

UCR RADIOCARBON DATES I

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A radiocarbon facility has been installed at the University of California, Riverside (UCR) to support interdisciplinary studies including archaeological, archaeometric, geophysical, and geologic research. The laboratory was built between 1970 and 1973. Initially, a sample pretreatment and combustion system designed for a proportional CO_2 counting system was installed. It was designed after concepts developed at the University of California Los Angeles (UCLA) and New Zealand (Institute of Nuclear Sciences) Laboratories, and began processing samples in November 1972.

A 1.7L CO_2 proportional counter was then installed in the UCR laboratory which commenced operation in late September, 1973. The counting system was assembled from components originally fabricated by G J Fergusson. Calculated radiocarbon ages are based on a 5568 yr half-life as recommended by the Eighth International Radiocarbon Dating Conference, October 1972, Lower Hutt, New Zealand. All samples are counted at a filling pressure equivalent to 76cm at 20°C. The standard for the contemporary biosphere is 0.95 NBS oxalic acid and AD 1950 constitutes the zero reference year. Statistical errors are calculated by combining the standard 1σ standard deviations of the background and sample counts. Samples which approach modern or background values are reported with 2σ limits. All samples were subjected to accepted HCl, NaOH or other special chemical pretreatments depending on specific conditions to exclude contamination.

Through the cooperation of W F Libby and Rainer Berger, the Isotope Laboratory of the Institute of Geophysics at UCLA performed radiocarbon determinations on sample gases prepared by the UCR facility for calibration and interlaboratory checks. UCR I contains the interlaboratory calibration data (Table 1) and sample descriptions for joint UCLA/UCR measurements. UCR II and subsequent lists will contain radiocarbon dates measured exclusively at the Riverside laboratory.

ACKNOWLEDGMENTS

The author wishes to express his gratitude to those who contributed to the development of the UCR radiocarbon facility. W F Libby and Rainer Berger provided continuing equipment support, advice, and encouragement. J G Fergusson, Scientific Research Equipment Corp of Baltimore, Maryland, provided technical assistance. H Suess and Donald Sullivan, Radiocarbon Laboratory, Scripps Inst of Oceanography, University of California, San Diego, provided equipment and expert assistance. Operational support came from various sources including the

American Philosophical Society, UCR Intramural Research Grants, the Graduate Division at UCR, and a Dept of Labor grant to UCR. The dedicated laboratory work of Peter Slota, Dwight Sawyer, and Stanley Sheldon is also very much appreciated. The support and encouragement of James Earley and Michael Reagan, College of Social and Behavioral Sciences, and Alan Beals and Sylvia Broadbent, Anthropology Dept, is gratefully acknowledged.

TABLE 1
Interlaboratory calibration samples

UCR sample no	Date	UCLA sample no.	Date
UCR-125*	modern (<100 yr)	UCLA-1887	modern (<100 yr)
UCR-129*	180 ± 100	UCLA-1888	190 ± 60
UCR-119F	720 ± 100	UCLA-1867F	770 ± 80
UCR-128*	940 ± 100	UCLA-1892	1170 ± 80
UCR-118D	1580 ± 150	UCLA-1800D	1650 ± 80
UCR-126*	3750 ± 100	UCLA- 900	3760 ± 80

* Descriptions for these samples will appear in UCR II.

SAMPLE DESCRIPTIONS

I. ARCHAEOLOGIC SAMPLES

Perris Reservoir series, Riverside Co, California

Studies were conducted by the Archaeol Research Unit, UCR, as salvage excavations supported by California Dept of Parks and Recreation, Perris Reservoir, Riverside Co, California (33° 50' N, 117° 30' W). This site represents the most intensely studied late prehistoric archaeological region in interior Southern California. The results of the excavations will appear elsewhere (O'Connell, *et al*). Samples were coll Spring 1971 and subm by P Wilke and T King, UCR.

870 ± 80

UCR-101/UCLA-1815. Peppertree site AD 1080

Charcoal from Feature 9, a hearth underlying primary living floor in Area 2 of 4-Riv-463, Peppertree site. *Comment* (PW): dates period prior to beginning of intensive site occupation.

215 ± 60

UCR-102/UCLA-1816. Peppertree site AD 1735

Charcoal from Feature 4, a hearth overlying primary living floor in Area 2 of 4-Riv-463, Peppertree site. *Comment* (TK): living floor represents period of most intensive use of site.

2200 ± 80

UCR-103/UCLA-1817. Peppertree site 250 BC

Charcoal from Feature 14, a hearth, basal feature of site, in otherwise generally sterile sand of 4-Riv-463, Peppertree site. *Comment* (TK): date is compatible with other evidence of occupation of the reservoir area

during the period ca 2000 BC. Other evidence includes an Elko Corner-Notched projectile point from the Charles Mott site (4-Riv-464).

210 ± 60

UCR-104/UCLA-1818. Charles Mott site AD 1740

Charcoal from Feature 13, a hearth from Loc 1, Unit 2S/18W, with cottonwood Triangular concave-base projectile point and Tizon Brown ware. *Comment* (PW): dates period of most intensive site use.

<150

UCR-105/UCLA-1819. Dead Dog site Modern

Charcoal from Loc B, Unit 7, a hearth assoc with small triangular projectile points and worked valves (*Argopecten* sp). *Comment* (TK): although it is not impossible that site was in use as late as AD 1800, date is the only evidence for it.

Buchanan Reservoir series, Madera Co, California

Human burials excavated from a mortuary complex in salvage operation in Buchanan Reservoir region (37° 13' N, 119° 59' E). Significance of data will be discussed elsewhere. All dates were obtained on collagen component of bone after the method of Berger *et al*, (1964). Coll 1972 by T King, UCR.

1690 ± 100

UCR-118A/UCLA-1860A. Jones site AD 260

Bone collagen from Human Burial 52, Jones site (4-Mad-159) on bedrock under 1m midden.

2750 ± 90

UCR-118B/UCLA-1860B. Schwabacker site 800 BC

Bone collagen from Human Burial 44, Schwabacker site (4-Mad-117) on bedrock under 70cm midden.

1470 ± 100

UCR-118C/UCLA-1860C. Schwabacker site AD 480

Bone collagen from Human Burial 59, Schwabacker site (4-Mad-117) on bedrock under 70cm midden.

1650 ± 80

UCR-118D/UCLA-1860D. Dancing Cow site AD 300

Bone collagen from Human Burial 24, Dancing Cow site (4-Mad-106) on bedrock under 1.5m midden.

1740 ± 100

UCR-118E/UCLA-1860E. Dancing Cow site AD 210

Bone collagen from Human Burial 11, Dancing Cow site (4-Mad 106).

970 ± 80

UCR-118F/UCLA-1860F. Schwabacker site AD 980

Bone collagen from Human Burial 21, Schwabacker site (4-Mad-117).

	1745 ± 100
UCR-118G/UCLA-1860G. Schwabacker site	AD 205
Bone collagen from Human Burial 16, Schwabacker site (4-Mad-117).	
	1400 ± 90
UCR-118H/UCLA-1860H. Jones site	AD 550
Bone collagen from Human Burial 13, Jones site (4-Mad-159) on bedrock under 1m midden.	
	1010 ± 80
UCR-118I/UCLA-1860I. Dancing Cow site	AD 940
Bone collagen from Human Burial 33, Dancing Cow site (4-Mad-106) on bedrock under 1.5m midden.	
	1540 ± 110
UCR-118J/UCLA-1860J. Jones site	AD 410
Bone collagen from Human Burial 5, Jones site (4-Mad-159) on bedrock under 1m midden.	
	1310 ± 80
UCR-118K/UCLA-1860K. Schwabacker site	AD 640
Bone collagen from Human Burial 20, Schwabacker site (4-Mad-117) on bedrock under 70cm midden.	
	1305 ± 80
UCR-118L/UCLA-1860L. Schwabacker site	AD 645
Bone collagen from Human Burial 8, Schwabacker site (4-Mad-117) on bedrock under 70cm midden.	
	1425 ± 80
UCR-118N/UCLA-1860N. Schwabacker site	AD 525
Bone collagen from Human Burial 36, Schwabacker site (4-Mad-117) on bedrock under 70cm midden.	
	2000 ± 80
UCR-118O/UCLA-1860O. Dancing Cow site	50 BC
Bone collagen from Human Burial 1, Dancing Cow site (4-Mad-106) on bedrock under 1.5m midden.	
	1630 ± 80
UCR-118P/UCLA-1860P. Jones site	AD 320
Bone collagen from Human Burial 6, Jones site (4-Mad-159) on bedrock under 1m midden.	

El Morro Canyon series

Samples found during excavations conducted by California State Univ, Fullerton, in El Morro Canyon N of Laguna Beach, Orange Co, California (33° 34' 30" N, 117° 48' 30" W). Coll Spring 1972 by J L Zahniser, Dept Anthropol, California State Univ, Fullerton.

	3500 ± 100
UCR-119A/UCLA-1867A. El Morro Canyon	1550 BC
Charcoal from Unit W-45-B, 40 to 50cm below datum at Site 4-Ora-327, N side of El Morro Canyon. <i>Comment</i> (JZ): unexpectedly early date.	

UCR-119B/UCLA-1867B. El Morro Canyon **940 ± 80**
AD 1010

Marine shell from Unit NI-C, 0 to 10cm below datum at Site 4-Ora-327, N side of El Morro Canyon.

UCR-119C/UCLA-1867C. El Morro Canyon **570 ± 80**
AD 1380

Marine shell from Unit NI-B-C-D, 30 to 50cm below datum at Site 4-Ora-327, N side of El Morro Canyon.

Rincon Valley series, Arizona

Samples are from excavations in habitation areas in 2 sites on N side of lower Rincon Valley, E of Tucson, Arizona. Samples were coll 1964 by J L Zahniser.

UCR-119D/UCLA-1867D. Loma Alta site **890 ± 70**
AD 1060

Charred roof timber from Unit 1, Rm 3, E half from probable roof fall at Loma Alta site (32° 8' N, 110° 43' W). *Comment (JZ)*: radiocarbon date is ca 200 yr earlier than anticipated—early Tanque Verde phase, AD 1100 to 1300. See Zahniser (1966).

UCR-119E/UCLA-1867E. Site BB:14 **1065 ± 80**
AD 885

Charred corn (*Zea maitze*) from lower fill of House No. 4, at Site BB:14 (32° 8' 20" N, 110° 43' W). Fill material probably originally stored in ceramic vessels on roof of house (Zahniser, 1966). *Comment (JZ)*: radiocarbon date is ca 200 yr earlier than anticipated date—early Tanque Verde phase, AD 1100 to 1300.

UCR-119F/UCLA-1867F. Loma Alta site **770 ± 80**
AD 1180

Charred roof timber from Unit 3, Rm 2, top 50cm fill, probably roof fall from Loma Alta site (32° 8' N, 110° 39' W).

II. GEOLOGIC SAMPLES

Earthquake Studies series

Geologic studies of a portion of the San Jacinto fault zone near San Bernardino, California were made to locate more precisely the most recently active fault trace(s) within the zone, and to determine the nature and dates of the most recent fault movements (Elders, 1973). Samples were obtained from O Huber, California Dept Water Resources, Palm-dale, California (UCR-106-109) and a team of undergraduate students, Univ California, Riverside (UCR-110-117) funded under Student-oriented Studies Program, Nat Sci Foundation (GY-9667). Samples were coll June-September 1972 by O Huber and K Sieh and subm by K Sieh, Dept Geol, Univ California, Riverside.

UCR-106/UCLA-1826. Santa Ana Valley **300 ± 80**
Pipeline **AD 1650**

Wood from channel alluvium at Pipeline Sta 182 + 60, at depth

5.2m (34° 04' N, 117° 18' E). *Comment* (OH): no direct evidence that deposit was offset by San Jacinto Fault.

UCR-107/UCLA-1827. Santa Ana Valley **100 ± 80**
Pipeline **AD 1850**

Wood from channel alluvium at Pipeline Sta 179 + 75, at depth 4.6m (34° 04' N, 117° 18' E). *Comment* (OH): no direct evidence that deposit was offset by San Jacinto Fault.

UCR-108/UCLA-1828. Santa Ana Valley **33,000 ± 900**
Pipeline **31,050 BC**

Wood from deformed, tilted, gravelly clay, offset by San Jacinto Fault at Pipeline Sta 172 + 15, at depth 6.7m (34° 04' N, 117° 18' E).

UCR-109/UCLA-1832. Santa Ana Valley **550 ± 80**
Pipeline **AD 1400**

Wood from iron-stained gravelly sand, offset by San Jacinto Fault at Pipeline Sta 174 + 25 at depth 5.8m (34° 04' N, 117° 18' E).

UCR-110/UCLA-1836. Barton Rd **1500 ± 150**
AD 450

Wood from root, 7.6cm diam, coll 1.2m from ground surface in silty clay in Barton Rd, Trench 3 (34° 03' N, 117° 17' E).

UCR-111/UCLA-1837. Barton Rd **1670 ± 150**
AD 280

Black, carbonaceous organic residue and peat from 1.5m area, 1.5m to 1.8m from surface in fine sand alternating with silt from Barton Rd, Trench 3 (34° 03' N, 117° 17' E).

UCR-113/UCLA-1839. Barton Rd **2460 ± 160**
510 BC

Black, carbonaceous organic residue from area 2.4m, ca 2.4m below ground in silty clay from Barton Rd, Trench 2 (34° 03' N, 117° 17' E).

UCR-114/UCLA-1840. Walnut St **4400 ± 250**
2450 BC

Reed in black, carbonaceous, organic matrix from 2.4m zone, 2.4m below ground in an intraformational breccia from Walnut St Trench (34° 04' N, 117° 19' E).

UCR-115/UCLA-1841. Walnut St **3180 ± 150**
1230 BC

Wood fragments and black, carbonaceous, organic material from 2.4 to 2.7m below ground in light gray silty sand from Walnut St Trench (34° 05' N, 117° 19' E).

UCR-116/UCLA-1842. Barton Rd **670 ± 80**
AD 1280

Fresh water gastropods (*Limnaea adeline* Tryon, *Physa gabbi* Tryon, *Planorbis trivolvis* Say, *Succinea oregonensis* Lea) from area 6m,

12m below surface in silty clay from Barton Rd, Trench 2 (34° 04' N, 117° 17' E).

UCR-117/UCLA-1843. Walnut St

**5540 ± 200
3590 BC**

Black, carbonaceous, organic material 4.3m below surface in silty sand in Walnut St Trench (34° 05' N, 117° 19' E).

General Comment (ET): except for UCR-115, ages fall into stratigraphic order and provide a preliminary date for prior movements along fault zones.

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