

MUSEO DE LA PLATA RADIOCARBON MEASUREMENTS II

ANIBAL J FIGINI, JORGE E CARBONARI and ROBERTO A HUARTE

Laboratorio de Tritio y Radiocarbono (LATYR), Facultad de Ciencias Naturales y Museo, Paseo del Bosque, 1900 La Plata, Argentina

INTRODUCTION

The ^{14}C measurements reported here were made between 1983 and 1987. Sample pretreatment and date calculations were previously reported (Figini *et al* 1984). The method employed, liquid scintillation counting, was previously described (Huarte & Figini 1988). No $^{13}\text{C}/^{12}\text{C}$ ratios were measured and results were not corrected for ^{13}C fractionation and/or reservoir effect. Descriptions, comments and references to publications are based on information supplied by submitters.

ACKNOWLEDGMENTS

The authors wish to express their thanks to the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina, for their financial support and to the Facultad de Ciencias Naturales y Museo (FCNyM), Universidad Nacional de La Plata. Our special gratitude goes to the Centro de Estudios Parasitológicos y de Vectores (CEPAVE), for the use of their liquid scintillation spectrometer and to Myriam Tarragó for critically evaluating the archaeological section of this date list.

GEOLOGIC SAMPLES

Argentina

LP-82. Glaciar del Río Manso **180 ± 60**

Wood (*Nothofagus* sp) identified by A Brandani, CONICET and J Bruno, Parques Nacionales, from outcrop of glacio-lacustrine deposit in contact with ice in lateral moraine, at 12m depth below top of moraine (41°10' S, 71°50' W) Cerro Tronador, Río Negro Prov. Coll and subm Feb 1983 by J Rabassa, Comm Inv Cient Prov Buenos Aires.

Comment (JR): sample directly assoc with neoglacial fluctuations of Río Manso glacier probably related to “Little Ice Age.”

LP-100. Estancia Manuil Malal **>36,000**

Wood (*Nothofagus* sp) identified by J Boninsegna and R Villalba, Inst Argentino Nivología Glaciología (IANIGLA), Mendoza Prov, from outcrop below El Condor till and glacio-lacustrine deposit corresponding to ice margin lake (39°30' S, 71°15' W), Junín de los Andes, Neuquén Prov. Coll and subm Dec 1983 by J Rabassa.

Comment (JR): correlation with beginning of El Condor glaciation. Estimated age: 40,000 yr. Another portion of same sample was dated at $27,740 \pm 555$ (SI-6384; Stuckenrath, pers commun).

Punta Hermengo series

Estuarine sediments containing mollusk shells from valley-fill deposit of Late Pleistocene and

Holocene ages, Punta Hermengo (38°18' S, 57°52' W), Miramar, Buenos Aires Prov. Samples coll and subm 1981 by F Fidalgo and J Figini, FCNyM.

LP-86. Sample I 3400 ± 110

Carbonate powder dispersed into sandy-silt sediment from exposed profile below Puesto Berrondo buried soil.

Comment: no pretreatment.

LP-87. Sample II 6680 ± 140

Shells (*Litoridina parchappei*) from exposed profile underlying Puesto Berrondo buried soil and Puesto Callejon Viejo paleosol.

Comment: no acid pretreatment.

General Comment: ages agree with proposed paleontologic-geologic sequence by Fidalgo and Tonni (1983) for upper continental sediments.

Arroyo Seco series

Pedogenic carbonate from stratigraphic sequence at archaeol Site 2 (38°21'38"S, 60°14'39" W), Arroyo Seco, Tres Arroyos, Buenos Aires Prov. Coll April 1981 by F Fidalgo and LATYR personnel.

LP-92. Sample I 1890 ± 80

Pedogenic carbonate from silty-sand sediment, 6% CaCO₃ conc, 0.7m depth.

Comment: no pretreatment. Age is younger than expected probably due to contamination by young carbon dissolved in meteoric waters that penetrated profile.

LP-93. Sample II 5740 ± 120

Pedogenic carbonate from silt with sand and clay sediment, 16% CaCO₃ conc, 0.75m depth.

Comment: no pretreatment.

LP-94. Sample III 5700 ± 120

Pedogenic carbonate from silt with clay and sand sediment, 14% CaCO₃ conc, 0.85m depth.

Comment: no pretreatment.

General Comment: concordance between LP-93 and -94 ages shows that this horizon corresponds to same weathering process. Chronologic sequence agrees with stratigraphic position of samples and other dates from same site (LP-53, 8390 ± 240 (Figini *et al* 1984: 132)).

Teatro Argentino series

Continental sediments named "Sedimentos Pampeanos" from ca 30m profile of Teatro Argentino building, La Plata city (34°54'36" S, 57°56'03" W), Buenos Aires Prov. Coll May 1981 by F Fidalgo and LATYR personnel.

LP-95. Sample I 13,160 ± 230

Pedogenic carbonate from 2.5m depth in sandy-clay silt sediment, 28% CaCO₃ by weight.

LP-96a. Sample II 15,300 ± 260

Pedogenic carbonate from 5m depth in the same sediment as LP-95, 56% CaCO₃ by weight.

LP-96b. 14,570 ± 280

Duplicate of LP-96a.

LP-98. Sample III >37,000

Pedogenic carbonate from 8.5m below discontinuous contact corresponding to one incipient K horizon. CaCO₃ from sandy-silt clay sediment, 10% by weight.

LP-99. Sample IV 32,700 ± 1400

Pedogenic carbonate from 9.5m depth below LP-98 in same sediment, 18% CaCO₃ by weight.

Comment: age is pooled mean of two determinations: LP-99a: 32,900 ± 1900 and LP-99b: 32,600 ± 2200.

General Comment: ¹⁴C ages agree with relative age of lithostratigraphic units; also they show more than one pedogenic cycle. LP-99 is probably contaminated by modern carbon; thus, age would be >32,700 yr. Age sediments cannot be established through palaeontologic or geologic evidence; Late Pleistocene age is suggested.

Las Escobas III series

Mollusk shells from Holocene marine coastal deposit belonging to Cerro de la Gloria member of Las Escobas Fm (Fidalgo, De Francesco & Colado 1973) at exposed profile in Rincon de Lopez (35°46'07" S, 57°24'30" W), Castelli, Buenos Aires Prov. Coll 1980-1982 by F Fidalgo and LATYR personnel. Shells identified by D Fernandez, FCNyM; calcite/aragonite x-ray diffraction analyses by M Iñiguez Rodriguez, FCNyM.

LP-111. Sample I, Site 1 3150 ± 70

Shells (*Macra isabelleana*) ca 1.9m depth below surface.

Comment: outer 20% of shells removed by acid pretreatment; remaining portion consisting of 4.9% calcite, 95.1% aragonite, was dated.

LP-112A. Sample II, Site 1 3150 ± 90

LP-112B. Sample II, Site 1 3050 ± 90

Shell (*Adelomedon brasiliiana*) ca 1.9m depth below surface, assoc with LP-111.

Comment: LP-112A was outer 20% of shell removed by acid pretreatment and dated; remaining portion, -112B, consisting of 0.7% calcite and 98.3% aragonite, was dated.

LP-114A.	Sample III, Site 1	6460 ± 110
LP-114B.	Sample III, Site 1	7220 ± 100

Shell (*Adelomedon brasiliiana*) ca 1.9m depth below surface, assoc with LP-111 and -112.

Comment: LP-114A was outer 20% of shell removed by acid pretreatment and dated; remaining portion, -114B, consisting of 100% aragonite, was dated.

LP-116.	Sample IV, Site 2	3490 ± 80
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Shells (*Mactra isabelleana*) ca 2m below surface, 3.25m from Site 1.

Comment: outer 20% of shells removed by acid pretreatment and discarded; inner fraction, consisting of 2.9% calcite and 97.1% aragonite, was dated.

LP-117A.	Sample V, Site 2	4320 ± 80
LP-117B.	Sample V, Site 2	3760 ± 60

Shell (*Adelomedon brasiliiana*) ca 2m below surface, assoc with LP-116.

Comment: LP-117A was outer 20% of shell removed by acid pretreatment and dated; remaining portion, -117B, consisting of 1% calcite and 99% aragonite, was dated.

LP-119A.	Sample VI, Site 2	4760 ± 110
LP-119B.	Sample VI, Site 2	4910 ± 110

Shell (*Adelomedon brasiliiana*) ca 2m below surface, assoc with LP-116 and -117.

Comment: LP-119A was outer 20% of shell removed by acid pretreatment and dated; remaining portion, -119B, consisting of 8.6 calcite and 91.4% aragonite, was dated.

LP-121A.	Sample VII, Site 2	3460 ± 70
LP-121B.	Sample VII, Site 2	3330 ± 50

Shell (*Adelomedon brasiliiana*) ca 2m below surface, assoc with LP-116, -117 and -119.

Comment: LP-121A was outer 20% of shell removed by acid pretreatment and dated; remaining portion, -121B, consisting of 8% calcite and 92% aragonite, was dated.

LP-124A.	Sample VIII, Site 2	6850 ± 90
LP-124B.	Sample VIII, Site 2	6340 ± 90

Shell (*Adelomedon brasiliiana*) ca 2m below surface, assoc with LP-116, -117, -119 and -121.

Comment: LP-124A was outer 20% of shell removed by acid pretreatment and dated; remaining portion, -124B, consisting of 7.7% calcite and 92.3% aragonite, was dated.

General Comment: shells died at different ages and were redeposited, which is consistent with nature of deposit.

Las Escobas IV series

Mollusk shells belonging to Cerro de La Gloria member of Las Escobas Fm, from exposed profile of Canal 15 (35°58'21" S, 57°29'16" W). Samples were extracted in vertical sequence; identified by D Fernandez; calcite/aragonite x-ray diffraction analyses by M Iniguez Rodriguez.

LP-110. Sample 14 4510 ± 110

Shells (*Macra isabelleana*) from ca 0.60m depth; outer 20% of shell removed by acid; remaining portion consisting of 25% calcite and 75% aragonite, was dated.

LP-147. Sample 14 4220 ± 110

Shells (*Macra isabelleana*) from ca 0.60m depth; outer 35% of shell removed by acid pretreatment and dated, remaining portion was discarded; calcite was not determined.

LP-109. Sample 13 4550 ± 100

Shells (*Macra isabelleana*) from ca 1m depth; outer 20% of shell removed by acid; remaining portion consisting of 30% calcite and 70% aragonite, was dated.

LP-154. Sample 13 4610 ± 90

Shells (*Macra isabelleana*) from ca 1m depth; outer 35% of shell removed by acid pretreatment and dated, inner portion was discarded; calcite was not determined.

LP-108. Sample 12 4800 ± 90

Shells (*Macra isabelleana*) from ca 1.60m depth; outer 20% of shell removed by acid; remaining portion consisting of 5% calcite and 95% aragonite, was dated.

LP-158. Sample 12 4680 ± 70

Shells (*Macra isabelleana*) from ca 1.60m depth; outer 35% of shell removed by acid pretreatment and dated, remaining portion was discarded; calcite was not determined.

LP-107. Sample 11 4440 ± 110

Shells (*Macra isabelleana*) from ca 2.40m depth; outer 20% of shell removed by acid; remaining portion consisting of 100% aragonite, was dated.

General Comment: Samples 12, 13 and 14 were divided into two portions for dating inner and outer fractions.

LP-113. Río Sauce Grande-La Toma 1150 ± 70

Wood (*Salix humboldtiana*) identified by J Bonisegna and R Villalba, IANIGLIA, from outcrop, 6m deep from top of ravine, Río Sauce Grande-La Toma (38°15' S, 61°45' W), Buenos Aires Prov. Coll and subm Feb 1984 by J Rabassa.

Comment (JR): Lujanese mammalian age estimated by correlation with strata containing extinct fauna. Other portion of same sample was dated at 1570 ± 45 (SI-6848; Stuckenrath, pers commun).

Cueva Tixi series

Carbonate layers in stratigraphic sequence of Tixi cave (37°58'30" S, 58°04'04" W), containing palaeontologic and archaeological debris, in slope of La Vigilancia range, General Alvarado, Buenos Aires Prov. Coll Dec 1983 by F Fidalgo and LATYR personnel.

LP-140. Sample I 1220 ± 70

Carbonate from layer, 0.23m thick, at top of stratigraphic sequence.

Comment: no pretreatment was made.

LP-139. Sample II 1730 ± 80

Carbonate from layer, 0.05m thick, 0.38m depth below LP-140.

Comment: no pretreatment was made.

General Comment: these ages agree with stratigraphic sequence and relative chronology based on faunal remains.

Valle del Rio Sauce Grande series

Snail shells from Upper Pleistocene and Holocene continental deposits corresponding to Agua Blanca Fm and Saavedra Fm. Coll and subm Feb 1985 by J Rabassa. Mollusk shells identified by D Fernandez; x-ray diffraction analyses by M Iñiguez Rodriguez.

LP-115. Balneario Saldungaray SG 96 32,300 ± 1800

Snail shells (*Plagiodontes patagonicus*) dispersed through middle sandy member of Agua Blanca Fm at 210m above msl (38°12' S, 61°46' W), Saldungaray, Buenos Aires Prov.

Comment: inner fraction (70%) was used with 2% calcite and 98% aragonite.

LP-118. Camino Saldungaray RP 51 9780 ± 140

Snail shells (*Plagiodontes patagonicus*) dispersed through piedmont deposit of superior member of La Toma Fm at 180m above msl (38°14' S, 61°43' W), Ruta Provincial 51, Saldungaray.

Comment: inner fraction was used with 10% calcite and 90% aragonite.

LP-120. Lartigau 113.9 ± 0.7 pMC

Snail shells (*Plagiodontes patagonicus*) coll alive on shrubs growing on outcrop of La Toma Fm at 180m above msl (38°23' S, 61°38' W) Lartigau, Buenos Aires Prov.

Comment: flesh was separated from shell in boiling water; inner shell fraction (90%) was used.

General Comment: snail shells (*Plagiodontes patagonicus* and *Austroborus lutescens*) from upper member of Saavedra Fm were dated at 5500 ± 200 and 3890 ± 110 (SI-6450A and SI-6450B; Stuckenrath, pers commun). LP-118 and both SI ages agree with Holocene age of these stratigraphic units. LP-115 confirms Upper Pleistocene age of unit, which had been attributed to Lujanese mammalian age. LP-120 shows current depletion of ¹⁴C atmospheric level marked by snails.

La Plata Eubalena series

Mandibular branch (*Eubalena australis*) from Holocene marine sediments corresponding to Las Escobas Fm (34°53'39" S, 57°56'47" W) Ensenada, Buenos Aires Prov. Coll and subm Aug 1982 by F Fidalgo. Taxonomic determination was made by E Tonni, FCNyM.

LP-141a.	Bone grinding <0.17mm	4600 ± 100
LP-141b.		5690 ± 250
LP-141c.		4870 ± 160

Comment: each sample was pretreated according to Longin (1971) in 1M HCL for 15 min.

LP-141d.	Bone grinding <2.0mm	4420 ± 80
LP-141e.		3880 ± 90
LP-141f.		3750 ± 80
LP-141g.		3960 ± 100
LP-141h.		4040 ± 90
LP-141i.		4070 ± 90

Comment: each sample was pretreated in 1M HCL for 24 hr in vacuum.

General Comment: in this study, we have introduced variations in pretreatment (time and particle-size) in order to recover the maximum protein content and assure the total dissolution of inorganic matrix. We did not obtain a complete acid dissolution of inorganic matrix in LP-141a, -141b and -141c. We obtained a complete acid dissolution of bone and an increase of protein flocculate in LP-141d, -141e, -141f, -141g, -141h and -141i. In all cases, collagen was extracted according to Longin (1971) in HCL solution pH 2-3 at 80°C for 24 hr and used for dating. Several determinations were made to evaluate variability of dates.

LP-141j	Total bone acidification	1060 ± 90
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Comment: CO₂ from acid evolution of bone sample. This result shows trend of inorganic contamination.

Baradero series

Bone (*Balaenoptera cf physalus*) from estuarine sediments corresponding to Las Escobas Fm near Baradero city (33°50' S, 59°30' W) Buenos Aires Prov, from 0.30-0.50m depth. Coll July 1986 by A Figini and F Fidalgo, identified by E Tonni.

LP-153a.	5630 ± 100
Collagen.	

LP-153b.	5420 ± 110
Duplicate.	

Comment: both samples were pretreated in 1M HCL for 24 hr in vacuum; collagen was extracted according to Longin (1971). Pooled mean was reported as LP-153: 5540 ± 80.

LP-153c.	2710 ± 110
CO ₂ from bone acidification.	

Comment: this age shows trend of inorganic contamination.

Lobería series

Bone sample from continental deposit of Late Pleistocene and Holocene ages, corresponding

to La Postrera Fm, Lobería (38°09' S, 58°48' W), Buenos Aires Prov. Coll, identified and subm Aug 1986 by E Tonni.

LP-152a. **10,590 ± 120**

Collagen from dermal ossicles of *Glossotherium (Pseudolestodon) myloides*.

LP-152b. **10,860 ± 130**

Duplicate.

Comment: pretreatment and collagen extraction of both samples equal to LP-153a and -153b. Pooled mean reported was LP-152: 10,710 ± 90.

LP-152c. **4150 ± 90**

CO₂ from bone acidification.

Comment: this age shows trend of inorganic contamination.

ARCHAEOLOGIC SAMPLES

Argentina

LP-85. CPV/96 Pichileufú **2530 ± 90**

Charcoal from occupational floor at 0.68-0.70m depth, level VIII, Río Pichileufú Cave (41°04' S, 70°52' W), Pilcaniyeu, Río Negro Prov. Coll and subm March 1981 by R Ceballos, Fac Humanidades, Univ Nac Rosario (UNR).

Comments (RC): corresponds to postglacial guanaco hunters of Northern Patagonia. (Myriam Tarragó (MT)): provides *ante quem* date for wall engravings which were covered by Levels I-XI. Such engravings are supposedly related to the cave's most ancient inhabitants. See Ceballos and Peronja (1983) for discussion.

LP-88. Fortin Marias II ó Fortin Necochea, Locus 2 **6010 ± 400**

Collagen from guanaco bone fragments at 0.9-1.0 below datum, Quad C21, Fortin Necochea (37°23'49" S, 61°08'15" W), near La Madrid city, Buenos Aires Prov. Coll by M Silveira and E Crivelli and subm Jun 1981 by A Sanguinetti, Inst Antrop, Fac Filosofía y Letras, Univ Nac Buenos Aires, (UBA).

Comments (MS-EC): dates early (but not first) occupation of an open-air stratified site. (MT): consistent with CSIC-593: 3630 ± 60. See Crivelli, Eugenio and Silveira (1987-1988) for discussion.

LP-89. Guayra Azul I **1100 ± 60**

Charcoal at 0.26m depth, Layer 2, Sec 3, Alero Guayra Azul I (22°57'56" S, 66°15'16" W), Cochinoca, Jujuy Prov. Coll by A Fernandez Distel and subm Jun 1981 by M Califano, Centro Argentino Etnol Am, CAEA.

Comments (MC): evaluation of hypothesis about aboriginal relations with San Pedro de Atacama, Chile. (MT): corresponds to Late Formative period of Quebrada de Humahuaca and Puna region's

chronologic sequence. It would be contemporary to Tiahuanaco Expansive period of both Atacama region and Bolivian Highlands.

LP-91. Abra de la Ventana **6230 ± 90**

Charcoal at 0.4-0.7m depth, Cueva del Abra (38°05' S, 62° W) Sierra de la Ventana region, Buenos Aires Prov. Coll and subm June 1979 by A Castro, Fac Ciencias Nat y Museo (FCNyM), Univ Nac La Plata (UNLP).

Comment (AC): this is the first date for lithic material that corresponds to Tandiliense industry in this cave, and represents an early occupation of Pampa Bonaerense.

LP-90. Los Matos II **2670 ± 70**

Charcoal from archaeological refuse at 0-0.40m depth, Test Pit B, Los Matos II, Quebrada de Los Matos (25°07' S, 64°52' W), Anta Dept, Salta Prov. Coll and subm Oct 1983 by A Fernandez, FCNyM.

Comments (AF): charcoal specks dispersed throughout deposit. Date should determine chronologic span of La Candelaria culture at AD 400-700. (MT): date was rejected because deposits were disturbed by bulldozer's action and date did not correspond to what was expected.

Inca Cueva series

Samples from Layer 2, Inca Cueva 4 (IC₄), Quebrada de Inca Cueva (23° S, 65°27' W), Humahuaca Dept, Jujuy Prov. Coll and subm Nov 1983 by C Aschero, Inst Nac Antrop, Buenos Aires.

LP-102. M-2 **9650 ± 110**

Charcoal at 0.50-0.53m depth, Quad L3a.

LP-137. M-1 **10,620 ± 140**

Stem and leaves (*Hypsocharis* sp) at 0.45-0.52m depth, Quad M4a.

Comment: sample was boiled in 2% HCL.

General Comments (CA): date should determine relative synchrony in presumed occupation level. Samples correspond to different quadrants and deposition episodes in refuse area. (MT): LP-102 and -137 respectively, date medium and lower strata. Both samples agree with AC-564: 9900 ± 200 and CSIC-4980: 9230 ± 70 from habitation area. The four dates correspond to archaic hunter-gatherer occupation level in rock-painting shelter. Layer 2 includes several features such as subcircular room floor, postholes and five storage pits dug into sandy substrate. Stemless triangular dart points are similar to those recovered at Huachichocana III-E3 (Tumbaya Dept), La Cueva (Yavi Dept) both in Jujuy Prov and Tuina in northern Chile. See Aschero (1980) for discussion.

LP-104. Cabo San Pablo 1 **290 ± 70**

Charcoal from shell midden at 0.25-0.28m depth, Cabo San Pablo region, Tierra del Fuego. Coll and subm Nov 1983 by L Borrero, Inst Ciencias Antrop, UBA.

Comment (LB): dates cultural remains assoc with Selk'nam technology. Should provide chronologic framework for human occupation of Cabo San Pablo area and its inter-site relations.

LP-105. Antumpa R II G-5

1360 ± 70

Bone fragments (mostly *Lama* sp) from circular dwelling at Antumpa (22°59' S, 65°21' W), Quebrada de Humahuaca, Jujuy Prov. Coll and subm Aug 1982 by S Renard de Coquet and M Hernandez Llosas, Inst Antrop Hist Hispanoamericana, Buenos Aires.

Comments (SRC & MHL): date should provide chronologic framework for occupation of circular dwelling in agricultural village of Quebrada de Humahuaca area. (MT): this is one of first dates for this area which places site towards end of Early Formative period of northwestern Argentina. See Hernandez Llosas, Renard and Podestá (1983-1985).

LP-136. Los Toldos M3 85

4850 ± 90

Charcoal fragments from 0.35-0.45m depth, in topmost Layer 4 and beneath ash layer, Cave 3, Los Toldos (47°28' S, 68°50' W), Santa Cruz Prov. Coll and subm March 1985 by A Cardich, FCNyM.

Comments (AC): date should provide chronology of Casapedrense occupation in this cave. (MT): confirms relationship between end of Casapedrense lithic industry occupation and cave's volcanic ash layer.

LP-142. Pueblo Viejo de la Cueva

1180 ± 50

Charcoal from hearth at 0.60-1.0m depth, Level III-V, Sec 1, Quad A, Pueblo Viejo de la Cueva (22°50' S, 65° 22' W), Quebrada de Humahuaca, Jujuy Prov. Coll and subm Jan 1984 by S Basilico de Valter and R Brito, Secy Cult Educ, Jujuy Prov.

Comments (MT): assoc with abundant domestic ware and La Isla ceramic style together with faunal remains corresponding to Middle and Late Formative period of Quebrada de Humahuaca region.

LP-144. Cueva Trafal III

4120 ± 80

Charcoal from hearth at 3.65-3.87m depth, Layer 17, Trafal III (also known as Los Maitenes Cave) (40°42'15" S, 71°09' W), Valle Encantado, Los Lagos, Neuquén Prov. Coll and subm April 1985 by D Curzio, Prog Estudios Prehist, CONICET-UBA.

Comment (DC): sample corresponds to first preceramic occupation of cave assoc with some flakes.

Alero Los Cipreses series

Samples from archaeological site Alero Los Cipreses (40°38'45" S, 71°19' W), Trafal Lake, Neuquén Prov. Coll and subm March 1985 by M Silveira, Inst Antropol, UBA.

LP-145. PTA-6 no. 9

1510 ± 90

Charcoal from hearth at 0.45-0.5m depth, Quad 3.

LP-159. PTA-6 no. 12**3490 ± 80**

Charcoal from hearth at 0.70-0.75m depth, Layer 4, Quad 6.

General Comment (MS): date should determine chronologic framework for ceramic and non-ceramic components of site.

Casa Piedra de Ortega series

Charcoal from Casa Piedra de Ortega, Paraje Corralito (40°44' S, 70°42' W), Pilcaniyeu, Río Negro Prov. Coll and subm March 1985 by E Crivelli, Fac Filosofía y Letras, UBA.

LP-146. CPO 10/85**2840 ± 80**

Charcoal from hearth at 1.43-1.48m below datum, Layer i, Quad G3.

Comment (EC): dates first occupation of cave and gives *terminus ante quem* for engravings in bedrock.

LP-168. CPO 5/86**2000 ± 90**

Charcoal at 1.25-1.29m below datum, Layer e2, Quads G1 and H1.

Comment (EC): dates aceramic phase of northern Patagoniense lithic industry.

General Comment (EC): both dates agree with cave's stratigraphy as well as with other dates from same site (all unpub): AC-951: 2710 ± 100 from Layer H; AC-936: 1440 ± 80 from Layer 3; LP-191: 280 ± 50 from Layer e2.

LP-156. Talampaya**1830 ± 60**

Wooden artifact (*Larrea* sp) identified by L Berridi and R Mamblona, Esc Sup Bosques UNLP, from Talampaya site (29°46'05" S, 67°46'07" W) Independencia, La Rioja Prov. Coll and subm Sept 1985 by M Gonaldi, Inst Antrop, Univ Prov La Rioja.

Comment (MT): from man-made lookout dug into rocky scarp assoc with other wooden objects, basketry, leather, wool, feathered sticks, maize and a domestic-ware sherd, which were lying on a bed of straw and branches, covered by a thick layer of pebbles. Date is related to Early Formative period of Valliserrana region of northwestern Argentina.

LP-157. Playa Grande no. 9**1800 ± 80**

Charcoal from shell midden at 0.10m depth, Playa Grande (48°58' S, 67°27' W) Santa Cruz Prov. Coll and subm March 1986 by A Cardich, FCNyM, UNLP.

Comment (MT): should date Santa Cruz's coastal occupation.

LP-160. Punta Bustamante**3200 ± 80**

Charcoal at 0.35m depth, 70-80m amsl at 1500m off shoreline, from Rudd I site (51°33'30" S, 68°58'40" W), Punta Bustamante, Guer Aike, Santa Cruz Prov. Coll and subm Feb 1985 by E Mansur, Centro Austral Investigaciones Científicas, CADIC.

LP-165. La Huerta**1150 ± 80**

Charcoal from refuse area at 1.45-1.78m depth, Quad C1, Layer XV-XVI, La Huerta (23°30' S, 65°20' W), Quebrada de Humahuaca, Jujuy Prov. Coll and subm May 1986 by R Raffino, FCNyM, UNLP.

Comments (RR): this date shows Inka-Humahuaca cultural contact in NW Argentina. (MT): date corresponds to refuse area in center of La Huerta town; related to pre-Inka phase of site. Upper layers show cultural contact between Humahuaca and Inka cultures and European objects.

LP-166. Los Flamencos I**3100 ± 110**

Bone collagen (*Lama* sp) from Los Flamencos I (37°40' S, 62°25' W), Campo Fernandez, Saavedra, Buenos Aires Prov. Coll and subm May 1986 by A Austral, FCNyM, UNLP.

Comment (MT): sample from upper layers of archaeological stratigraphy of non-ceramic component. Date should provide chronologic framework for pampean pottery, resulting in date somewhat later than expected (4000 BP).

LP-167. Lago San Roque**3500 ± 110**

Human bone collagen at 0.70m depth, Lago San Roque Beach (31°22' S, 64°33' W), Carlos Paz city, Cordoba Prov. Coll and subm Jan 1987 by Poder Judicial de Cordoba (Cordoba Dept Justice).

Comment: data requested for judicial investigation.

LP-169. Susques**400 ± 100**

Wood (*Trochocereus* sp) from roof of house, Susques (23°16' S, 66°16' W), Jujuy Prov. Coll, identified and subm May 1986 by A Fernandez Distel.

Comment (AFD): date should provide chronologic framework for architectural structures related to Late Regional Developments period of Puna de Atacama region.

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