

TEMPLE UNIVERSITY RADIOCARBON DATES I

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INTRODUCTION

Temple's radiocarbon dating facility is housed in the Department of Geology on the Main Campus. The laboratory was established to support research in late Pleistocene and Holocene Geology, Archaeology, and Anthropology.

The method employed is liquid scintillation counting of synthesized benzene using the basic techniques described by Noakes, Kim, and Stipp (1965), Polach and Stipp (1967), and modifications as described by Stipp, Eldridge, and Cadwell (1976) converting sample \rightarrow CO₂ \rightarrow C₂H₂ \rightarrow C₆H₆. Over-all yield is approximately 90 to 95%. Shell samples are etched with dilute HCl; organic samples are pretreated with 3N HCl and, with the exception of total organic carbon dates, 2% NaOH.

Counting is done on an automatic Searle Mark III liquid scintillation spectrometer with a background of 7cpm utilizing a 20cc low ⁴⁰K glass vial. The 4cc cocktail includes PPO and dimethyl-POPOP scintillators. Instrument stability is continuously monitored.

The dates reported here are calculated using a ¹⁴C half-life of 5568 yr. 95% of NBS oxalic acid ¹⁴C dating standard, converted to CO₂ by a solution of potassium permanganate and sulfuric acid, is used for the modern reference. Errors are reported as one standard deviation which includes only the combined counting uncertainty of the background, modern, and sample. Ages of check samples determined in this laboratory indicate agreement with the results of other laboratories. Reproducibility of multiple runs is satisfactory.

ACKNOWLEDGMENTS

R Harper of Temple's Skin and Cancer Clinic generously provides use of his liquid scintillation counter. With his unselfish cooperation the laboratory is able to maintain efficient operation.

Special thanks to G Ulmer, Department of Geology, Temple Univ, for his support and encouragement. Student M Dobday supplied valuable assistance in various aspects of the laboratory's construction.

SAMPLE DESCRIPTIONS

I. ARCHAEOLOGIC SAMPLES

A. United States

TEM-129. Arthur Dean site, M52 SE-10-110 1800 ± 80

Charcoal from Arthur Dean site, Sesachacha Pond W, Nantucket, Massachusetts (41° 17' 35" N, 69° 59' 62" W). Sample excavated 65cm beneath surface from midden located in glacial moraine. Result dates occupation of site by early peoples. Coll 1973 and subm 1979 by D G Crozier, Temple Univ, Philadelphia, Pennsylvania.

TEM-111. Assunpink Creek, AS-1-44-3 2770 ± 60

Charcoal from Assunpink Creek, Hamilton Twp, New Jersey (40° 15' N, 74° 45' W). Sample in loose assoc with argillite assemblage from 35 to 45cm beneath surface. Coll 1976 and subm 1978 by J W Gruber, Temple Univ. *Comment*: 2nd date TEM-112: 2950 ± 70 from additional charcoal contemporaneous with TEM-111. *Comment* (JWG): 1st in series of samples to establish spatial chronology est 1150 to 6950 BP of occupation by single component at this site.

*B. Pakistan***TEM-118. Sanghao Caves 61 and 62 11,760 ± 260**

Charcoal from Sanghao Cave, Sanghao Valley, Peshawar Basin, Pakistan (34° 30' N, 72° 30' E). Sample from hearth excavated 2m beneath surface of cave floor. Result establishes regional sequence of archaeological cultures. Coll 1975 and subm 1978 by A J Ranere, Temple Univ. *Comment* (AJR): date expected to be much older from geol and cross-dating estimates. Sample assoc with stone tools which are probably contemporary with Upper Paleolithic industries to W.

*C. Guatemala***TEM-113. El Mirador EM 78-1 1450 ± 120**

Charcoal from Aguada Limon reservoir, El Mirador, El Peten, Guatemala (17° 47' N, 89° 55' W), 20 to 50cm beneath surface. Result dates abandonment of reservoir by early peoples during Classic or Post-Classic Maya phase. Coll by D K Moore; subm 1978 by B H Dahlin, Catholic Univ America, Washington, DC.

D. Panama

Temple Univ is currently involved with members of Am Mus Nat Hist and Smithsonian Tropical Research Inst in research directed towards assessing age and nature of early cultural patterns in New World humid tropics as well as age and nature of hunting-gathering patterns from which they developed. Attention has been focused on Pacific coastal plains of Panama where archaeol investigations conducted in 1940's and 1950's revealed sequence of occupations spanning at least last 7000 yr (Willey & McGimsey, 1954; McGimsey, 1956; Willey, 1971). Re-excavation of Monagrillo and Aguadulce sites was undertaken during 1975 to coll archaeol and paleol samples for accurate dating and to reconstruct environmental and subsistence systems (Ranere, 1972; 1975; 1976; Ranere & Hansell, 1978). Samples excavated in 1974 from the Ladrones site contained Monagrillo-like sherds, providing 3rd ceramic occupation for cross-dating.

The following dates are latest radiocarbon results for Monagrillo, Aguadulce and Ladrones; previous dates are referenced where appropriate. Future work on these and additional sites will include coastal and intertidal sedimentol studies by Temple's Dept Geol.

TEM-109. Monagrillo #70 **5500 ± 100**

Charcoal from coastal shell midden, 5km NE of Chitre on coast of Parita Bay, Monagrillo, Herrera Province, Panama (8° 02' N, 80° 28' W). Sample from Block 2, 100 to 110cm beneath surface. Coll 1975 and subm 1978 by A J Ranere. *Comment*: previous dates on site are Y-585: 4090 ± 70 (R, 1959, v I, p 142-172); I-9384: 3325 ± 85 (Buckley, 1976, written commun); SI-2840: 3615 ± 80 and SI-2841: 5385 ± 95 (Stuckenrath, 1976, written commun).

Aguadulce series

Samples from rockshelter in coastal plains of central Panama, 18km N on coast of Parita Bay, 8km NE of Santa Maria R, 13km W of Aguadulce, Panama (8° 11' 08" N, 80° 38' 28" W). Coll 1973 and subm 1978-79 by A J Ranere.

General Comment (AJR): stratigraphy was highly compressed yielding ca 5000 yr of cultural deposits between 40 to 85cm depth beneath surface.

TEM-107. Aguadulce #30 **2570 ± 100**

Ostrea corteziensis from Block 3, Layer B₁, 5 to 10cm beneath surface.

TEM-125. Aguadulce #32 **2540 ± 70**

Ostrea corteziensis from Block 3, Layer B₂, 10 to 15cm beneath surface.

TEM-126. Aguadulce #33 **2960 ± 80**

Ostrea corteziensis from Block 3, Layer B₃, 15 to 20cm beneath surface. *Comment* (AJR): TEM-107, -125, and -126 are assoc with Monagrillo ceramics.

TEM-108. Aguadulce #24 **3630 ± 100**

Ostrea corteziensis from Block 2, Layer C₁, 20 to 25cm beneath surface.

TEM-127. Aguadulce #36 **2790 ± 110**

Ostrea corteziensis from Block 3, Layer C₃, 25 to 30cm beneath surface. *Comment*: 2nd date TEM-128; 3700 ± 100 from *Protothaca asperima*. *Comment* (AJR): TEM-127 expected to be older (assoc with pre-ceramic culture); stratigraphically below TEM-108 and -126.

TEM-130. Aguadulce #37 **4210 ± 90**

Ostrea corteziensis from Block 3, Layer C₄, 30 to 35cm beneath surface. *Comment*: 2nd date TEM-131; 6180 ± 120 from *Anadara tuberculosa*.

TEM-106. Aguadulce #40 **5840 ± 100**

Ostrea corteziensis from Block 3, Layer C₅, 35cm beneath surface to bedrock.

TEM-110. Aguadulce #38 and #41 3540 ± 120

Charcoal from Block 3, Layer C₄ and D, #38 from 30 to 35cm beneath surface; #41 from 35cm beneath surface to bedrock. *Comment* (AJR): date expected to be older. Sample coll from both layers as small flecks; reworking by termites could have caused contamination. TEM-108, -127, -128, -130, -131, -106 and -110 are assoc with preceramic culture.

Ladrones series

Samples from rockshelter, Cueva de los Ladrones, Cocle, Panama (8° 30' 08" N, 80° 29' 27" W). Coll 1974 by J Bird, Am Mus Nat Hist and R Cooke, Smithsonian Tropical Research Inst; subm 1978 by Bird and Cooke.

TEM-120. Ladrones CL-46 3770 ± 80

Ostrea from Area 2A, Layer 4, inside drip-line of rockshelter. Date expected to be late preceramic. *Comment*: 2nd date, TEM-121: 3860 ± 90 from *Ostrea*, Layer 5, contemporaneous with TEM-120.

TEM-123. Ladrones #3_c 6860 ± 90

Charcoal from 0 to 15cm beneath surface, Area 2A, Layer 6. Sample assoc with earliest signs of occupation grading down to bedrock.

TEM-124. Ladrones #1_c 4520 ± 100

Charcoal lying on base rock, Area 1, Layer 2B. Correlation with early ceramic/late preceramic culture.

TEM-119. Ladrones CL-4 4800 ± 100

Ostrea from 30 to 45cm beneath surface, Area 1, Layer 3, assoc with Monagrillo-like sherds. *Comment*: sample stratigraphically related to TEM-124.

TEM-122. Ladrones #2_c 3880 ± 80

Charcoal from Area 0, Layers 7 and 8. Date expected to be late preceramic.

II. GEOLOGIC SAMPLES

A. United States

TEM-114. Selbyville quad shell 27,760 + 920 - 860

Crassostrea fragments from Selbyville quad, Sussex Co, Delaware (38° 29' 05" N, 75° 08' W), cored 2.4 to 2.8m beneath surface of back barrier marsh environment. Result dates late Pleistocene coastal history in E Sussex Co. Coll and subm 1978 by J Demarest, Univ Delaware, Newark, Delaware. *Comment*: previous date on basal peat is I-7526: > 40,000 (Buckley, written commun).

TEM-115. Selbyville quad peat + 3860
33,500

– 2600

Peat sample from Selbyville quad, Sussex Co, Delaware (38° 29' 05" N, 75° 08' W), cored 8.2 to 8.6m beneath surface. Result dates same geol event as TEM-114. Coll and subm 1978 by J Demarest. *Comment*: total organic carbon content dated.

TEM-116. Bethany Beach quad marsh mud 4340 ± 80

Marsh mud from median strip on Rt 1, N of Indian R inlet, Bethany Beach quad, Sussex Co, Delaware (38° 38' N, 75° 04' W). Sample from core ca 6m beneath surface. Result dates presence of back barrier marsh subsequently buried under barrier island during transgression. Coll and subm 1978 by W Carey, Univ Delaware. *Comment*: total organic carbon content dated.

TEM-117. Biddleford Pool spartina 980 ± 80

Spartina marsh grass from Biddleford Pool, Saco, Maine (43° 26' N, 70° 21' W), exposed in surf of transgressing sandy barrier. Date establishes rate of barrier transgression and relative sea level position. Coll and subm 1978 by J C Kraft, Univ Delaware. *Comment*: duplicate run of sample gave 1070 ± 60 BP.

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