abs	No	5,01	1,42
La Pachona	1	1	1	2	90				0,4	flake	unkn	chert	coarse	prox	Pink	abs	No	5,41	2,02
La Pachona	1	1	1	2	91				0,8	flake	unmod	chert	coarse	prox	Pink	abs	No	7,19	2,84
La Pachona	1	1	1	2	92				0,5	flake	unmod	chert	fine	prox	Brown	abs	No	4,10	1,33
La Pachona	1	1	1	2	93				0,4	flake	unmod	chert	coarse	med	White	abs	No		
La Pachona	1	1	1	2	94				3,2	flake	unkn	chert	coarse	med	White	abs	No		
La Pachona	1	1	1	2	95				0,5	flake	unkn	unkown	coarse	prox	White	abs	No	7,25	2,76
La Pachona	1	1	1	2	96				0,1	flake	unkn	chert	fine	prox	Brown	abs	No	6,29	1,63
La Pachona	1	1	1	2	97				0,6	flake	unmod	chert	fine	prox	White	abs	No	9,16	2,79
La Pachona	1	1	1	2	98				0,4	flake	unkn	chert	coarse	prox	Orange	abs	Yes	5,32	1,75
La Pachona	1	1	1	2	99				0,1	blade	unmod	chert	fine	prox	White	abs	No	5,15	1,93
La Pachona	1	1	1	2	100				0,7	flake	unmod	Igneous	coarse	prox	Grey	abs	No	2,95	1,17
La Pachona	1	1	1	2	101				1,8	flake	unmod	chert	fine	med	Red	abs	No		
La Pachona	1	1	1	2	102				0,2	flake	unkn	chert	fine	prox	Brown	abs	No	8,85	3,30
La Pachona	1	1	1	2	103				0,3	flake	unmod	chert	coarse	prox	White	abs	No	6,26	1,95
La Pachona	1	1	1	2	104				0,3	flake	unkn	chert	coarse	med	Black	abs	No		
La Pachona	1	1	1	2	105				1,8	flake	unmod	chert	coarse	prox	Orange	abs	No	6,97	1,8
La Pachona	1	1	1	2	106				0,6	blade	unkn	chert	coarse	prox	White	abs	No	9,73	3,09
La Pachona	1	1	1	2	107				0,5	flake	unkn	chert	fine	med	Pink	abs	No		
La Pachona	1	1	1	2	108				0,5	flake	unkn	chert	fine	prox	Brown	abs	No	9,27	2,85
La Pachona	1	1	1	2	109				0,6	flake	unkn	chert	fine	length	orange	abs	No		
La Pachona	1	1	1	2	110				0,9	flake	unmod	chert	fine	prox	Brown	abs	No	4,9	1,62
La Pachona	1	1	1	2	111				0,4	flake	unmod	chert	fine	prox	Yellow	abs	No	8,07	1,9
La Pachona	1	1	1	2	112				0,5	flake	unkn	Igneous	coarse	prox	Grey	abs	No	6,34	1,66
La Pachona	1	1	1	2	113				0,2	flake	unmod	chert	fine	dist	Brown	abs	No		
La Pachona	1	1	1	2	114				0,3	flake	unkn	chert	fine	dist	Brown	abs	No		
La Pachona	1	1	1	2	115				0,3	flake	unmod	chert	fine	prox	Mixed	abs	No	7,85	1,63
La Pachona	1	1	1	2	116				0,3	flake	unmod	chert	fine	prox	White	abs	No	10,77	2,47
La Pachona	1	1	1	2	117				0,1	flake	unmod	chert	fine	prox	Brown	abs	No	5,58	1,34
La Pachona	1	1	1	2	118				0,7	flake	unmod	chert	coarse	dist	Brown	abs	Yes		
La Pachona	1	1	1	2	119				0,2	flake	unkn	chert	fine	prox	Orange	dl50	No	8,81	2,56
La Pachona	1	1	1	2	120				0,2	flake	ret	chert	fine	prox	Brown	abs	No	3,17	0,97
La Pachona	1	1	1	2	121				0,2	blade	unkn	chert	fine	prox	Mixed	abs	No	4,88	1,43
La Pachona	1	1	1	2	122				0,4	flake	unkn	chert	fine	prox	Brown	abs	No	6,62	2,04
La Pachona	1	1	1	2	123				0,2	flake	unkn	chert	fine	dist	Yellow	abs	No		
La Pachona	1	1	1	2	124				0,2	flake	unkn	chert	coarse	prox	Orange	abs	No	5	1,9
La Pachona	1	1	1	2	125				0,1	flake	unkn	chert	fine	prox	Grey	abs	No	4,94	1,56
La Pachona	1	1	1	2	126				0,2	flake	unkn	chert	fine	prox	Brown	abs	No	6,27	2,17
La Pachona	1	1	1	2	127				0,2	flake	unkn	chert	fine	prox	Red	abs	No	4,26	1,49
La Pachona	1	1	1	2	128				0,4	flake	unkn	chert	fine	prox	Pink	abs	No	5,86	1,77

La Pachona	1	1	1	2	129				0,4	flake	unkn	chert	coarse	prox	Pink	abs	No	7,12	2,61
La Pachona	1	1	1	2	130				0,1	blade	unmod	chert	coarse	prox	Yellow	abs	No	5,57	1,93
La Pachona	1	1	1	2	131				0,1	flake	unmod	chert	fine	prox	White	abs	No	3,15	1,11
La Pachona	1	1	1	2	132				0,1	blade	unkn	chert	coarse	med	Pink	abs	No		
La Pachona	1	1	1	2	133				0,1	flake	unmod	chert	fine	prox	Red	abs	No	4,2	0,86
La Pachona	1	1	1	2	134				28,7	ground	unkn	Igneous	fine	uns	Grey		No		
La Pachona	1	1	1	2	135	39,01	51,17	9,88	24,7	flake	ret	unknown	coarse	uns	Brown	abs	No	17,26	7,44
La Pachona	1	1	1	2	136	34,7	24,23	4,25	2,5	flake	ret	chert	fine	dist	White	abs	Yes		
La Pachona	1	1	1	2	137	22,61	14,7	7,16	2,4	flake	ret	chert	fine	uns	Brown	pldm50	No	6,05	2,93
La Pachona	1	1	1	2	138	39,83	21,46	8,16	6,2	unkn	ret	chert	fine	uns	Brown	abs	No		
La Pachona	1	1	1	2	139	26,39	17,07	15,43	10,3	core	unkn	chert	fine	uns	Mixed	abs	No		
La Pachona	1	1	1	2	140	47,89	21,07	5,57	6,1	flake	ret	chert	coarse	dist	White	abs	No		
La Pachona	1	1	1	2	141	29,91	11,7	2,34	1,1	blade	ret	chert	fine	compl	Yellow	dm50	No	5,15	2,77
La Pachona	1	2	1	20	142				2,5	flake	unkn	chert	coarse	med	Yellow	abs	No		
La Pachona	1	2	1	20	143				3	flake	unmod	chert	coarse	prox	Yellow	abs	No	10,36	5,12
La Pachona	1	2	1	20	144				3,2	blade	unmod	chert	coarse	dist	Red	abs	No		
La Pachona	1	2	1	20	145				1,8	flake	unkn	chert	coarse	med	Yellow	abs	No		
La Pachona	1	2	1	20	146				3,5	flake	unmod	chert	fine	dist	Brown	dl50	No		
La Pachona	1	1	1	20	147				2,2	flake	unkn	chert	coarse	med	Yellow	abs	No		
La Pachona	1	2	1	20	148				1,1	flake	unmod	chert	fine	prox	Yellow	abs	No	13,69	4,84
La Pachona	1	2	1	20	149				2,1	flake	unmod	chert	fine	prox	Red	abs	No	11,16	3,58
La Pachona	1	2	1	20	150				3,2	flake	unkn	unknown	coarse	med	Mixed	abs	No		
La Pachona	1	2	1	20	151				1,7	flake	unmod	chert	coarse	prox	Red	abs	No	3,7	1,8
La Pachona	1	2	1	20	152				1,6	flake	unmod	chert	coarse	prox	Yellow	abs	No	11,39	4,5
La Pachona	1	2	1	20	153				1,4	flake	unkn	chert	fine	length	Yellow	abs	No		
La Pachona	1	2	1	20	154				2,2	flake	unkn	chert	coarse	prox	Yellow	abs	No	8,19	3,77
La Pachona	1	2	1	20	155				0,9	flake	unkn	chert	fine	prox	Red	abs	No	8,97	2,63
La Pachona	1	2	1	20	156				1,3	blade	unkn	chert	coarse	med	Yellow	abs	No		
La Pachona	1	2	1	20	157				0,9	flake	unkn	chert	fine	prox	Yellow	abs	No	9,50	3,25
La Pachona	1	2	1	20	158				0,7	flake	unkn	Igneous	coarse	prox	Grey	abs	No	9,42	4,42
La Pachona	1	2	1	20	159				0,5	blade	unkn	chert	fine	prox	Yellow	abs	No	7,41	2,13
La Pachona	1	2	1	20	160				0,5	flake	unkn	chert	fine	prox	Yellow	abs	No	5,01	1,99
La Pachona	1	2	1	20	161				0,7	flake	unkn	chert	fine	med	Yellow	abs	No		
La Pachona	1	2	1	20	162				0,7	flake	unmod	chert	coarse	dist	Yellow	abs	No		
La Pachona	1	2	1	20	163				0,4	flake	unkn	chert	fine	med	Red	abs	No		
La Pachona	1	2	1	20	164				0,6	blade	unmod	chert	fine	dist	Yellow	abs	No		
La Pachona	1	2	1	20	165				0,5	blade	unkn	chert	fine	prox	Brown	abs	No	3	1,25
La Pachona	1	2	1	20	166				0,4	blade	unkn	chert	fine	prox	Yellow	abs	No	10,31	3,2
La Pachona	1	2	1	20	167				0,3	flake	unmod	chert	fine	prox	Brown	abs	No	5,65	1,14
La Pachona	1	2	1	20	168				0,2	flake	unmod	chert	fine	prox	Brown	abs	No	5,56	1,72
La Pachona	1	2	1	20	169				0,2	blade	unkn	chert	fine	prox	Yellow	abs	No	7,38	2,56
La Pachona	1	2	1	20	170				0,3	flake	unkn	chert	fine	med	Red	abs	No		
La Pachona	1	2	1	20	171				0,5	flake	unkn	chert	coarse	prox	Yellow	abs	No	9,47	2,83

La Pachona	1	2	1	20	172				0,5	flake	unkn	chert	fine	prox	Brown	abs	No	3,12	0,74
La Pachona	1	2	1	20	173				1,4	flake	unkn	chert	fine	prox	Yellow	abs	No	7,79	2,82
La Pachona	1	2	1	20	174				0,1	flake	unmod	chert	fine	dist	White	abs	No		
La Pachona	1	2	1	20	175				0,2	flake	unmod	chert	fine	dist	Yellow	abs	No		
La Pachona	1	2	1	20	176				0,2	flake	unmod	chert	fine	prox	Red	abs	Yes	8,58	2,47
La Pachona	1	2	1	20	177				0,3	flake	unkn	chert	fine	prox	Brown	abs	No	3,88	1,17
La Pachona	1	2	1	20	178				0,2	flake	unmod	chert	fine	compl	Yellow	abs	No	6,57	2,39
La Pachona	1	2	1	20	179				0,2	flake	unkn	chert	coarse	prox	Yellow	abs	No	7,49	2,58
La Pachona	1	2	1	20	180				0,3	flake	unkn	chert	fine	prox	Black	abs	No	10,37	3,6
La Pachona	1	2	1	20	181	38,69	31,18	6,21	8	flake	unmod	chert	fine	compl	Orange	dm50	No	8,15	3,29
La Pachona	1	2	1	20	182	34,61	10,55	4,79	1,4	blade	unkn	Igneous	coarse	compl	Grey	abs	No	4,29	4,89
La Pachona	1	2	1	20	183	24,81	13,26	2,79	0,8	flake	unmod	chert	fine	compl	Yellow	abs	No	13,61	3,15
La Pachona	1	2	1	20	184				2,7	flake	unkn	chert	coarse	prox	Brown	abs	Yes	12,34	3,79
La Pachona	1	2	1	20	185	35,14	17,21	2,81	1,6	flake	unmod	chert	coarse	compl	Yellow	abs	No	6,69	1,6
La Pachona	1	2	1	20	186	19,55	9,87	3,28	0,4	blade	unmod	chert	coarse	compl	Orange	abs	No	8,19	2,16
La Pachona	1	2	1	20	187	24,64	17,94	3,53	1,6	flake	unmod	chert	fine	compl	Brown	abs	No	6,47	2,16
La Pachona	1	2	1	20	188	11,47	16,88	4,12	0,7	flake	unmod	chert	coarse	compl	Orange	abs	No	11,15	4,48
La Pachona	1	2	1	20	189	11,76	17,02	3,12	0,5	flake	unmod	chert	fine	compl	Orange	dl50	No	5,19	2,54
La Pachona	1	2	1	20	190	18,87	11,85	1,93	0,5	flake	unmod	chert	coarse	compl	Brown	abs	No	4,90	2,99
La Pachona	1	2	1	20	191	29,54	33,52	5,17	4,6	flake	ret	chert	fine	compl	White		No	4,41	3,07
La Pachona	1	2	1	20	192	25,38	20,33	4,28	1,9	unkn	ret	chert	fine	uns	Orange	abs	No		
La Pachona	1	2	1	20	193	20,02	17,67	3,88	1,3	unkn	ret	chert	fine	uns	Black	abs	No		
La Pachona	1	2	1	24	194	45,43	51,33	5,26	14,2	flake	unmod	chert	fine	compl	Brown	abs	No	14,1	4,16
La Pachona	1	2	1	24	195	43,85	46,84	7,15	18,1	flake	unmod	Igneous	coarse	compl	Grey	abs	No	18,6	8,25
La Pachona	1	2	1	24	196				0	flake	unmod	chert	coarse	length	Yellow	abs	No		
La Pachona	1	2	1	24	197	36,97	34,47	5,86	5,7	flake	unmod	chert	fine	compl	Black	abs	No	16,73	9,95
La Pachona	1	2	1	24	198	56,74	54,21	17,75	58,4	flake	unmod	chert	fine	compl	Yellow	abs	No	13,53	5,28
La Pachona	1	2	1	24	199	52,48	34,34	4,9	9,7	flake	unmod	chert	coarse	compl	Yellow	pldm50	No	16,73	9,95
La Pachona	1	2	1	24	200	34,28	41,68	10,34	13,7	flake	unmod	chert	coarse	compl	Yellow	abs	No	11,5	4,13
La Pachona	1	2	1	24	201	46,66	28,41	5,34	8,7	flake	unmod	Igneous	coarse	compl	Grey	abs	No	10,8	2,66
La Pachona	1	2	1	24	202	23,29	28,57	7,24	4,9	flake	unmod	chert	fine	compl	Yellow	abs	No	27,47	8,84
La Pachona	1	2	1	24	203	27,43	26,98	4,7	2,5	flake	unmod	chert	fine	compl	Yellow	abs	No	14,84	4,18
La Pachona	1	2	1	24	204	22,27	41,91	4,98	4,4	flake	unmod	chert	fine	compl	Yellow	abs	No	9,93	7,38
La Pachona	1	2	1	24	205	29,21	28,7	4,33	3,1	flake	unmod	chert	coarse	compl	Yellow	abs	No	10,9	3,4
La Pachona	1	2	1	24	206	44,76	36,47	8,8	11,3	flake	unmod	chert	coarse	compl	Yellow	abs	No	14,21	6,36
La Pachona	1	2	1	24	207	38,14	25,31	2,61	3,2	flake	unmod	chert	coarse	compl	Yellow	abs	No	6,71	2,46
La Pachona	1	2	1	24	208	34,71	49,98	8,8	12,7	flake	unmod	chert	coarse	compl	Yellow	abs	No	18,61	4,12
La Pachona	1	2	1	24	209	52,84	34,89	4,63	7,1	flake	unmod	chert	fine	compl	White	abs	No	12,9	3,59
La Pachona	1	2	1	24	210	31,01	20,06	3,37	2,6	flake	unmod	chert	fine	compl	Brown	abs	No	14,14	6,21
La Pachona	1	2	1	24	211	43,05	30,18	4,84	6,5	flake	unmod	unknown	coarse	compl	Grey	abs	No	9,55	3,08
La Pachona	1	2	1	24	212	37,36	23,84	5,25	5,6	flake	unmod	chert	fine	compl	Yellow	abs	Yes	18,96	7,5
La Pachona	1	2	1	24	213	38,97	23,14	3,56	3,5	flake	unmod	igneous	coarse	compl	Grey	abs	No	10,84	3,16
La Pachona	1	2	1	24	214	26,72	44,8	6,39	6,2	flake	unmod	chert	coarse	compl	Black	abs	No	11,03	4,16

La Pachona	1	2	1	24	215	37,93	29,22	6,47	6,9	flake	unmod	chert	fine	compl	Orange	dl50	No	7,94	3,48
La Pachona	1	2	1	24	216	28,15	29	5,74	3,4	flake	unmod	chert	fine	compl	Red	abs	No	13,7	4,14
La Pachona	1	2	1	24	217	32,86	20,92	5,59	4,6	flake	unmod	chert	coarse	compl	Yellow	abs	No	15,94	6,22
La Pachona	1	2	1	24	218	30,83	21,07	3,91	2,4	flake	unmod	chert	coarse	compl	Yellow	dl50	No	15,13	6,49
La Pachona	1	2	1	24	219	22,11	31,26	2,87	2,1	flake	unmod	chert	fine	compl	Pink	abs	No	12,55	3,45
La Pachona	1	2	1	24	220	31,98	23,74	2,81	2	flake	unmod	chert	fine	compl	Red	abs	No	6,5	1,81
La Pachona	1	2	1	24	221	25,88	23,06	4,64	2,6	flake	unmod	chert	fine	compl	Red	abs	No	8,09	2,23
La Pachona	1	2	1	24	222	27,69	18,89	4,12	2,3	flake	unmod	igneous	coarse	compl	Grey	abs	No	9,56	3,79
La Pachona	1	2	1	24	223	25,52	17,82	1,95	1,3	flake	unmod	chert	fine	compl	Red	abs	No	7,95	3,17
La Pachona	1	2	1	24	224	25,24	21,16	3,33	2,1	flake	unmod	chert	fine	compl	Brown	dl50	No	14,81	5,36
La Pachona	1	2	1	24	225	19,18	24,06	3,49	1	flake	unmod	chert	fine	compl	Brown	abs	No	3,66	1,26
La Pachona	1	2	1	24	226	24,24	19,96	2,62	1,1	flake	unmod	chert	fine	compl	Red	abs	No	8,75	2,39
La Pachona	1	2	1	24	227	29,73	15,41	2,71	1,3	flake	unmod	chert	fine	compl	Black	abs	No	6,81	1,93
La Pachona	1	2	1	24	228	23,08	10,58	2,23	0,6	blade	unmod	chert	fine	compl	Yellow	pldm50	No	4,45	1,25
La Pachona	1	2	1	24	229	13,34	18,87	3,96	0,8	flake	unmod	chert	fine	compl	Red	abs	No	6,69	2,26
La Pachona	1	2	1	24	230	15,33	13,51	3,04	0,6	flake	unmod	chert	fine	compl	Black	abs	No	7,05	3,35
La Pachona	1	2	1	24	231	16,91	10,4	1,77	0,2	flake	unmod	chert	fine	compl	Red	abs	No	4,93	1,25
La Pachona	1	2	1	24	232	19,39	11,01	2,02	0,4	flake	unmod	chert	fine	compl	Brown	abs	No	6,69	1,73
La Pachona	1	2	1	24	233	14,88	17,41	2,18	0,6	flake	unmod	chert	fine	compl	Brown	abs	No	14,12	2,84
La Pachona	1	2	1	24	234	15,75	14,64	2,21	0,4	flake	unmod	chert	fine	compl	Brown	abs	No	6,78	2,7
La Pachona	1	2	1	24	235	13,58	12,68	2,73	0,4	flake	unmod	chert	fine	compl	Yellow	abs	No	11,79	3,26
La Pachona	1	2	1	24	236	16,46	13,45	2,77	0,6	flake	unmod	igneous	coarse	compl	Grey	abs	No	9,45	2,05
La Pachona	1	2	1	24	237	32,58	28,89	4,25	3,6	flake	unmod	chert	coarse	compl	Pink	abs	No	14,05	4,92
La Pachona	1	2	1	24	238	19,12	20,87	3,45	1,4	flake	unmod	chert	fine	compl	Brown	abs	No	7,52	2,15
La Pachona	1	2	1	24	239	24,7	20,46	1,71	1,4	flake	unmod	chert	fine	compl	Red	abs	No	14,46	3,38
La Pachona	1	2	1	24	240	28,34	12,93	2,82	0,8	blade	unmod	chert	coarse	compl	Brown	abs	No	8,44	3,23
La Pachona	1	2	1	24	241	28,86	18,37	2,92	1,4	flake	unmod	chert	fine	compl	Red	abs	Yes	7,99	2,32
La Pachona	1	2	1	24	242	31,35	33,22	5,43	5	flake	unmod	chert	fine	compl	Brown	dm50	No	6,58	1,63
La Pachona	1	2	1	24	243	37,77	35,03	5,94	6,3	flake	unmod	chert	coarse	compl	Pink	abs	No	8,93	3,01
La Pachona	1	2	1	24	244	41,13	14,68	4,7	2,3	blade	unmod	chert	coarse	compl	Yellow	abs	No	9,87	3,15
La Pachona	1	2	1	24	245	30,51	29,27	6,58	5,3	flake	unmod	chert	coarse	compl	White	abs	No	11,32	2,95
La Pachona	1	2	1	24	246	24,66	19,42	5,45	2,5	flake	unmod	chert	fine	compl	Yellow	pldm50	No	14,18	7,52
La Pachona	1	2	1	24	247	16,91	19,24	3,03	0,9	flake	unmod	chert	coarse	compl	Yellow	abs	Yes	9,98	3,1
La Pachona	1	2	1	24	248	27,24	17,89	4,94	2,1	flake	unmod	chert	fine	compl	Yellow	abs	No	8,51	2,51
La Pachona	1	2	1	24	249	32,29	24,09	2,9	2	flake	unmod	chert	coarse	compl	Yellow	abs	No	12,02	4,7
La Pachona	1	2	1	24	250	14,23	20,89	2,34	0,7	flake	unmod	chert	fine	compl	White	abs	No	11,66	3,94
La Pachona	1	2	1	24	251	19,21	28,36	2,5	1,3	flake	unmod	chert	fine	compl	Yellow	abs	No	12,69	3,1
La Pachona	1	2	1	24	252	17,72	7,98	1,16	0,2	flake	unmod	chert	fine	compl	Yellow	abs	No	3,67	1,11
La Pachona	1	2	1	24	253	21,91	16,62	3,93	1,6	flake	unmod	chert	fine	compl	Yellow	abs	Yes	12,8	3,5
La Pachona	1	2	1	24	254	31,28	12,61	4,6	1,4	blade	ret	chert	fine	compl	Yellow	abs	No	7,87	2,79
La Pachona	1	2	1	24	255	19,98	13,93	2,79	0,8	flake	unmod	chert	coarse	compl	Yellow	abs	No	9,63	2,17

La Pachona	1	2	1	24	256	23,63	29,61	7,37	4,7	flake	ret	chert	fine	compl	Red	abs	No	16,8	9,05
La Pachona	1	2	1	24	257	17,48	16,62	2,3	0,8	flake	unmod	chert	fine	compl	Red	abs	No	9,97	4,79
La Pachona	1	2	1	24	258	19,21	14,31	1,78	0,4	flake	unmod	chert	fine	compl	Red	abs	No	3,41	1,26
La Pachona	1	2	1	24	259	19,51	11,61	2,5	0,6	flake	unmod	chert	fine	compl	Black	abs	Yes	5,44	2,03
La Pachona	1	2	1	24	260	13,18	9,68	1,9	0,2	flake	unmod	chert	fine	compl	Black	abs	No	8,59	1,97
La Pachona	1	2	1	24	261	21,17	14,25	2,34	0,7	flake	unmod	chert	fine	compl	Red	abs	No	3,57	1,66
La Pachona	1	2	1	24	262	25,09	10,39	2,7	0,7	flake	unmod	chert	fine	compl	Brown	dl50	No	6,4	3,06
La Pachona	1	2	1	24	263	42,17	15,28	4,65	3,9	blade	unmod	chert	coarse	compl	Mixed	abs	Yes	11,64	4,06
La Pachona	1	2	1	24	264	19,84	11,71	1,64	0,4	flake	unmod	chert	fine	compl	Brown	abs	No	6,61	3,02
La Pachona	1	2	1	24	265	22,81	14,02	2,14	0,7	flake	unmod	chert	fine	compl	Brown	dl50	No	4,42	1,85
La Pachona	1	2	1	24	266	14,65	9,68	1,93	0,3	flake	unmod	igneous	coarse	compl	Grey	abs	No	5,33	1,92
La Pachona	1	2	1	24	267	21,85	23,43	2,65	2,7	flake	unmod	igneous	coarse	compl	Grey	abs	No	14,51	4,69
La Pachona	1	2	1	24	268				11,6	flake	unmod	chert	fine	prox	Brown	abs	Yes	10,7	7,03
La Pachona	1	2	1	24	269				1,7	flake	unmod	chert	fine	prox	Brown	abs	No	5,39	2,45
La Pachona	1	2	1	24	270	29,73	25,62	6,95	4,7	flake	unmod	chert	fine	compl	Mixed	abs	No	8,66	2,92
La Pachona	1	2	1	24	271				2,9	flake	unkn	chert	fine	prox	Yellow	abs	No	15,94	5,09
La Pachona	1	2	1	24	272				2,4	flake	unkn	igneous	coarse	prox	Grey	abs	No	11,37	3,33
La Pachona	1	2	1	24	273				2,3	flake	unkn	chert	coarse	prox	Mixed	abs	Yes	14,76	5,05
La Pachona	1	2	1	24	274				12	flake	unmod	chert	coarse	prox	Yellow	dm50	No	9,93	4,48
La Pachona	1	2	1	24	275				4,5	flake	unkn	chert	fine	prox	Red	abs	No	9,63	2,09
La Pachona	1	2	1	24	276				2,4	flake	unmod	chert	coarse	prox	White	abs	No	17,44	4,51
La Pachona	1	2	1	24	277				3,6	flake	unmod	chert	coarse	prox	Yellow	abs	No	8,25	2,51
La Pachona	1	2	1	24	278				1,1	flake	unkn	chert	fine	med	White	abs	No		
La Pachona	1	2	1	24	279				1,7	flake	unkn	chert	fine	prox	White	abs	No	14,76	5,87
La Pachona	1	2	1	24	280				1,4	flake	unkn	chert	fine	med	Orange	abs	No		
La Pachona	1	2	1	24	281				0,9	flake	unkn	chert	coarse	prox	Pink	abs	No	6,23	1,7
La Pachona	1	2	1	24	282				2,5	flake	unkn	chert	coarse	prox	Yellow	abs	No	6,23	3,42
La Pachona	1	2	1	24	283				7,5	flake	unkn	chert	fine	dist	Mixed	abs	Yes		
La Pachona	1	2	1	24	284				1,6	flake	unkn	chert	fine	prox	Yellow	abs	No	6,09	2,04
La Pachona	1	2	1	24	285	39,31	26,47	4,64	4,7	flake	unmod	chert	fine	compl	Orange	abs	No	10,96	2,74
La Pachona	1	2	1	24	286				1,7	flake	unkn	chert	coarse	prox	Yellow	abs	No	5,29	2,09
La Pachona	1	2	1	24	287				1,1	flake	unkn	chert	fine	prox	Yellow	abs	No	16,55	4,5
La Pachona	1	2	1	24	288				5,4	flake	unkn	chert	coarse	prox	Yellow	abs	No	9,47	3,62
La Pachona	1	2	1	24	289				2,1	flake	unkn	igneous	coarse	dist	Grey	abs	No		
La Pachona	1	2	1	24	290				2,4	flake	unkn	chert	fine	prox	Yellow	abs	No	7,77	2,95
La Pachona	1	2	1	24	291				0,8	flake	unkn	chert	fine	prox	Yellow	abs	No	14,76	2,71
La Pachona	1	2	1	24	292				1,5	blade	unmod	chert	fine	dist	White	abs	No		
La Pachona	1	2	1	24	293				4,4	flake	unkn	chert	coarse	dist	Black	abs	Yes		
La Pachona	1	2	1	24	294				2,2	flake	unmod	chert	fine	dist	White	abs	No		
La Pachona	1	2	1	24	295				1,4	Flake	unkn	chert	coarse	dist	White	abs	No		
La Pachona	1	2	1	24	296				2,4	flake	unkn	chert	fine	med	Mixed	abs	No		
La Pachona	1	2	1	24	297				1,2	flake	unmod	chert	fine	prox	Brown	abs	No	3,77	1,08
La Pachona	1	2	1	24	298				10,5	flake	unmod	chert	fine	dist	Brown	abs	No		

La Pachona	1	2	1	24	299				2,1	flake	unkn	chert	fine	prox	White	abs	No	7,38	3,59
La Pachona	1	2	1	24	300	26,17	18,3	2,66	1,1	flake	unmod	chert	fine	compl	Orange	abs	No	6,12	1,76
La Pachona	1	2	1	24	301	37,38	27,52	3,67	4	flake	ret	chert	fine	compl	White	abs	No	8,09	3,23
La Pachona	1	2	1	24	302	24,37	16,19	4,4	1,7	flake	unmod	chert	coarse	compl	Brown	abs	No	10,3	2,97
La Pachona	1	2	1	24	303				1,3	flake	unmod	chert	coarse	prox	Yellow	abs	No	5,44	2,46
La Pachona	1	2	1	24	304				2	flake	unmod	chert	coarse	dist	Yellow	abs	No		
La Pachona	1	2	1	24	305				2,8	flake	unmod	chert	coarse	dist	Yellow	abs	No		
La Pachona	1	2	1	24	306				1,2	flake	unmod	chert	fine	dist	Orange	abs	No		
La Pachona	1	2	1	24	307				1,4	blade	unkn	chert	fine	med	Yellow	abs	No		
La Pachona	1	2	1	24	308				1,2	flake	unkn	chert	coarse	prox	Yellow	abs	No	12,32	4,03
La Pachona	1	2	1	24	309				4,2	flake	unkn	chert	coarse	prox	Yellow	abs	No	11,75	3,99
La Pachona	1	2	1	24	310	25,35	22,02	2,66	1,4	flake	unmod	chert	fine	compl	Yellow	abs	No	9,93	2,42
La Pachona	1	2	1	24	311				1,7	blade	unkn	chert	coarse	dist	White	abs	No		
La Pachona	1	2	1	24	312				2	flake	unkn	chert	fine	med	Yellow	abs	No		
La Pachona	1	2	1	24	313				0,8	blade	unkn	chert	fine	prox	Yellow	abs	No	7,96	3,63
La Pachona	1	2	1	24	314				1,5	blade	unkn	chert	fine	prox	Yellow	abs	Yes	10,27	3,59
La Pachona	1	2	1	24	315				1,3	flake	unkn	chert	coarse	prox	Yellow	abs	No	11,71	2,69
La Pachona	1	2	1	24	316				0,9	blade	unkn	chert	coarse	med	Yellow	abs	No		
La Pachona	1	2	1	24	317				0,9	flake	unkn	chert	fine	prox	Brown	abs	No	11,31	3,23