

25 THE EARLY PALEOINDIAN RECORD FROM AUGUST PINE RIDGE: A NEW SITE WITH IMPLICATIONS FOR PLEISTOCENE SETTLING-IN IN CENTRAL AMERICA

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In 2023, the Pine Ridge Preceramic Project (PRPP) project was initiated in the village of August Pine Ridge, Orange Walk, to add to our understanding of the Preceramic period of Central American prehistory. Sand quarrying had been unearthing artifacts for over 70 years; this activity eventually came to the attention of archaeologists and collectors alike. The PRPP has begun documenting informal collections held throughout the village while also conducting excavations to understand archaeological contexts and depositional conditions. Based on two seasons of work, August Pine Ridge may be considered one of the most prolific Preceramic sites in Central America; temporally diagnostic artifacts and technologies spanning from Early Paleoindian fluted bifaces to the very latest Archaic are present here, making this one of the few study areas in Central America with a ~10,000-year long record of human occupation. Especially abundant are materials that appear to indicate bi-directional influences from South (Fell, or Fishtail) and North America (Clovis) during what we call the Fluted Biface Horizon, 13,000-12,200 years ago. We have examined approximately 50 specimens that we believe belong to this period and estimate another ~30 exist in collections outside of Belize. August Pine Ridge is one of three or four sites between Sonora, Mexico and Ecuador in northern South America that has produced a similar quantity of artifacts, and the technological record here has significant implications for the early settlement history of Belize, Central America, and the Western Hemisphere.

Introduction



Figure 1. Excavation areas around August Pine Ridge and its location in northern Belize.

In 2023, the authors initiated a new project, called the Pine Ridge Preceramic Project (PRPP), that was centered around the village of

August Pine Ridge, in the Orange Walk District in northern Belize (Figure 1). This work followed reports of Preceramic artifacts being found by sand quarrying activities, including several Clovis-like fluted bifaces representing human occupation starting perhaps as early as 13,000 years ago. The PRPP is inspired by two main objectives: to document what appears to be a highly prolific Paleoindian and Archaic site, and to provide a legitimate research presence in the area that might lead to the conservation and preservation of elements of this cultural record. Our project has three primary goals:

- (1) to catalog existing collections, adding these specimens to the record of archaeological knowledge regarding some of Central America's earliest occupations;
- (2) conduct primary excavations to document depositional contexts and help define the prehistoric record of the region; and
- (3) to work with local parties to advance knowledge and awareness of the remarkable Preceramic portion of Belize's cultural heritage.

This paper presents preliminary highlights concerning what we define as the Early Paleoindian part of the Preceramic record at August Pine Ridge.

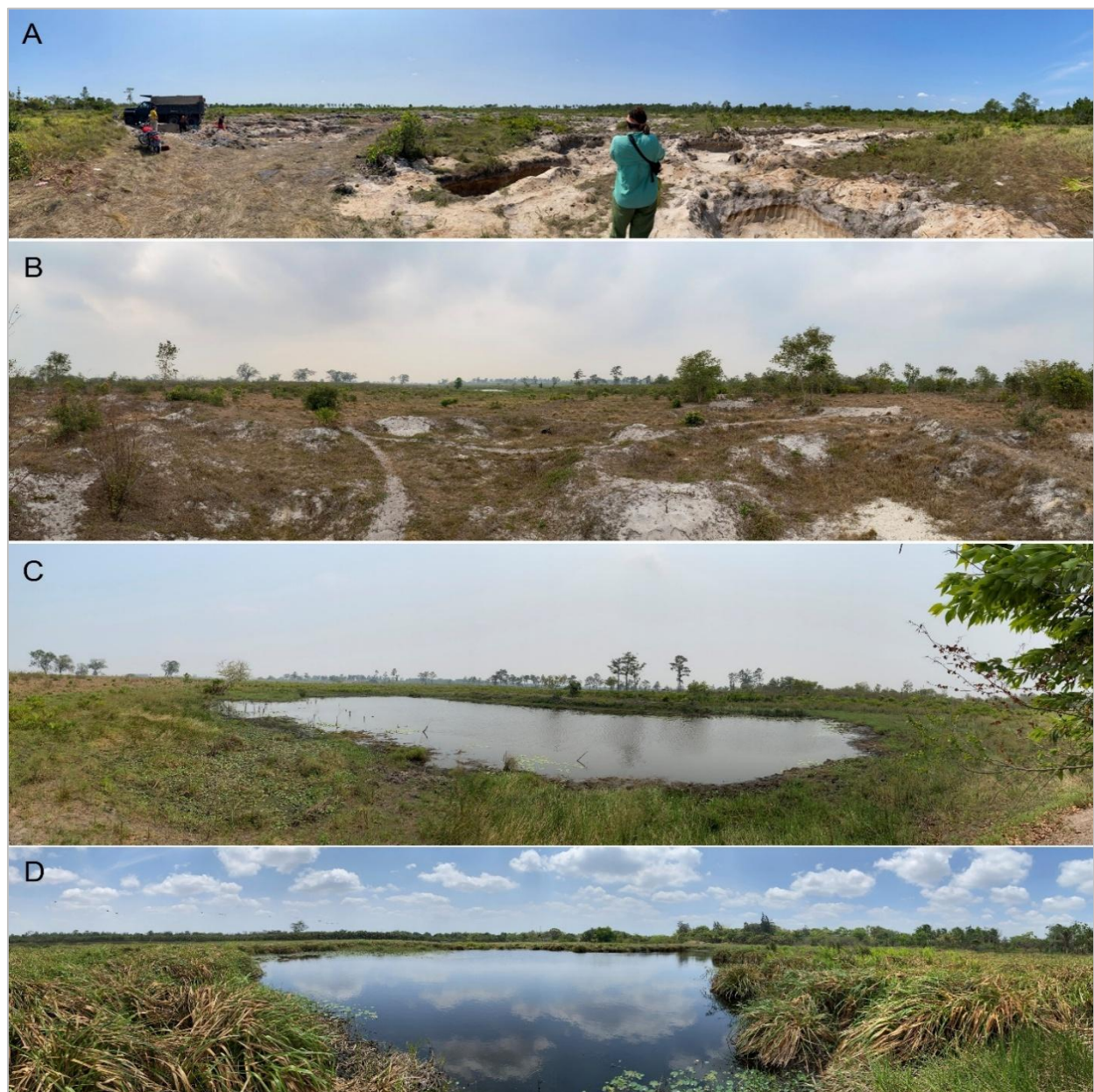


Figure 2. Overview of sand quarrying (A and B) and freshwater aguadas (C and D).

Site Setting

According to the 2015 geologic map of Belize (Cornec 2015), August Pine Ridge is situated on the Tertiary-age Red Bank Formation. Here, local sandstone geology is associated with a turbidite deposit (sea floor formation) that formed and was subsequently uplifted between 23 and 2.5 million years ago (MYA). This geologic history accounts for the vast quantities of naturally occurring sand found in the area and extending across much of northern Belize.

According to some village residents, sand quarrying has been an important economic activity since the 1950s. This work has intensified in recent years to support growing regional development; today, weather permitting, several trucks enter and leave the village each day to deliver sand loads to construction sites across the region. Over recent decades, quarrying scars have come to define much of the landscape surrounding August Pine Ridge (Figure 2A, 2B).

Environmentally, the area is characterized as a relic pine savannah situated along a low “ridge” that defines the southern valley margin of the Hondo River. When the air is clear, one can see a few kilometers across the valley to the scarp that defines the Mexican border. Although historic logging has removed most of the forest cover, stands of pine trees mixed with scrub oak vegetation are occasionally present. We think that the landscape is generally non-aggrading, meaning that very little sedimentation takes place beyond gravity-driven surface movements during rain events. Artifacts present here are found below the modern ground surface, and we believe the primary causes for their burial are attributable to a combination of this slow colluvial process along with the actions of roots and burrowing animals. Missing here are the organically rich (black to dark gray) alluvial clayey topsoils that cover shallow river valleys and their catchments elsewhere in northern Belize, and that today sustain garden agriculture and intensive sugar cane production. Our preliminary assessment of geologic strata indicates that soil profiles reflect primarily post-depositional, pedogenic activities associated with the downward-percolating movement of minerals and small grain particles through rainwater illuviation. With some variation, regional profiles reflect a fairly consistent sequence of A-E-Bhs-Bs-C horizons overlying parent sandstone material that weathers out, where exposed, to produce the sand that characterizes the region (Figure 3A).

Within this arid and seemingly homogenous environment, several near-surface aquifers are present, fed by seasonal rainfall, that provide year-round sources of freshwater (see Figure 2C, 2D). Some of these aquifers are exposed in shallow aguadas that dot the landscape and that undoubtedly provided a critical resource that allowed early inhabitants and animals to live here. The pine ridge is a delicate, nuanced ecosystem reflecting relic conditions from the Pleistocene era, including these small, fragile wetland systems that were key to transforming the region into a habitable landscape. Sandy topsoils are very poorly suited for agriculture, and we hypothesize that as maize agriculture became increasingly important in the Late Archaic (Lohse et al. 2022), leading

eventually to the appearance of the earliest settled Maya villages around 1000 B.C. (Lohse 2010), Preceramic inhabitants likely relocated their residences elsewhere so as to be closer to their gardens. Continued Maya use of the pine ridge is evidenced by tools suggesting wood cutting, hunting, and other resource-extractive activities. While depositional conditions make it unlikely that archaeological deposits occur in well-preserved, stratified contexts, the lack of Maya-period intensive agriculture and settlements make this, like many other areas of northern Belize, particularly well-suited for investigations into the Preceramic period. Through our combined experiences, we believe that the abundant Preceramic record of northern Belize is not solely due to the lack of widespread Maya settlements. The occupation history here starting in the Terminal Pleistocene is truly rich and rivals any study area to be found in Central America.

History of Investigations

Through interviews we have conducted within the village, we understand that the first accounts of artifacts coming from August Pine Ridge may have occurred in the 1970s, when Mary Neivens and Dennis Puleston were working at nearby El Pozito (Eppich and Ball 2023). Dr. Neivens apparently visited the village, but no account has been found that describes that visit or any discoveries that may have resulted (J.W. Ball, personal communication to Perrot-Minnot 2024). In 2005, Valdez and Aylsworth (2005) published images and brief descriptions of a few chipped stone artifacts, including a small fluted point and a Lowe biface, that had been presented by a village resident. In 2021, Valdez et al. (2021) published photographs of an unfluted lanceolate biface that had reportedly been collected from near August Pine Ridge. Beyond these brief accounts, no published information has revealed the nature or degree of Preceramic materials present at August Pine Ridge. To our knowledge, no field investigation has ever been conducted here prior to our project.

Beginning around 2020, reports of artifacts including fluted bifaces as well as Archaic specimens recovered from August Pine Ridge began to circulate among the archaeological community. From informal conversations and opportunities to observe items



Figure 3. A) Typical soil sequence at August Pine Ridge (courtesy of Charles D. Frederick), and B) documenting artifacts that have been recovered from quarrying activities.

displayed at artifact shows in the U.S., our estimates put the number of specimens that can be provisionally traced to August Pine Ridge at approximately two-to-three dozen bifaces reflecting Clovis-like and Fishtail-like forms, as well as several dozen Lowe points and smaller numbers of other forms that are less well-known. In September, 2022, Lohse and McBride made a trip to the village to collect our own observations (see Figure 3B). What we saw corroborated the earlier accounts; within several households are collections of varying sizes representing “stones” that sand quarryers encountered during their labors and took the time to bend over to pick up. Among the variety of items present are ground and pecked stone objects (bowls, mortars, pestles) (Perrot-Minnot 2024) as well as chipped stone bifaces, blades, and flakes. Although a small percentage of these objects are of Maya-age, most are diagnostic of the Preceramic period.

August Pine Ridge and the Early Paleoindian Record

Although we have yet to systematically record all artifacts held here, what we have seen so far in terms of diversity and quantity easily qualifies August Pine Ridge as one of the most prolific Preceramic study areas documented so far anywhere in Mexico or Central America. Understanding the material record requires familiarity with regional patterns and lithic technological attributes; it is unlikely that any

contexts datable by radiocarbon means will be encountered here, so we consider these collections to be like a large surface collection with village-level provenience. Nonetheless, controlled investigations together with regional assessments that have been previously reported (e.g., Iceland 2005; Kelly 1993; Lohse et al. 2006; Pearson 2017; Pohl et al. 1006; Prufer et al. 2019, 2021; Rosenswig and Masson 2001; Stemp and Awe 2013; Stemp et al. 2016; Wilson et al. 1998) allow us to infer generalized cultural sequences spanning from approximately 13,000 years ago to around 1000 B.C., a period of about 10,000 years. Based on what archaeologists know of technological and typological changes through this period, August Pine Ridge seems to represent this entire sequence. Especially common are bifaces with fluted bases similar to well-documented Clovis and Fishtail technologies from North and South America, respectively, where they represent the presence and activities of hunter-gatherers moving about the landscape during the Terminal Pleistocene. The question of what these forms and technologies mean for Central America has important implications for how the Western Hemisphere was settled during this early time (Acosta-Ochoa et al. 2019; Pearson 2017; Perrot-Minnot 2013; Ranere and Cooke 1991).

Fluted bifaces from Belize have yet to be recovered from directly-dated contexts, so the age ranges that we assign to these forms come

from well-dated assemblages elsewhere (Pratres and Perez 2018; Waters et al. 2015, 2020; Waters and Stafford 2007). Secure dates associated with fluted points (of any type) are extremely scarce in Central America (Lohse 2021:15-16; Pearson 2004), although assays reported from Los Tapiales (Gruhn et al. 1977) and Chivacabe (Lohse et al. 2021) in the Guatemalan Highlands are plausible indicators that people associated with these early tool forms were passing through Central America around the same time as better-documented sites in South and North America. Here, we propose that the technologically distinctive behaviors associated with fluted biface preform preparation and point production can be approximately and indirectly dated by comparisons with well-dated assemblages elsewhere. Clearly, secure radiocarbon dates directly associated with these materials would provide more reliable support for our proposed chronology, but until such data are available, we argue that ours is the most plausible hypothesis for accounting for the presence of these materials.

Over the 2023 and 2024 seasons, we have observed and documented over 200 individual items. Included are approximately 50 specimens that represent the manufacture, use, and/or discard of bifaces that were fluted, or that were intended for fluting. Combined with specimens that are thought to exist outside the country, August Pine Ridge has produced perhaps as many as 80 bifaces from the Terminal Pleistocene; this number is a ten-fold increase over previously known specimens from Belize, and under-represents the quantity of material actually present. Few sites of comparable density have been recorded in Middle America. As of 2021, approximately 140 Clovis bifaces have been documented at Fin del Mundo in Sonora, Mexico (Sanchez and Carpenter 2021), marking that region as one of the most prolific Terminal Pleistocene sites anywhere in the Americas. South of August Pine Ridge, Michael Snarskis (1979) reported the recovery of 18 fluted bifaces and dozens of other items, including several preforms, from Turrialba, Costa Rica (also known as Finca Guardiría). The site is located on an outcrop of knappable stone, offering an example of combined site components related to quarrying, workshop reduction, and habitation. Acuña Coto (1983, 2000) has documented

additional early Preceramic occupations and components in the greater Turrialba Valley, especially at Florencia-1. Anthony Ranere (2006) documented another workshop site in Panama, called La Mula West. Fifteen fragments recovered here show evidence of fluting, and technological activities represented by dozens of preforms in various stages of reduction and related flaking debris are indicative of Clovis. La Mula West is associated with other nearby Terminal Pleistocene locales, including Vampire Cave (Pearson and Cooke 2003), the Nieto quarry (Pearson 2003), and Madden Lake (Ranere and Cooke 1991) that have produced further evidence for regional Early Paleoindian populations. In northern Ecuador, research first by Robert Bell (1960) and then William Mayer-Oakes (1986) at El Inga and nearby sites have produced thousands of specimens (including dozens of diagnostic bifaces and abundant quantities associated reduction materials) of indicating Terminal Pleistocene-to-Early Holocene occupations. Importantly, fluted biface types and styles from Turrialba, Panama, and northern Ecuador all reflect blended cultural traditions suggestive of dynamic social interactions at this early period. Material from August Pine Ridge contributes to this research.

Briefly, fluted points representing North American Clovis and South American Fishtail (or Fell), as well as an intermediate form that traditionally has been called Waisted Clovis (Ranere and Cooke 1991) but that we call Waisted Fluted, provisionally define a period of time between approximately 13,000-12,000 years ago (Perrot-Minnot 2012). With the assumptions stated above, we refer to this period as the **Fluted Biface Horizon** and understand it as a highly active and complex period of social settlement dynamics, with small bands conveying technological information up and down the Central American land bridge. In our scheme, these behaviors each span thousands of kilometers, as the Western Hemisphere was in the process of being “Peopled” at the end of the Terminal Pleistocene (Pearson 2004, 2017). Considering that earlier-than-Clovis populations were established in both South and North America prior to this period, Lohse (2021) refers to this phase of early colonization and population as “settling in.” The exact social mechanisms for

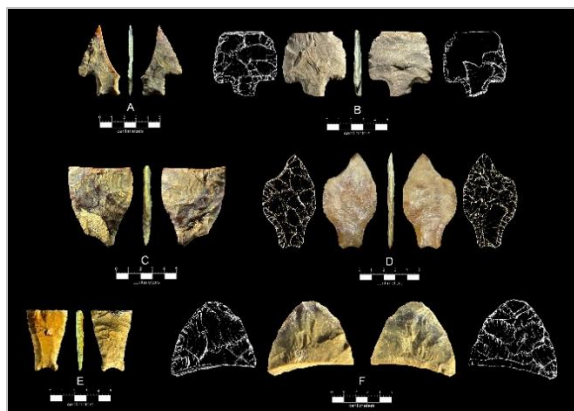


Figure 4. Examples of Fishtail-style specimens from August Pine Ridge. A) IT-35, manufacturing failure of stemmed variety; B) JT-52, stemmed variety Fishtail point showing impact damage at distal end and base of stem; C) IT-05, constricted variety of Fishtail biface (broken in manufacture and recovery by shovel); D) ES-01, constricted variety of Fishtail biface (broken by shovel); E) IB-05, Fishtail stem; F) JT-04, distal preform fragment of Fishtail biface.

this Peopling process remain unknown, but Gruhn (2023) suggests that it unfolded at a comparatively slow pace involving family-based groups leap frogging each other, and maintaining contact while exploring and learning new environments, resources, and pathways. Melzter (2009) discusses possible rendezvous sites that may have played important roles in helping maintain social group contacts during this process (also Perrot-Minnot 2013), and August Pine Ridge may provide an example of such a site. The quantity and diversity of material remains from sites like those mentioned above suggests that the Peopling process followed along well-known routes, that these routes and certain important places along them were established early and frequently revisited, and that the process involved the bi-directional transmission of information.

At August Pine Ridge, we have recorded dozens of specimens from this period representing nearly all reduction stages. Many of the bifaces were fluted while others were intended for fluting but failed prior to reaching this step. Several specimens appear nearly complete but were never used. Unlike Turrialba and La Mula West, no known chert outcrops are available nearby; instead, we see flake blanks and perhaps early-stage bifaces being carried here to be further reduced. (Several specimens still show

the ventral side of the original flake blank on one of their faces.) Furthermore, we see consistency in the narrow variety of raw materials utilized during this early period; relatively few “exotic” materials are present. These observations suggest that occupation and stone-tool related behaviors were regionally established, and that site visitations were not characterized by ephemeral “moments” when small groups were simply passing through and discarding some lost tools along the way. Understanding the source and nature of long-distance cultural influences that are present during the Fluted Biface Horizon requires a technological assessment, as has been performed on contemporary assemblages elsewhere in Central America (e.g., Pearson 2004; Ranere 2006). A key component of our work, however, involves identifying specimens that illustrate how Clovis and Fishtail technological traditions may have been practiced in relative isolation from each other, and instances where they overlapped to produce the third variety, Waisted Fluted.

Fishtail Bifaces and Clovis Influences

Present within this assemblage are some artifacts that clearly reflect South American-derived influences associated with Fishtail-style points or bifaces. Defined by Bird (1969), these points are typically stemmed with prominent shoulders (Figure 4A, 4B), although a second variety includes a heavily constricted or “waisted” haft element (Figure 4C, 4D). Stems often have small out-flaring “ears” (Figure 4E). A few examples have previously been reported from Belize (Lohse et al. 2006), and it is clear that these specimens were being manufactured this far north from South America. Technologically, we see the Fishtail category as distinct from Clovis. Distal blades are typically wide, broad, and relatively flat (bi-planar) in cross-section. These proportions are achieved by removing thinning flakes from blade margins that fan out and terminate at or just beyond the longitudinal midline. One specimen, a distal preform fragment, is placed into this category based on its extreme width and the flaking that it exhibits (Figure 4F). Importantly, fluting occurs relatively late in the reduction sequence for these specimens.

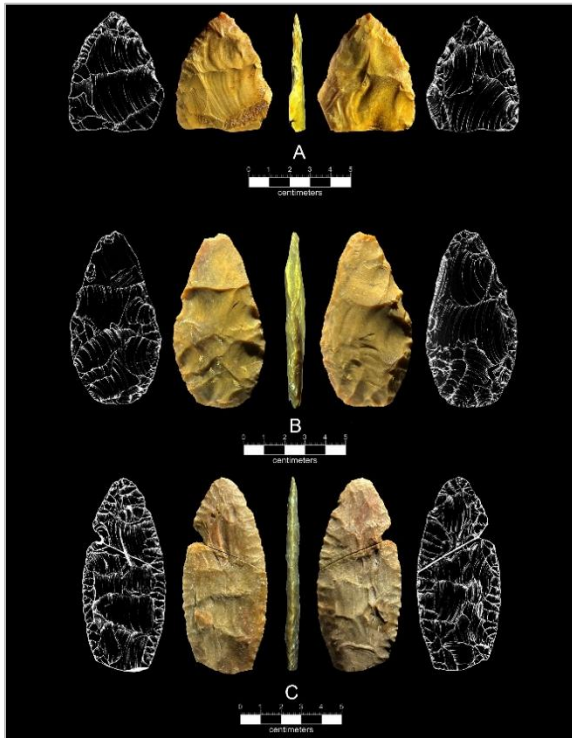


Figure 5. Examples of Clovis knapping traits. A) JT-49, distal preform fragment showing full-face flaking in preparation for a controlled overshot flake to remove a tabular edge; B) IB-04, probable Waisted Fluted preform showing remnant of a tabular edge that was set up for removal from the opposing margin before the biface was ruined; C) JT-16, nearly complete finished point that exhibits most of the traits expected of a “typical” Clovis point (broken by shovel).



Figure 6. Specimens exhibiting traits expected of Clovis knappers. A) JT-17, fluting failure that removed the distal end of a mid-stage preform; B) IT-03, mid-stage preform showing the end of a flute scar (left face) prior to manufacturing failure; C) IT-08, probable Waisted Fluted preform ruined by a failed overshot attempt; D) JT-15, square-based, mid-stage Clovis preform fragment; E) BF-01, square-based, mid-stage Clovis preform fragment.

Clovis-related technological behavior is also present, although we are challenged to identify any single specimen as a “classic” example. Following Bradley (1982), Bradley et al. (2010), Morrow and Morrow (2002), Waters et al. (2011), and others, certain key Clovis manufacturing traits are present in our inventory, but these tend to disappear in later stages of reduction. Important attributes include lanceolate or parallel-sided lateral margins; squared bases; controlled overshot, full-face, or “overface” (Smallwood 2010) flaking; fluting during middle reduction stages and later; and well-ground platforms for removing flutes and occasionally thinning flakes. Some traits like tabular lateral margins or fluting failures are indicators of these practices. Tabular edges were often removed from the opposite margin by controlled overshot flakes (Figure 5A, 5B), and mid-stage preforms ruined by fluting (Figure 6A) or after fluting (Figure 6B) reflect the sequencing of that step. At August Pine Ridge, we see many of these traits but rarely in combination. Squared bases, some with fluting, are present in early-to-middle reduction stages (Figure 6D, 6E), but these lack well-prepared fluting platforms. Some preforms show evidence for the preparation if not actual execution of overshot flaking (Figure 5A, 5B); more common is full face flaking although we have very few specimens that show what this looked like on finished points. One preform (Figure 6C) was ruined by a thinning flake that removed too much of the opposing margin; this specimen, however, was also set up for fluting by the removal of two guide flakes, suggesting that the actual flute removal would happen at a later step. Specimen JT-16 (Figure 5C), a finished point that is missing most of its base, is the best example of a biface that exhibits most of the expected Clovis attributes.

Waisted Fluted

Our current view is that Clovis-informed knapping strategies were being employed here, along with the production of actual stemmed Fishtail points, but that most of the record from August Pine Ridge consists of regionalized approaches to producing these complex bifaces in ways that reflect the blending of these traditions. This observation may help distinguish August

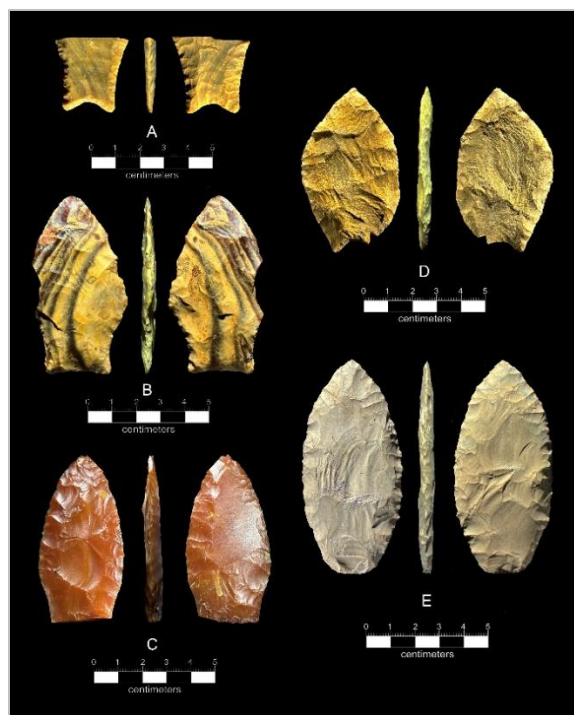


Figure 7. Examples of Waisted Fluted preforms. A) DC-14, stem showing flute on one face (right) and original flake scar on the other (left); B) IK-03, late-stage preform (broken by shovel) exhibiting no edge grinding and virtually no basal thinning; C) IT-01, late-stage preform broken during stemming, showing ground basal margins and a small remnant of a tabular edge at the distal end; D) IT-06, early-mid-stage preform (broken at the base by shovel) showing faint basal thinning on one face (right); E) JT-57, mid-stage preform showing failed basal thinning efforts on both faces.

Pine Ridge from other prolific Early Paleoindian sites like Fin del Mundo (Sanchez and Carpenter 2021) or La Mula West (Ranere 1996) where Clovis behaviors appear to have predominated. Outside of these influences, few “rules” appear to have guided production of these points. Preform reduction begins with ovate outlines (Figure 7D, 7E) whose margins were then gradually reduced to create the faintly stemmed haft element (we call this step “stemming”). Present in our assemblage are several distal-medial portions (Figure 7C) and also several stems (Figure 7A). From this, we infer that the act of stemming may have been an opportunity for failure. Some late-stage preforms show virtually no fluting (Figure 7B).

On finished points, we see much variation in the preparation and treatment of bases in terms of depth of concavity, and many specimens are fluted on only one side (Figure 8).

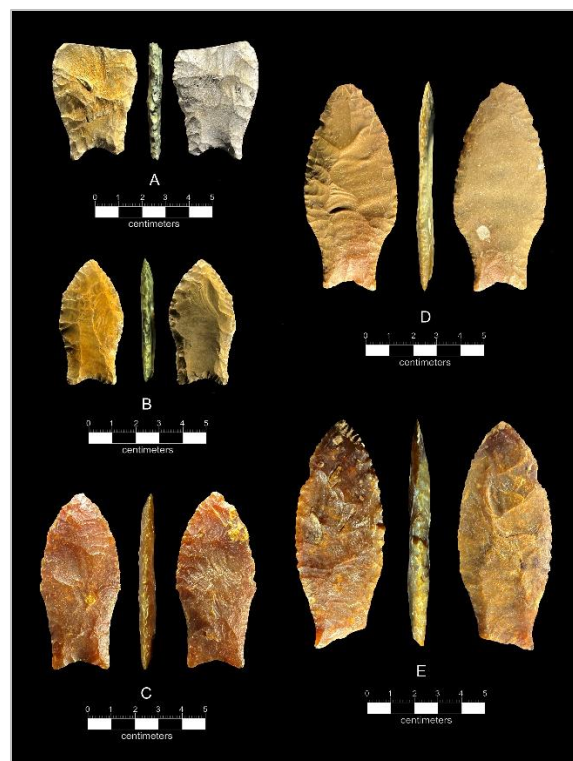


Figure 8. Examples of Waisted Fluted points. A) IT-02, nearly exhausted point, probably broken during use; B) DC-07, exhausted point; C) DC-27, finished by unused point; D) JT-58, finished but unused point; E) JT-59, finished but unused point (shovel damage at base and on one margin).

Thinning flakes that reach beyond the midline are uncommon (Figure 8A). Only one specimen in our entire catalog (Figure 8E) retains any portion of a well-ground, isolated platform that was used to guide the flute removal. Overall, we see that preparing and finishing the basal portion, including edge grinding along the haft region (two specimens, JT-58 (Figure 8D) and JT-59 (Figure 8E) even have a pronounced bevel) preceded final-stage trimming and flaking around the blade elements. For example, Specimen IT-01 (Figure 7C) is heavily ground along what remains of its basal margin, but the distal end retains a tabular edge remnant that has yet to be removed.

Discussion and Conclusion

August Pine Ridge is one of a very few sites from Middle America and northern South America where a large number of technologically diagnostic artifacts dating to the Terminal Pleistocene have been recovered. This assemblage is scientifically valuable not only

because of the nearly complete specimens that are present, but also for the information it contains about stages of manufacture that were undertaken. From this remarkable collection, archaeologists can draw inferences about the nature and process of the Peopling of the Americas, particularly the period following earliest exploration and colonization, when regional populations started to “settle in” and establish local traditions. David Meltzer (2009:283-286) describes this process as one where population densities are low but evidence is seen for knowledge about and utilization of local resources. Landscape learning begins to shift from the scale of “megapatches” (Beaton 1991), which include broadly defined ecological zones (karstic plains, montane forests, coastal margins, etc.) to local catchments. Many of these local catchments can become familiar way points during long distance movements. An example of what this may have looked like at August Pine Ridge involves people traveling up and down the Atlantic coast before entering into interior Central America along river valleys such as the Hondo, which happens to be the last river on the eastern side of Central America as one travels north before reaching the Yucatan shelf. Indeed, August Pine Ridge appears to reinforce a relationship between PaleoAmerican settlement and the Atlantic slope and coast of Middle America, which has implications for the hypothesis of an early sphere of interaction along the Atlantic Coast (Faught 2006; Pearson 2002, 2004) and perhaps the initial settlement routes of the Isthmus (Perrot-Minnot 2016).

Beyond its contribution to PaleoAmerican studies, the record at August Pine Ridge is also important for helping build a robust cultural chronology for Belize. The Fluted Biface Horizon defines what we call the Early Paleoindian period (although earlier remains may be identified). Based on cross-dated specimens that appeared from Central Mexico to northern South America, including unfluted lanceolate points (Lohse et al. 2024b) and the narrow-shouldered Paján horizon, which appears in Belize as the newly-defined Pine Ridge biface type (Lohse et al. 2024a), we suggest that important technological and social changes may have appeared around 12,000 years ago that included the disappearance of fluted forms in

favor of more regionalized styles. Coeval with this technological transition was a marked decline in the geographic extent, from thousands to hundreds of kilometers, within which cultural information about tool forms and manufacturing practices was exchanged. This shift defines the transition from Early to Late Paleoindian period and accelerated substantially until around 10,000 years ago, when Lowe forms appear to have predominated in Belize (Prufer et al. 2019). Importantly, by this time regional styles proliferated to include a wide range of similar but distinctive stemmed forms (Ranere and Cooke 2021), each bearing unique characteristics suggestive of localized populations, or at least lithic traditions. While little is yet known of these Early Holocene traditions, at least some regional styles have yet to be identified beyond a range of approximately 200 kilometers, suggesting that the widespread movements and cultural exchanges that defined the Early Paleoindian period had all but disappeared.

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