[RADIOCARBON, VOL. 16, No. 3, 1974, P. 402-408]

UNIVERSITY OF MIAMI RADIOCARBON DATES I

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The radiocarbon dating facility is part of the UM Geochronology laboratory housed in the Department of Geology, University of Miami, Main Campus. The laboratory was established to carry out and support research in Pleistocene marine geology, particularly in the Caribbean, and to act as a specialized teaching facility of geochronologic research using radiometric age dating techniques.

The method employed is liquid scintillation counting of synthesized benzene using the basic techniques described by Noakes *et al* (1965) and Polach and Stipp (1967) converting sample $\rightarrow CO_2 \rightarrow C_2H_2 \rightarrow C_6H_6$ with an over-all yield of approximately 90 to 95%.

Counting is done on an automatic Beckman 100-C and an automatic Packard Tri-Carb 2003 liquid scintillation spectrometer with a background of 9cpm utilizing 4cc counting vials. PPO and dimethyl-POPOP are added as scintillators. Instrument stability is continuously monitored.

The dates reported here are calculated using a ^{14}C half-life of 5568 yr. The modern reference is taken as 95% of the NBS oxalic acid ^{14}C standard converted to CO_2 by a solution of potassium permanganate and sulfuric acid. Errors are reported as one standard deviation which includes only the combined counting uncertainty of the background, modern, and sample.

ACKNOWLEDGMENTS

J Clegg and D Evans of the Department of Biology generously loaned us use of their liquid scintillation counters, which enabled us to operate prior to installation of our own counter. Their counters have also served as valuable supplements during heavy load periods from student dating projects.

C Emiliani, Chairman, Division of Marine Geology and Geophysics, RSMAS, supported and encouraged the laboratory. We are particularly grateful to the National Science Foundation (IDOE Gx-36155) for funds to purchase our own counter.

We also wish to thank students M Andrejko, J Sawlan, and K Forshee for their assistance with various aspects of laboratory preparations.

Ages of check samples determined in this laboratory indicate satisfactory agreement with the results of other laboratories. Reproducibility, as indicated by multiple runs, is satisfactory.

SAMPLE DESCRIPTIONS

I. ARCHAEOLOGIC SAMPLES

A. Guatemala

UM-101. Salinas LaBlanca 1 **3135 ± 120** **1185 BC**

Charcoal from Mound 2, E side of Rio Naranjo, Mun Ocos, Dept

CHECK SAMPLES
Interlaboratory cross checks

UM sample	UM date	Other sample	Other date	Reference	Sample material
*UM-152/a	690 ± 110	IVIC-26	730 ± 120	IVIC I	charcoal
152/b	740 ± 105				
152/c	620 ± 90				
152/d	710 ± 140				
152/e	700 ± 120				
UM-154	8910 ± 165	P-1665	9475 ± 135	Penn XIV	charcoal
UM-140	12,740 ± 250	ML-821	12,600 ± 150	James, pers commun	coral
*UM-167/a	4164 ± 70	*QU-2/3	4225 ± 130	unpub	wood
167/b	4420 ± 85	2/4	4400 ± 150		
167/c	4235 ± 80	I-6003	4460 ± 140	unpub	wood
UM-168	1480 ± 70	QU-8	1490 ± 130	unpub	wood
		GSC-22(1)	1220 ± 80	unpub	wood

*Complete reruns of the same sample

San Marcos, Guatemala (14° 31′ 30″ N, 92° 10′ 30″ W). Large amount of pottery, stone and shell artifacts of early Pre-Classic Cuadros and Jocotal phases. Coll and subm 1973 by E M Shook. *Comment*: other pertinent dates are Y-1150: 2928 ± 105; Y-1151: 2715 ± 105; Y-1145: 2878 ± 105; Y-1166: 2764 ± 90 (Coe and Flannery, 1967).

2770 ± 70

UM-102. Salinas LaBlanca 2 **820 BC**

Charcoal from Mound 'N', Mun Ocos, Dept San Marcos, Guatemala (14° 35′ 30″ N, 92° 08′ 15″ W). Large amount of pottery and stone artifacts of the Middle Pre-Classic Las Conchas phase. Coll and subm 1973 by E M Shook. *Comment*: other pertinent date is Y-1167: 2740 ± 60 (*ibid*, above).

B. United States

2845 ± 90

UM-121. Lakeland wood **895 BC**

Wood sample from drainage ditch of phosphate mine NE of Lakeland, Florida (28° 30′ N, 81° 30′ W). Sample was extracted from beneath 1.5m muck, under fibrous peat. Wood is believed part of an early watercraft of fire and water process, possibly used by N Florida indians. Coll 1972 and subm 1973 by A Rosenberg. *Comment*: other pertinent dates are I-1662: 2600 ± 130; I-1661: 3040 ± 115 (Bullen and Brooks, 1967).

Arch Creek shell midden series

Shell samples from Arch Creek site, Dade Co, Florida (25° 08′ 17″ N, 80° 10′ 55″ W), studied to determine period midden was used by early

Florida indians. Dated samples are remains of one of major shellfish food sources found within the midden. Pottery and other artifacts from same area indicate occupation during the Glades-II period AD 400 to 1000. Variables affecting validity of dates are disturbance by development, pothunters, vandals, and some heavy vegetational growth above sample area. Coll and subm 1972 by M Andrejko.

1170 ± 140

UM-41. Arch Creek shell midden IM-1302 **AD 780**

Shell (*Phacoides pectinata*).

1490 ± 100

UM-42. Arch Creek shell midden IM-1303 **AD 460**

Shell (*Strombus gigas*).

1135 ± 100

UM-43. Arch Creek shell midden IM-1304 **AD 815**

Shell (*Phacoides pectinata*).

II. GEOLOGIC SAMPLES

North Key Largo series

Cores from 3 sites in the mangroves of North Key Largo, Florida. Red Mangrove Peat was dated to help determine sediment depth and physical and chemical properties of the substratum. Sites were chosen to represent different situations.

Core A (25° 18′ 15″ N, 80° 17′ 17″ W) contained shallow organic sediment near Dispatch Creek, where water flows quite freely and there is extensive exchange with the Creek.

Core B (25° 18′ 15″ N, 80° 17′ 06″ W) was taken at the point between the Creek and the ridge where the rock substratum is ca 1.5m deep and the organic layer is relatively thick.

Core C (25° 18′ 15″ N, 80° 17′ 06″ W) was taken at the transition point between scrub mangroves and the ridge where the rock substratum is ca 1.5m deep and the organic layer is relatively thin. This is a location in a channel of flow.

Visible roots were removed by the submitter before chemical conversion. The most evident consistency is that in areas with good surface flow (Cores A and C) the material near the surface is older than in those with impeded surface flow (Core B); thus, there is an appreciable difference in the process of building mangrove peat. Coll 1972 by Brooke and Cronholm and subm 1972 by Rio Palenque, Inc, Miami, Fla.

UM-11. North Key Largo **Modern**

Red mangrove peat from surface (Core A).

2310 ± 100

UM-26. North Key Largo **360 BC**

Red mangrove peat from 46cm beneath surface (Core A).

UM-12. North Key Largo **2370 ± 170 / 420 BC**
Red mangrove peat from 91cm beneath surface (Core A).

UM-27. North Key Largo **2180 ± 125 / 230 BC**
Red mangrove peat from 122cm beneath surface (Core A).

UM-13. North Key Largo **2900 ± 100 / 950 BC**
Red mangrove peat from 152cm beneath surface (Core A).

UM-14. North Key Largo **Modern**
Red mangrove peat from surface (Core B).

UM-15. North Key Largo **Modern**
Red mangrove peat from 46cm beneath surface (Core B).

UM-16. North Key Largo **1115 ± 135 / AD 835**
Red mangrove peat from 76cm beneath surface (Core B).

UM-17. North Key Largo **1015 ± 110 / AD 935**
Red mangrove peat from 102cm beneath surface (Core B).

UM-18. North Key Largo **2400 ± 100 / 450 BC**
Red mangrove peat from 122cm beneath surface (Core B).

UM-19. North Key Largo **2315 ± 120 / 365 BC**
Red mangrove peat from 152cm beneath surface (Core B).

UM-20. North Key Largo **3570 ± 100 / 1620 BC**
Red mangrove peat from 198cm beneath surface (Core B).

UM-21. North Key Largo **2030 ± 130 / 80 BC**
Red mangrove peat from 259cm beneath surface (Core B).

UM-22. North Key Largo **Modern**
Red mangrove peat from surface (Core C).

UM-23. North Key Largo **500 ± 135 / AD 1450**
Red mangrove peat from 61cm beneath surface (Core C).

1790 ± 235

UM-24. North Key Largo **AD 160**

Red mangrove peat from 91cm beneath surface (Core C).

1315 ± 135

UM-25. North Key Largo **AD 635**

Red mangrove peat from 122cm beneath surface (Core C).

1055 ± 125

UM-28. North Key Largo **AD 895**

Red mangrove peat from 152cm beneath surface (Core C).

Anastasia Island series

6930 ± 110

UM-29. Anastasia Island 11-C **4980 BC**

Shell fragments from 90cm beneath surface near base of sec, Anastasia I, 56km SSE of Jacksonville, Florida (29° 51′ 55″ N, 81° 16′ 00″ W). Dated to determine age of base of N beach deposits on Anastasia I. Shells firmly cemented were expected to be much older. Coll 1972 by P Murphy and subm 1972 by R D Perkins, Duke Univ.

8670 ± 165

UM-30. Anastasia Island 2-J **6720 BC**

Shell fragments from 90cm beneath surface on top of sec, Anastasia I, 56km SSE of Jacksonville, Florida (29° 48′ 43″ N, 81° 16′ 11″ W). Dated to determine age of top of S beach deposits on Anastasia I. Shells were not cemented but were between 2 cemented layers with reworked shells from older rock. Sample was expected to be much older. Coll 1972 by P Murphy and subm 1972 by R D Perkins.

Sanibel Island series

Aragonitic mollusk shell dated to establish chronologic deposition of Sanibel Island, Florida. Coll 1972 and subm 1973 by T M Missimer, Florida State Univ.

547 ± 74

UM-66. S Wulfert Ridges **AD 1403**

Sample from side of canal cut through highest-standing beach ridge, elev .9m above MSL, S part of Sanibel I, Florida (26° 28′ 52″ N, 82° 10′ 25″ W).

2131 ± 98

UM-67. N Wulfert Ridges **181 BC**

Sample from oldest Wulfert ridge, elev 3m above MSL, W part of Sanibel I, Florida (26° 25′ 39″ N, 82° 10′ 10″ W).

1871 ± 76

UM-76. Tarpon Bay E Ridges **AD 79**

Sample from side of drainage ditch cut through a set of low-lying beach ridges, elev 1.5m above MSL, E part of Sanibel I, Florida (26° 27′ 00″ N, 82° 03′ 15″ W).

848 ± 90

UM-77. Sanibel Slough Ridge Set **AD 1102**

Sample from a high beach ridge set in central portion of interior, elev 1.2m above MSL, E part of Sanibel I, Florida (26° 26′ 30″ N, 82° 02′ 46″ W).

1365 ± 68

UM-78. Tarpon Bay Truncation **AD 585**

Sample from a truncation line between 2 beach ridge sets, elev 2m above MSL, S part of Sanibel I, Florida (26° 25′ 30″ N, 82° 04′ 52″ W).

4310 ± 120

UM-98. Wulfert 2-A **2360 BC**

Sample from a high-standing beach ridge in Wulfert Set, elev 1.5m above MSL, Sanibel I, Florida (26° 28′ 51″ N, 82° 10′ 00″ W). *Comment*: see UM-99, a 2nd run of this sample with a different mollusk species; age: 3948 ± 80 BP.

3948 ± 80

UM-99. Wulfert 2-B **1998 BC**

Sample is from same location as UM-98. *Comment*: see UM-98, 1st run of this sample with a different mollusk species; age: 4310 ± 120 BP.

2102 ± 85

UM-100. Wulfert 3 **152 BC**

Sample from highest-standing beach ridge in Wulfert Set, elev 3m above MSL, Sanibel I, Florida (26° 28′ 49″ N, 82° 09′ 50″ W). *Comment*: see UM-98, UM-99 for other dates of Wulfert Ridge Set.

968 ± 60

UM-110. Wateree River flood plain **AD 982**

Wood fibers from 7.6m beneath surface from channel-lag at base of a meander scar, 6.4km S of Lugoff, South Carolina (34° 10′ 07″ N, 80° 40′ 09″ W). Dates of plant material incorporated in channel-lag sediment are to fix period of higher river discharge during development of Wateree River flood plain. Coll and subm 1973 by L J Bruning, Duke Univ. *Comment*: expected age: ca 6000 yr based on similar samples dated from other flood plains. Duplicate runs of sample gave 915 ± 70 BP and 1020 ± 70 BP, verifying radioactive content.

Key Biscayne series

Red mangrove peat and shell from lagoonal mud cored 183m N of fossil mangrove reef, Key Biscayne, Florida (25° 25′ N, 80° 09′ W). Study to establish a time correlated stratigraphic sequence for N shore of Key Biscayne. Coll and subm 1973 by R Martinek and J McEneaney.

3232 ± 120

UM-127. Key Biscayne **1282 BC**

Red mangrove peat from 0.3m beneath surface.

1900 ± 120

UM-128. Key Biscayne **AD 50**

Red mangrove peat from 24cm beneath surface.

2370 ± 80

UM-130. Key Biscayne **420 BC**

Shell material from 50cm beneath surface in lagoonal mud.

2900 ± 70

UM-131. Key Biscayne **950 BC**

Shell material from 85cm beneath surface in lagoonal mud.

UM-132. Key Biscayne **>30,800**

Shell material from 150cm beneath surface in lagoonal mud.

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