Supplemental Table 1.

AMS Radiocarbon Dates for Jornada and Mimbres Region Perishables and Plasma Oxidation AMS Dates for Pictographs

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Region/Site (superscript number indicates the reference) | Accession # | Object | Dated Material | Lab Number |  Measured 14C Age | δ13C | Conventional 14C Age | 2-sigma Calibrated Range |
|  |  |  |  |  |  |  |  |  |
| **El Paso County, TX** |  |  |  |  |  |  |  |  |
| Ceremonial Cave (41EP19) 3 | TARL 41EP19-46815A | Paho | *Yucca* fibers | Beta 302178 | 1940 ± 30 | -18.1 | 2050 ± 30 | 160 BC – AD 25 |
| Ceremonial Cave (41EP19) 3 | TARL 41EP19-46815B | Paho  | *Yucca* fibers | Beta 302179 | 1900 ± 30 | -22.2 | 1950 ± 30 | AD 5 – 130  |
| Ceremonial Cave (41EP19) 3 | TARL 41EP19-19-1 | Tablita  | *Yucca* or *Dasylirion* stalk | Beta 302177 | 1080 ± 30 | -18.3 | 1190 ± 30 | AD 770 – 900 |
| Ceremonial Cave (41EP19) 3 | TARL 41EP19-17511 | Tablita | *Yucca* or *Dasylirion* stalk | Beta 302176 | 1050 ± 30 | -18.1 | 1160 ± 30 | AD 775 – 980 |
| Ceremonial Cave (41EP19) 2 | CM A36.3.157 | Tablita | *Yucca* or *Dasylirion* stalk | Beta 330544 | 1210 ± 30 | -20.9 | 1280 ± 30 | AD 660 – 775 |
| Ceremonial Cave (41EP19) 2 | CM A36.3.158 | Tablita | *Yucca* or *Dasylirion* stalk | Beta 330545 | 1190 ± 30 | -21.2 | 1250 ± 30 | AD 675 – 875 |
| Ceremonial Cave (41EP19) 1 | PMAE 28-3-10/96698.1 | Tablita | *Yucca* or *Dasylirion* stalk | Beta 357415 | 4240 ± 30 | -18.4 | 4350 ± 30 | 3025 – 2900 BC  |
| Ceremonial Cave (41EP19) 1 | PMAE 28-3-10/96745-2 | Foreshaft | Wood (SOX) | UGAMS10870 | n/a | -23.0 | 1950 ± 25 | AD 5 – 130 |
| Ceremonial Cave (41EP19) 4 | PMAE 28-3-10/96746 | Foreshaft | *Agave* stalk | Beta 293254 | 3060 ± 30 | -8.1 | 3340 ± 30 | 1690 – 1530 BC |
| Ceremonial Cave (41EP19) 4 | TARL 46808-705 | Foreshaft | Wood | Beta 259572 | n/a | n/m | 2270 ± 40 | 400 – 205 BC |
| Ceremonial Cave (41EP19) 4 | TARL 46808-711 | Foreshaft | Wood | Beta 265842 | 2030 ± 40 | -23.6 | 2050 ± 40 | 170 BC – AD 60 |
| Ceremonial Cave (41EP19) 4 | TARL 46808-707 | Foreshaft | Sinew | Beta 259573 | n/a | n/m | 1900 ± 40 | AD 25 – 235  |
| Ceremonial Cave (41EP19) 5 | TARL 46811a | FCS  | Wood (SOX) | AA 87857  | n/a | -24.6 | 2016 ± 81 | 200 BC – AD 210 |
| Ceremonial Cave (41EP19) 5 | TARL 17508 | FCS | Wood | AA 89960 | n/a | -24.7 | 2081 ± 55 | 350 BC – AD 65 |
| Ceremonial Cave (41EP19) 5 | TARL 46811b | FCS | Wood | AA 87858 | n/a | -25.2 | 2085 ± 38 | 200 – 10 BC  |
| Ceremonial Cave (41EP19) 5 | TARL 46811c | FCS | Wood | AA 89961 | n/a | -24.6 | 2229 ± 56 | 400 – 150 BC |
| Ceremonial Cave (41EP19) 5 | MMA 66.9.39 / 1.30.4.3 | FCS | Wood (SOX) | AA 89974 | n/a | -24.7 | 2914 ± 55  | 1265 – 965 BC |
| Ceremonial Cave (41EP19) 5 | MMA 66.9.38 / 1.30.42.2 | FCS | Wood | AA 87848 | n/a | -24.5 | 2216 ± 37 | 385 – 175 BC |
| Ceremonial Cave (41EP19) 5 | MMA 66.9.37 / 1.30.4.1 | FCS | Wood | AA 87850 | n/a | -24.4 | 2126 ± 37 | 350 – 45 BC |
| Ceremonial Cave (41EP19) 5 | MMA 66.9.49 / 1.30.4.12 | FCS | Wood (SOX) | AA 87849 | n/a | -26.0 | 2116 ± 37 | 350 – 40 BC |
| Hueco Cave 5 (FB 6676) 1 | PMAE 28-3-10/96820 | Tablita | *Yucca* or *Dasylirion* stalk | Beta 357413 | 1190 ± 30 | -18.3 | 1300 ± 30 | AD 660 – 775 |
| Hueco Cave 7 (FB6678) 1 | PMAE 28-3-10/96849 | GE Tablita | *Yucca* or *Dasylirion* stalk | Beta 357414 | 1190 ± 30 | -18.9 | 1290 ± 30 | AD 660 – 775 |
|  |  |  |  |  |  |  |  |  |
| **Doña Ana County, NM** |  |  |  |  |  |  |  |  |
| Chavez Cave (LA 5520) 1 | PMAE 28-3-10/ 96567.2 | Foreshaft | Wood (SOX) | UGAMS10868 | n/a | -22.0 | 1810 ± 30 | AD 130 – 335  |
|  |  |  |  |  |  |  |  |  |
| **Lincoln County, NM** |  |  |  |  |  |  |  |  |
| Feather Cave? (LA 37551) 1 | MIAC 43604/11 | GE Effigy | *Yucca* or *Dasylirion* stalk | Beta 349947 | 1260 ± 30 | -23.9 | 1280 ± 30 | AD 660 – 775 |
|  |  |  |  |  |  |  |  |  |
| **Grant County, NM** |  |  |  |  |  |  |  |  |
| Steamboat Cave (LA 73054) 1 | PMAE 28-3-10/97167.1 | GE Tablita | *Yucca* or *Dasylirion* stalk | Beta 357412 |  960 ± 30 | -21.1 | 1020 ± 30 | AD 980 – 1130 |
| Doolittle Cave (LA 71696 ) 1 | PMAE 26-7-10/95457 | Tablita | *Yucca* or *Dasylirion* stalk | Beta 357416 | 1020 ± 30 | -21.4 | 1080 ± 30 | AD 890 – 1025 |
| Mule Creek Cave (LA 71914) 1 | PMAE 29-20-10/97377 | Tablita | *Yucca* or *Dasylirion* stalk | Beta 357417 |  360 ± 30 | -21.9 |  410 ± 30 | AD 1430 – 1625 |
| Mule Creek Cave (LA 71914) 1 | PMAE 29-20-10/97379.1 | Tablita | *Yucca* or *Dasylirion* stalk | Beta 357418 |  860 ± 30 | -20.1 |  940 ± 30 | AD 1030 – 1170 |
|  |  |  |  |  |  |  |  |  |
| **Hidalgo County, NM** |  |  |  |  |  |  |  |  |
| U-Bar Cave (LA 5689) 1 | MIAC 26554/11 | GE Effigy | *Yucca* or *Dasylirion* stalk | Beta 349946 |  720 ± 30 | -20.2 |  800 ± 30 | AD 1210 – 1280 |
|  |  |  |  |  |  |  |  |  |
| **AMS date on GE pictograph** |  |  |  |  |  |  |  |  |
| Hueco Tanks (41EP2) 6 | Panel 20, Element C-1 | Pictograph | Black paint | CAMS 25866 | n/a | n/a | 1250 ± 80 | AD 650 – 900 |
| Hueco Tanks (41EP2) 7 | Panel 20, Element C-2 | Pictograph | Black paint | CAMS 92186 | n/a | n/a | 1200 ± 80 | AD 670 – 990 |
| Hueco Tanks (41EP2) 6 | Panel 20, Element G-5 | Pictograph | Black paint | CAMS 29314 | n/a | n/a | 1180 ± 80 | AD 670 – 995 |
| Painted Walls (LA72165) 8 | Panel 9, Element 1 | Pictograph | Green paint | CAMS 190053 | n/a | n/a |  1100 ± 120 | AD 670 – 1170 |

Key: PMAE – Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge

TARL – Texas Archeological Research Laboratory, University of Texas at Austin

MIAC – Museum of Indian Arts and Culture, Museum of New Mexico, Santa Fe

CM – Centennial Museum, University of Texas at El Paso, El Paso

MMA – Maxwell Museum of Anthropology, University of New Mexico, Albuquerque

 FCS – flat curved stick GE – Goggle-eye imagery SOX – solvent extraction pretreatment in addition to acid-alkali-acid pretreatment

n/a 13C isotope measured internally in the mass accelerator

n/m sample was too small to obtain a separate IRMS delta 13C measurement; isotope was measured internally in the mass accelerator

Dendrochronological calibrations were made using OxCal ver 4.4.1 and INTCAL20 calibration dataset (Reimer et al. 2020). Age ranges are rounded to the nearest 5 year interval as recommended by Stuiver and Polach (1977:362)

References for published dates:

1 published here

2 Loendorf et al. 2013

3 Miller et al. 2012

4 Dial and Creel 2001

5 Geib 2016

6 Hyman et al. 1999

7 Rowe 2005

8 Steelman 2023

**References**

Dial, Susan, and Darrell G. Creel

2001 Hafted Dart Point Analysis. http://www.texasbeyondhistory.net/ceremonial/hafted.html. Accessed 07/23/2020.

Geib, Phil R.

2016 Basketmaker II Warfare and Fending Sticks in the North American Southwest. Unpublished Ph.D. dissertation, Department of Anthropology, University of New Mexico, Albuquerque.

Hyman, Marian, Kay Sutherland, Marvin W. Rowe, Ruth Ann Armitage, and John R. Southon

1999 Radiocarbon Analyses of Rock Paintings: Hueco Tanks, Texas. *Rock Art Research* 16(2):75-88.

Loendorf, Lawrence L., Myles R. Miller, Leonard Kemp, Laurie White, and Mark Willis

2013 *Rock Art at Seven Localities in the Southern Sacramento Mountains, Organ Mountains, and Otero Mesa on Fort Bliss*. Cultural Resources Report No. 12-12. Environmental Division, Fort Bliss, U.S. Army, Texas.

Miller, Myles R., Lawrence L. Loendorf, and Leonard Kemp

2012 *Picture Cave and Other Rock Art Sites on Fort Bliss.* Cultural Resources Report No. 10-36. Environmental Division, Fort Bliss, U.S. Army, Texas.

Reimer, Paula J., William E.N. Austin, Edouard Bard, Alex Bayliss, Paul G. Blackwell, Christopher Bronk Ramsey, Martin Butzin, Hai Cheng, R. Lawrence Edwards, Michael Friedrich, Pieter M. Grootes, Thomas P. Guilderson, Irka Hajdas, Timothy J. Heaton, Alan G.Hogg, Konrad A. Hughen, Bernd Kromer, Sturt W. Manning, Raimund Muscheler, Jonathan G. Palmer, Charlotte Pearson, Johannes van der Plicht, Ron W. Reimer, David A. Richards, E. Marian Scott, John R. Southon, Christian S. M. Turney, Lukas Wacker, Florian Adolphi, Ulf Büntgen, Manuela Capano, Simon M. Fahrni, Alexandra Fogtmann-Schulz, Ronny Friedrich, Peter Köhler, Sabrina Kudsk, Fusa Miyake, Jesper Olsen, Frederick Reinig, Minoru Sakamoto, Adam Sookdeo, Sahra Talamo

2020 The IntCal20 Northern Hemisphere Radiocarbon Age Calibration Curve (0-55 cal kBP). *Radiocarbon* 62(4):725-757.

Rowe, Marvin W.

2005 Radiocarbon Dates of Charcoal Drawings: Hueco Tanks. In *Archaeology Between the Borders: Papers from the 13th Biennial Jornada Mogollon Conference*, edited by Marc Thompson, Jason Jurgena, and Lora Jackson, pp. 89-94. El Paso Museum of Archaeology, El Paso, Texas.

Steelman, Karen L.

2023 *Radiocarbon Dating Pictographs on the White Sands Missile Range*. Shumla Archaeological Research and Education Center, Comstock, Texas and Versar, Inc., El Paso, Texas. Prepared for Directorate of Public Works, White Sands Missile Range, New Mexico.

Stuiver, Minze, and Henry A. Polach

1977 Discussion: Reporting of 14C Data.  *Radiocarbon* 19(3):355-363.