The Cerro Tres Tetas (C3T) Locality in the Central Plateau of Santa Cruz, Argentina

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For several years we have been carrying on research in the Central Plateau of Santa Cruz province at estancias La María, San Rafael, Los Granaderos, La Asturiana, El Ceibo, La Evelina, and Santa Catalina with the aim of reconstructing the past of the region (Paunero 1994, 1996, 2000a, 2000b; Paunero and Castro submitted).

The Cerro Tres Tetas (C3T) archaeological locality, previously unknown in scientific publications, was found in 1993. It is located at 48° 08′ 58″ S, 68° 56′ W, 450–480 m a.s.l., 55 km north of the La María and El Ceibo localities (Cardich 1987; Paunero 2000b) and approximately 75 km southwest of the Piedra Museo locality (Miotti 1995; Miotti et al. 1999).

One of the most important missions in American archaeology is establishing the time of arrival of the first colonizing human groups in the Southern Cone. This report, based on the datings of Pleistocene archaeological sites, discusses different theories regarding the technology, settlement patterns, diet, and origin of these hunter-gatherer colonizers.

Cueva 1, C3T is a multicomponent site whose stratigraphy and archaeological contexts date to the colonization phase of the Central Plateau of Santa Cruz in the late Pleistocene. It therefore constitutes an ideal subject for testing regional hypotheses, especially those proposed for the Los Toldos, El Ceibo, La María, and Piedra Museo localities (Cardich et al. 1973, 1982; Cardich and Paunero 1991, 1994; Miotti 1995; Paunero 2000b).

Stratigraphy of Cueva 1, C3T

The mouth of Cueva 1 is oriented towards the west. The cave lies 110 m from a present spring and 9.13 m above it. It is dark; soot covers the roof, and there are paintings on the

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walls. A systematic excavation was done in 1994 and 1995. Nine grids divided in sectors were excavated, covering a total area of 12.25 m^2 .

Identified Units (Figure 1)

0: Hudson volcanic ash (from August, 1991); thickness 2–6 cm.

1: Gray sand layer containing sheep dung; thickness 3–8 cm.

2: Sand layer, much darker, without dung, containing small and very small stemmed projectile points, hearth remains, and glass; thickness 6–12 cm.

3a: Light gray sand layer with a hearth in grid B, with small points similar to those of layer 2, but without glass or European material. Bone and lithic remains were found; thickness 8–12 cm.

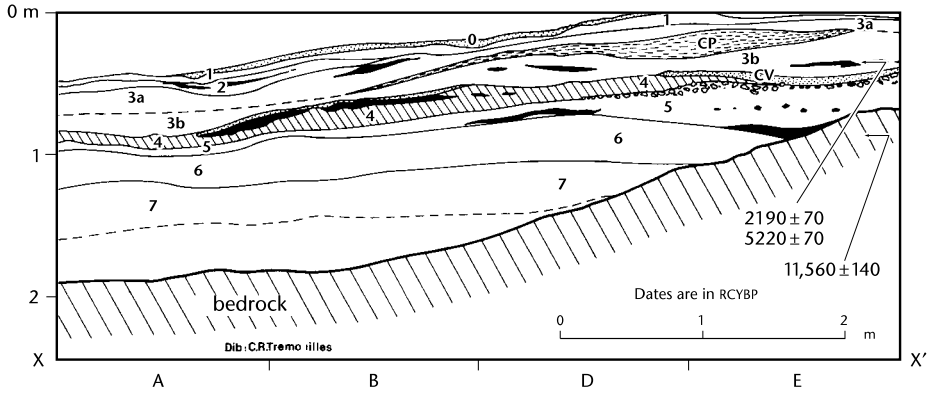

Figure 1. Stratigraphic profile, Cerro Tres Tetas.

CP: Layer of hay placed as a lens; thickness 2–16 cm.

E: Fine-grained light-colored sand layer, archaeologically sterile; thickness 11–20 cm.

3b: Fine-grained dark gray sand unit, with hearths; thickness 12–16 cm.

CV: Lens of volcanic ash. It overlies layer 4 except in the interior, where it lies directly over the roof of Unit 5; thickness 2–5 cm.

4: Sand and lime-brown-colored layer, with archaeological content; thickness 10–14 cm. An erosive nonconformity separates unit 4 from unit 5. Rocks of medium and small size fallen from the roof of the cave constitute an excellent natural seal over layer 5. They were found in the interior grids. The latest hearth from the initial component is directly covered by this depositional unit.

5: Light-ocher-colored slime-sandy layer, separated from layer 4 by a clear nonconformity. In the outer grids this layer is very thin (6 cm), but in the interior it is thicker, reaching 38 cm. In this layer the earliest occupation of the site was found, represented by four important hearths with a lenticulate structure and ranging in size from 80 to 120 cm. Lithic material and some bone remains were associated.

6: Clay and sandy layer, archaeologically sterile.

Lithic Analysis

The technical and morphological classification below should also be optimal for a functional analysis using the high-augmentation technique. A total of 523 pieces were recovered in the lower cultural component. This assemblage was divided into four technological groups: instruments, cores, debris, and unmodified rocks (Figure 2A, B, D, E).

Tools 31.

Scrapers 8 total; 7 sidescrapers, 9 retouched flakes, 3 knives.

Bifacial tools 2, a chopper and a hammer.

Cores 2 of flakes; also 3 fragments.

Debris 474 pieces.

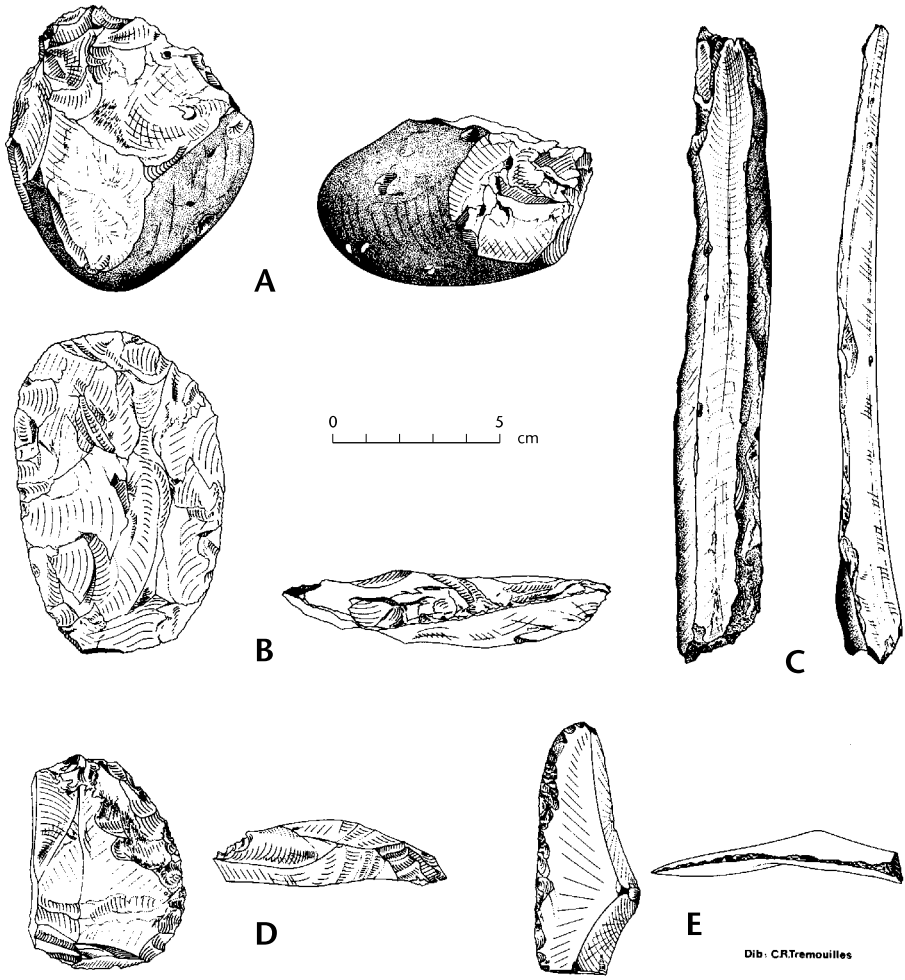

Figure 2. **A,** core; **B,** double lateral sidescraper; **C,** tool made from *Lama guanicoe* diaphysis; **D,** lateral scraper; **E,** knife with extended unifacial retouch.

Complete flakes and identified fragments 174.
Unidentified chipping fragments 71.
Microflakes 229.
Unmodified rocks 14.

Size of Tools

Length 3.6–10.3 cm.
Width 3–8 cm.
Thickness 0.4–5.7 cm.

Blanks

Thirteen instruments were made from flakes, eight from wide flakes, four from long flakes, one from a blade, one from a very wide flake, two from cobbles, and two from unidentified blanks.

Retouch

Tools are unifacial except for a notch and a preform with bifacial retouch. The marginal retouch on the dorsal face (short and long) is the most common; it is rarely on the ventral face.

Platforms

Among the complete tools, the most abundant platforms are natural (8), plain (7), and finally faceted (3), worn out (2) and dihedral (1). Among the debris, the types of platforms are 38 faceted (30.1 percent), 33 plain (26.2 percent), 17 natural (13.5 percent), 14 dihedral (11.1 percent), 8 prepared (6.3 percent), and 6 "puntiformes" (4.7 percent). Among the complete debris (and among the identified fragmented products) are 95 flakes (57.2 percent), 33 wide flakes (19.8 percent), 24 very wide flakes (14.4 percent), 12 long flakes (7.2 percent), and 2 blades (1.2 percent).

Raw Materials

There is a great diversity of materials from the flint (*silex*) family, with different colors and different degrees of homogeneity and fracture conditions. We have located several sources of raw material. In one instance, pebbles were taken from the creek that flows through the locality; in another, rock exposures of different concentrations located in the highest places near the site show evidence of quarrying. Among the instruments, 18 are made of flint, 8 of petrified wood, one of silicified tuff, 3 of chalcedony, and none of obsidian. Among the identified debris, 106 pieces are flint, 60 are petrified wood, 29 are chalcedony, 27 are silicified tuff, and 5 are obsidian.

Functional Analysis

A sample was selected from the complete lithic assemblage for the functional analysis of microwear (Keeley 1977, 1980; Semenov 1964; Vaughan 1981); based on a stratified criterion of sampling, the sample of 57 lithic pieces included 23 instruments, 32 pieces of debris, and 2 cores (Paunero and Castro submitted). The study determined that 10 pieces were used for working hides and 3 for working bones. A tool defined as a scraper had been used to work on hide and bone. Analysis of the spatial distribution of cultural materials in the cave identified two activity areas; in one the main activity was scraping hide, and in the other it was mainly working hide and scarcely any bone.

Heat Treating

The use of thermal treatment techniques to prepare tool blanks can be recognized by changes in the structure and color of the mineral, by a shiny surface (Nami et al. 2000), and by diagnostic thermal fractures. Of the sample artifacts selected for functional analysis, 13 showed evidence of heat treatment; moreover, 11 of these were found within 75 cm of the hearths (Paunero 1994, 1996; Paunero and Castro submitted).

Faunal Remains

In the cultural level, unlike the middle and upper components, there are few bone remains. It seems unlikely that this situation is due to postdepositional transformations, since the recovered bone fragments and flakes are very well preserved.

Bones and associated artifacts found consist of *Lama guanicoe* (a proximal right femur fragment, a distal fragment of metapodial, two fragments of diaphysis, a tool made of diaphysis with evidence of thermal treatment and marginal retouches forming a blade (Figure 2C), a fragment of proximal metapodial and a diaphysis with cut marks, a distal end of phalanx, a right upper molar and two vertebrae); and unidentified mammal (a small mammal vertebra, 30 flakes with evidence of heat treatment, 46 fragments, a light-colored awl made of a fragment without evidence of heat treatment, and two fragments of long bones).

In six units no bone remains were recovered. It is remarkable that the lithic artifacts and bone fragments were not found within the hearths; instead, they were found surrounding the structures or distributed in some sectors of the sedimentary light-ocher matrix, typical of unit 5.

It is also noteworthy that a botanical analysis made of one of the radiocarbon-dating samples detected the *Schinus* genus (J. Steele pers. comm.). In accordance with bibliographic research and recognition of present flora, it could be assigned to the local "Molle": *Schinus (duwana) polygamus patagonicus* (Cabrera 1938, 1971).

Conclusions

Unit 5 contains the Pleistocene cultural component. This unit overlies the bedrock in the interior of the cave and layer 6 in the rest of the excavated surface. In its upper part it is separated from unit 4 by a nonconformity, and in the interior grids of layer 5 it is sealed by medium-size fallen rocks. This initial cultural level (Table 1), referring to the colonization phase of the Central Plateau of Santa Cruz, spans the period from 11,560 RCYBP (LP-525), based on evidence from the three hearths at the bottom, until 10,260 RCYBP (LP-800), based on evidence from the hearth at the top of this layer, which is sealed by fallen rock.

Analysis of the lithic assemblage concludes that the chipping technique was direct percussion with hard hammers, rarely soft, with pressure retouch on a small scale. Two strategies were used to obtain blanks for tools. One was the direct method, selecting rocks of optimal quality and nodules with natural structural possibilities to obtain normal or wide flakes. In the other strategy, percussion platforms were prepared to create cores from which predetermined forms could be made (Tixier 1980), yielding products with faceted or dihedral blanks (Mansur 1987; Paunero 1994). In all these cases, the chosen forms were almost exclusively normal and wide flakes, resulting in tools intended to be gripped by hand. The tools would have been designed for specific functions.

Table 1. Radiocarbon chronology for components and units of C1 C3T.

Cultural component	Stratigraphy		Standard radiocarbon age (RCYBP)	Lab no.
	O	volcanic ash		
	1			
Historic Tehuelche	2			
Late Tehuelchense	3a	upper	830 ± 60	LP-770
	3a	lower	1,340 ± 50	LP-1180
	CP	hay layer	1,740 ± 60	LP-1187
	E			
Tehuelchense	3b		2,190 ± 70	LP-541
	CV	volcanic ash		
Casapedrense	4		5,220 ± 70	LP-538
		roof fall		
Initial component	5	upper	10,260 ± 110	LP-800
	5	lower	10,850 ± 150	LP-781
			10,853 ± 70	AA-39366
			10,915 ± 65	OxA-9244
			11,015 ± 66	AA-39368
			11,100 ± 150	AA-22233
			11,560 ± 140	LP-525
	6			
		bedrock		

The evidence reveals hearths, thermal treatment techniques, and scarce faunal remains. These findings suggest controlled cultural management of fire and a site compartmentalized into specific working areas, resulting in a highly efficient system for preparing tool blanks and refining the finished products.

It appears likely that the practice of fracturing long bones to obtain edible bone marrow was rarely used. Although it is possible that meat without bone was consumed, primary processing and consumption must have been done in some other site near the cave. Near the cave is a depression crossed by the creek that traverses the locality; the depression crosses the locality in a southeast direction and constitutes an ideal locale for hunting and processing prey.

The context of Cerro Tres Tetas is an example of the functional variability of early sites of the region. The spatial distribution of artifacts and structures suggests space was divided into areas intended for specific activities. In this way the site contributes to the evolving theory about the role of caves in different activity patterns of societies of the late Pleistocene.

References Cited

Cabrera, A. L.

1938 Revisión de las Anacardiáceas Austroamericanas. *Revista del Museo de La Plata,* N.S. II, Sección Botánica: 3–64. La Plata, Argentina???.

1971 Fitogeografía de la República Argentina. *Boletín de la Sociedad de Botánica*, XIV(1-3):25–36.

Cardich, A.

1987 Arqueología de Los Toldos y El Ceibo (Provincia de Santa Cruz, Argentina). In *Investigaciones Paleoindias al sur de la línea ecuatorial*, edited by L. Núñez and B. Meggers, pp. 98–117. Estudios Atacameños 8, Universidad del Norte, Antofagasta, Chile.

Cardich, A., L. Cardich, and A. Hajduk
1973 Secuencia Arqueológica y Cronología Radiocarbónica de la Cueva 3 de Los Toldos (Santa Cruz, Argentina). *Revista Relaciones* 7:87–122 Sociedad Argentina de Antropología.

Cardich, A., M. E. Mansur-Franchomme, M. Giesso, and V. A. Durán
1982 Arqueología de las Cuevas de El Ceibo (Provincia de Santa Cruz, Argentina). *Relaciones* 14(2):173–209 Sociedad Argentina de Antropología.

Cardich, A., and R. S. Paunero
1991 Arqueología de la Cueva 2 de Los Toldos (Santa Cruz, Argentina). *Anales de Arqueología y Etnología* 46/47:49–97.

1994 Mid-Holocene Herding in Central Patagonia. *Research and Exploration* 10(3):368–369.

Keeley, L. H.
1977 *An Experimental Study of Microwear Traces on Selected British Paleolithic Implements*. Ph. D. Dissertation, Oxford University.

1980 Experimental Determination of Stone Tool Uses: A Microwear Analysis. In *Prehistoric Archaeology and Ecology Series,* edited by K. Butzer and L. G. Freeman, pp. 1–212. The University of Chicago Press, London??.

Mansur, M. E.
1987 Características Tecno-tipológicas y Análisis Funcional de la Industria "Nivel 11". *Comunicaciones de Primeras Jornadas de Arqueología de la Patagonia*. Serie Humanidades 2:153–159. Chubut, Argentina.

Miotti, L.
1995 Piedra Museo Locality: A Special Place in the New World. *Current Research in the Pleistocene* 12:37–40.

Miotti, L., M. Vázquez, and D. Hermo
1999 Piedra Museo: Un Yamnagoo Pleistocénico en la Colonización de la Meseta de Santa Cruz. El Estudio de la Arqueofauna. *Simposio de Poblamiento en Terceras Jornadas de Arqueología de la Patagonia*. In *Soplando en el Viento,* edited by R. Goñi, pp. 113–136. Universidad Nacional del Comahue and Instituto Nacional de Antropologia y Pensamiento Latinoamericano, Neuquén–Buenos Aires, Argentina.

Nami, H., R. Cattáneo, and M. Pupio
2000 Investigaciones experimentales sobre el tratamiento térmico en algunas materias primas de Pampa y Patagonia. *Anales del Instituto de la Patagonia* (Serie Ciencias Sociales) 28:315–331, Punta Arenas, Chile.

Paunero, R. S.
1994 El Sitio Cueva 1 de la Localidad Arqueológica Cerro Tres Tetas (Estancia San Rafael, Provincia de Santa Cruz, Argentina). *Anales de Arqueología y Etnología.* 48/49:73–90.

1996 Noticia sobre Nuevas Fechas Radiocarbónicas del Sitio Cueva 1, C3T, Santa Cruz, Argentina. *Anales de Arqueología y Etnología* 50-51:189–199.

2000a Localidad Arqueológica Cerro Tres Tetas. In *Guía de Campo de la Visita a las Localidades Arqueológicas*, edited by L. Miotti, R. Paunero, M. Salemme, and G. C. Cattáneo. pp. 89–100. Taller Internacional sobre La Colonización del Sur de América Durante la Transición Pleistoceno/Holoceno. La Plata, Argentina.

2000b Relevamiento, Arte Rupestre y Sectorización de la Localidad Arqueológica La María. In *Guía de Campo de la Visita a las Localidades Arqueológicas,* edited by L. Miotti, R. Paunero, M. Salemme, and G. C. Cattáneo. pp. 104–120. Taller Internacional sobre La Colonización del Sur de América Durante la Transición Pleistoceno/Holoceno. La Plata, Argentina.

Paunero, R., and A. Castro
2001 Análisis Lítico y Funcionalidad del Componente Inferior de Sitio Cueva 1, Localidad

Arqueológica Cerro Tres Tetas, Provincia de Santa Cruz, Argentina. *Anales del Instituto de la Patagonia*. Punta Arenas, Chile.

Semenov, S. A.
1964 *Prehistoric Technology.* Cory, Adams and MacKay, London.

Tixier, J., M. L. Inizan, and H. Roche
1980 *Prehistorie de la Pierre Taille.* Circle de Recherches et d'Etudes Prehistoriques, Antibes, France.

Vaughan, P.
1981 Microwear Analysis of Experimental Flint and Obsidian Tools. Third International Symposium on Flint, *Staringia* 6:90–91.