[RADIOCARBON, VOL 27, NO. 3, 1985, P 610–615]

UNIVERSITY OF GRANADA RADIOCARBON DATES II

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Most of the ^{14}C measurements reported here were made between 1979 and 1981. The samples were measured by benzene synthesis and liquid scintillation counting (Pietig & Sharpenseel, 1966; Polach & Stipp, 1967; Tamers, 1969).

Sample treatment was reported previously (González-Gómez, López-González and Domingo-García, 1982). ^{14}C activity was measured in a Nuclear Chicago Isocap 300 liquid scintillation spectrometer, with a background of 9 to 10cpm for 5ml benzene samples, using 20ml low ^{40}K counting vials.

The dates were calculated based on a ^{14}C half-life of 5570 years. The modern reference is taken as 0.95 of the activity of the NBS oxalic acid standard. Calculations and data are processed by a Hewlett-Packard HP-85 computer using BASIC programs made by González-Gómez. Results are reported in years before 1950 (BP).

$\delta^{13}C$ values are based on data reported by Stuiver and Polach (1977). Errors quoted with dates are based only on counting statistics and are equivalent to ± 1 standard deviation (1σ), which includes statistical variations of sample count, as well as background and standard. Efficiency is ca 70%, using the part of spectrum above the end point of tritium.

Sample descriptions are based on information provided by submitters.

ARCHAEOLOGIC SAMPLES

Spain

Las Angosturas series

Charcoal and bone from Las Angosturas (37° 21′ N, 3° 50′ W), Gor, prov Granada. Samples coll and subm 1981 by M Botella, Diputación prov to date Eneolithic period and Copper age in E Andalucía.

UGRA-17. N 15 24311 **3460 ± 210**

Bone.

UGRA-30. Ag 34304 **4040 ± 140**

Bone.

UGRA-84. Ag 35158 **4310 ± 150**

Charcoal at 5.5m depth.

UGRA-87. Ag 34856 **4450 ± 240**

Bone at 5.3m depth.

UGRA-88. Ag 32074 **5020 ± 190**

Charcoal at 4.3m depth.

UGRA-125. Ag 31044 **3980 ± 160**

Charcoal at 3.7m depth.

UGRA-126. Ag 40291 **4240 ± 120**

Charcoal at 3.1m depth.

General Comment: dates agree with expected ages.

Cerro de los Infantes series

Charcoal from Cerro de los Infantes (37° 16′ 02″ N, 3° 46′ 01″ W) Pinos Puente, prov Granada. Samples coll and subm 1981 by F Molina, Dept Prehist, Univ Granada, to date Bronze age in S peninsula Ibérica.

UGRA-111. CI 23479 **2580 ± 140**

2.1m depth.

UGRA-112. CI 23097 **2390 ± 170**

40cm depth.

UGRA-113. CI-23488 **2310 ± 160**

1.9m depth.

General Comment: dates agree with expected ages.

Cerro de la Encina

Charcoal from Cerro de la Encina (37° 08′ 16″ N, 3° 32′ 51″ W), Monachil, prov Granada. Sample coll 1970 and subm 1979 by F Molina to date Bronze age in upper Andalucía.

UGRA-116. M 1931 bis **3360 ± 150**

3.3m depth.

Cerro de la Mora

Charcoal from Cerro de la Mora (37° 17′ 31″ N, 3° 59′ 07″ W), Moraleda, prov Granada. Sample coll and subm 1981 by J Carrasco, Dept Prehist, Univ Granada.

UGRA-92. CM 1 **3250 ± 140**

11.4m depth.

Rincón de Olvera series

Charcoal from Rincón de Olvera (38° 00′ 41″ N, 3° 19′ 05″ W), Ubeda, prov Jaen. Samples coll and subm 1979–1981 by J Carrasco to date El Argar in prov Jaen.

UGRA-54. R Olvera 1 **3380 ± 110**

2m depth.

UGRA-73. R Olvera 2 **2690 ± 210**

UGRA-74. R Olvera 3 **3310 ± 150**

General Comment: age for R Olvera 2 is probably too young.

Almizaraque series

Charcoal from Almizaraque (37° 18′ N, 1° 47′ W), Cuevas de Almanzora, prov Almería. Samples coll 1981 and subm by M Fernández-Miranda, Subdir Gen Arqueol, to date first metallurgy in SW peninsula Ibérica.

UGRA-83. A 180 Cl **4100 ± 120**

UGRA-93. A 180 C2 **4200 ± 110**

UGRA-94. A 480 C3 **4120 ± 140**

1.03m depth.

UGRA-95. A 180 C4 **4130 ± 140**

UGRA-96. A 180 C5 **4090 ± 130**

General Comment: dates agree with expected ages.

Cueva de Nerja

Charcoal from Cueva de Nerja (36° 45′ 45″ N, 3° 50′ 55″ W), Maro, prov Málaga. Sample coll and subm 1981 by F Jordá-Cerdá, Dept Prehist y Aqueol, Univ Salamanca, to date establishment of Upper Paleolithic in E Andalucía.

UGRA-98. N C4 131 **12,300 ± 200**

2.9m depth.

Morra del Quintanar series

Charcoal from Morra del Quintanar (39° 01′ 05″ N, 1° 14′ 05″ W), Munera, prov Albacete. Samples coll 1980 and subm 1981 by C Martín-Morales, Subdir Gen Arqueol, to date middle Bronze age in prov Albacete.

UGRA-102. Q 386-80 **3500 ± 130**

1.98m depth.

UGRA-103. Q 419-80 **3470 ± 120**

1.37m depth.

UGRA-104. Q 1455-80 **3770 ± 140**

0.62m depth.

Peña Miel 1

Bone from Peña Miel 1 (42° 12′ 59″ N, 2° 37′ 51″ W), Pradillo de Cameros, prov Rioja. Sample coll 1980 and subm 1981 by P Utrilla, Dept Hist Antigua, Univ Zaragoza, to date Upper Paleolithic in Rioja.

UGRA-128. PM 1 4B 130.5 **>28,000**

Motilla del Azuer series

Charcoal and seeds from Motilla del Azuer (39° 03′ 14″ N, 3° 29′ 48″ W), Daimiel, prov Ciudad Real. Samples coll and subm 1979 by F Molina to date Bronze age in S Tableland.

UGRA-109. D 37 bis **3400 ± 130**

Charcoal at 1.25m depth.

UGRA-114. D 6016 **3440 ± 130**

Seed at 1.1m depth.

UGRA-115. D 15027 **3770 ± 160**

Charcoal at 1.05m depth.

UGRA-118. D 15077 **3730 ± 150**

Seed at 1.8m depth.

UGRA-127. D 15114 **3620 ± 100**

Seed at 2.15m depth.

UGRA-129. D 15173 **3680 ± 100**

Seed at 1.9m depth.

UGRA-132. D 15358 **4030 ± 130**

Charcoal at 3.4m depth.

General Comment: in general, dates agree with expected ages.

Motilla de los Palacios

Charcoal from Motilla de los Palacios (39° 03′ 14″ N, 3° 38′ 03″ W), Almagro, prov Ciudad Real. Sample coll 1974 and subm 1981 by F Molina to date Bronze age in S Tableland.

UGRA-110. A 2106 **3320 ± 130**

1.9m depth. *Comment:* date agrees with expected age.

El Raso de Candeleda series

Charcoal from El Raso de Candeleda (40° 07′ 00″ N, 5° 18′ 08″ W), Candeleda, prov Avila. Samples coll and subm 1981 by F Fernández, Mus Arqueol, Seville, to date pre-Roman town.

UGRA-105. El Raso 4 B4 **2010 ± 130**

80cm depth.

UGRA-108. El Raso 5 Cl **2100 ± 140**

70 to 80cm depth.

Cueva de Arevalillo

Charcoal from Cueva de Arevalillo (41° 20′ N, 4° 00′ W), Arevalillo de Cega, prov Segovia. Sample coll 1978 and subm 1981 by M D Fernández-Posse, Subdir Gen Arqueol, to date Bronze age.

UGRA-99. CA 78 C4 **3510 ± 130**

95cm depth.

Tossal de la Roca series

Charcoal from Tossal de la Roca (38° 48′ 08″ N, 0° 15′ 55″ W), Vall de Alcalá, prov Alicante. Samples coll 1978 and subm 1981 by C Cacho, Mus Arqueol Nacl, Madrid, to date end of Paleolithic in Spanish Mediterranean.

UGRA-119. TR 5-3 **12,480 ± 210**

UGRA-120. TR 5-4 **12,390 ± 250**

UGRA-130. TR 78/9 **15,360 ± 1100**

Son Fornés series

Charcoal from Son Fornés (39° 35′ 03″ N, 2° 58′ 13″ E), Montuiri, Mallorca. Samples coll and subm 1981 by V Lull, Univ Auton, Barcelona.

UGRA-121. HT 1 2-2 **2450 ± 190**

3.28m depth.

UGRA-122. HT 6 5-2 **2490 ± 130**

1.54m depth.

UGRA-123. T2 3-2 **2700 ± 120**

3.57m depth.

General Comment: no expected ages for these samples.

Sota Palou series

Charcoal from Sota Palou (42° 13′ 50″ N, 2° 10′ 27″ E), Campdevanol, prov Gerona. Samples coll and subm 1981 by E Carbonell, Asoc Arqueol Gerona, to date Upper Paleolithic in Cataluña.

UGRA-69. SP 803 **8540 ± 180**

1.9m depth.

UGRA-124. SP 814 **9060 ± 380**

Comment: expected age for SP 803 was too old.

Cova 120 series

Wood and charcoal from Cova 120 (42° 17′ N, 2° 37′ E), Sadernas, prov Gerona. Samples coll and subm 1981 by G Alcalde-Gurt, Mus Olot, Gerona, to date Bronze age in Cataluña.

UGRA-106. C 120 **440 ± 160**

Wood at 30cm depth. *Comment:* expected age was ca 3950; sample is probably too young.

UGRA-107. Z.A.9.10/7.8.9 **3190 ± 130**

Charcoal at 35cm depth. *Comment:* expected age was ca 3950.

Cingle Vermell

Charcoal from Cingle Vermell (41° 56′ N, 2° 23′ E), Vilanova de Sau, prov Barcelona. Sample coll 1979 and subm 1980 by J Estévez, Inst Bioestrat CSIC, Barcelona, to date Holocene in Cataluña.

UGRA-68. CV El C14 **9760 ± 160**

60cm depth. *Comment:* date is as expected.

Roc del Migdia

Charcoal from Roc del Migdia (41° 56′ N, 2° 23′ E), Vilanova de Sau, Prov Barcelona. Sample coll and subm 1981 by J Estévez and G Alcalde, Inst Bioestrat CSIC, Barcelona, to date Paleolithic-Mesolithic cultures in Cataluña.

UGRA-117. RM C14 1 **11,520 ± 220**

55cm depth. *Comment:* date is as expected.

Portugal

Cerro do Castelo de Santa Justa

Charcoal from Cerro do Castelo de Santa Justa (37° 29′ N, 7° 29′ W), Alcoutim, Faro. Sample coll 1980 and subm 1981 by V Gonçalves, Centro Hist, Univ Lisboa, to date copper metallurgy in Portugal at S Tajo R.

UGRA-131. G-24 **4390 ± 150**

Comment: expected age: 4150 to 4950.

REFERENCES

González-Gómez, C, López-González, J D, and Domingo-García, M, 1982, University of Granada radiocarbon dates I: Radiocarbon, v 24, p 217–221.

Pietig, F and Sharpenseel, H W, 1966, Altersbestimmung mit dem Flüssigkeits-Szintillations-Specktrometer. Ein neuer Katalizator zur Benzolsynthese: Atompraxis, v 12, p 95–97.

Polach, H A and Stipp, J J, 1967, Improved synthesis techniques for methane and benzene radiocarbon dating: Internatl Jour Appl Radiation Isotopes, v 18, p 359–364.

Stuiver, Minze and Polach, H A, 1977, Discussion: Reporting of ^{14}C data: Radiocarbon, v 19, p 355–363.

Tamers, M A, 1969, Instituto Venezolano de Investigaciones Científicas natural radiocarbon measurements IV: Radiocarbon, v 11, p 396–422.