

UNIVERSITY OF MIAMI RADIOCARBON DATES II

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The following list of dates are selected from geologic and archaeological samples measured in late 1973. The laboratory procedures and techniques are the same as indicated in R, 1974, v 16, p 402-408, where sample is synthesized to benzene and counted for 24 hours in either a Beckman LS-100-C or Packard 2311 liquid scintillation spectrometer. Ages are calculated relative to $0.95 \times$ NBS oxalic acid using a ^{14}C half-life of 5568 years. The quoted error is 1σ , which includes only the counting uncertainties of the background, modern standard, and sample. Sample descriptions and comments were written in collaboration with collectors and submitters.

ACKNOWLEDGMENTS

We are grateful to D Evans of the Department of Biology for use of his spectrometer as a supplement to our own counter.

CHECK SAMPLES

Interlaboratory cross checks

UM sample	UM date	Other sample	Other date	Reference	Sample material
*UM-182/a	$10,538 \pm 145$	A-1250	$10,150 \pm 480$	unpub	wood
182/b	$10,125 \pm 119$				
182/c	9446 ± 110				
182/d	$10,379 \pm 108$				
182/e	$10,724 \pm 173$				

* Complete reruns of the same sample.

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

SAMPLE DESCRIPTIONS

I. ARCHAEOLOGIC SAMPLES

*A. United States***Maximo Park shell midden series**

Shells from a series of kitchen middens, Maximo Park, S of St Petersburg, Florida ($27^{\circ} 42' 30''$ N, $82^{\circ} 41' 00''$ W), to determine environmental utilization patterns of peoples who constructed midden and number of their cultures. Radiocarbon analyzed and artifacts identified to establish age range for habitation. Coll 1973 by J R Williams, Dept Anthropol, Univ South Florida, Tampa, Florida; subm 1973 by M Andrejko.

General Comment (JRW): inhabitants of Tampa Bay middens during Archaic period are currently without distinct cultural names. Early in-

habitants were efficient users of Tampa Bay eco-system; there are no signs of ecological disturbances.

- UM-143. Shell Midden A, RC-1** **976 ± 70**
AD 974
Charcoal from 72cm beneath surface.
- UM-150. Shell Midden A, RC-17A** **4148 ± 90**
2198 BC
Ostrea equestris shells from 105 to 110cm beneath surface.
- UM-151. Shell Midden A, RC-17B** **2130 ± 105**
180 BC
Calcareous concretion found in a possible fire pit, from 105 to 110cm beneath surface.
- UM-149. Shell Midden A, RC-15A** **4022 ± 122**
2072 BC
Aequipecten irradians concentricus shells from 115 to 120cm beneath surface.
- UM-144. Shell Midden B, RC-9A** **3977 ± 118**
2027 BC
Ostrea equestris shells from 75 to 80cm beneath surface.
- UM-145. Shell Midden B, RC-9B** **3875 ± 90**
1925 BC
Aequipecten irradians concentricus shells from 75 to 80cm beneath surface. *Comment*: cf UM-144.
- UM-147. Shell Midden B, RC-12** **3822 ± 100**
1872 BC
Aequipecten irradians concentricus shells from 80cm beneath surface. *Comment*: duplicate runs of sample gave 3852 ± 92 BP and 3793 ± 108 BP.
- UM-148. Shell Midden B, RC-14B** **3822 ± 80**
1872 BC
Aequipecten irradians concentricus shells from 100cm beneath surface. *Comment*: duplicate runs of sample gave 3879 ± 86 BP and 3765 ± 80 BP.
- UM-146. Shell Midden B, RC-11** **3827 ± 80**
1877 BC
Strombus alatus shells from 105cm beneath surface.

B. British Honduras

- UM-122. San Jose, C4** **1010 ± 50**
AD 940
Fragment of Sapote wood from a cross beam in principal Palace Building of Mayan site in San Jose, British Honduras (17° 30' 12" N, 88° 55' 00" W). Sample used to cross-date pottery from same structure. Coll 1967 and subm 1973 by H C Ball, Inst Maya Studies, Miami, Florida. *Comment* (HCB): pottery assoc with structure id as San Jose V, or AD 987 (Thompson, 1939).

C. Guatemala

UM-124. Kinal Lintel **1320 ± 73**
AD 630

Fragment of wooden lintel from East Temple, Main Plaza, Mayan site of Kinal, Guatemala (17° 42' N, 89° 14' W). Sample used to cross-date pottery and artifacts from same site. Coll 1964 and subm 1973 by H C Ball. *Comment* (HCB): pottery sherds from site correspond to both Tzakol phase, AD 300 to 650 and Tepeuh phase, AD 650 to 1000. Kinal architecture is similar to other sites in area that date near middle of Classic period, ca AD 500 to 700 (Graham, 1967).

E. China

UM-170. Goddess Kuan Yin **162 ± 50**
AD 1788

Wood cored from Buddhist sculpture, from Temple, Shenhshi, China (ca 35° 00' N, 110° 00' E). Coll and subm 1973 by L R Rick, Jr, Key Biscayne, Florida. *Comment* (LRR): sculpture is gesso covered wood, 1.2m high, carved from a single block. Represents Kuan Yin, China's Bodhisattva Goddess of Mercy. Iconographically comparable only to 5th and 6th century stone. Kuan Yin is shown in Lubor Hajek's "Chinese Art" pls 137-145, Naprstek Mus, Prague, Czechoslovakia. If sculpture was dated from 6th to 8th century, it would be oldest Buddhist sculpture in wood extant today. *Comment*: ¹⁴C date is average of 3 separate runs of sample, 135 ± 65 BP; 195 ± 65 BP; 155 ± 60 BP.

II. GEOLOGIC SAMPLES

*A. Tunisia***Lake Tunis series**

Red algae and mollusk shells cored from center of Lake Tunis, Tunisia (36° 45' N, 10° 15' E). Dates help establish sedimentation rate of lagoonal deposits in lake. Coll 1972 by F Kerr; subm 1973 by O H Pilkey, Duke Univ, Durham, North Carolina.

UM-160. Lake Tunis, RC-1 **2520 ± 95**
570 BC
Sample from 60 to 70cm beneath lake bottom.

UM-156. Lake Tunis, RC-2 **3130 ± 105**
1180 BC
Sample from 220cm beneath lake bottom.

B. United States

UM-155. Continental rise pelagic mud **9710 ± 155**
7760 BC

Core interval 110 to 114cm, Continental rise, 3500m off North Carolina coast (33° 40' 18" N, 75° 04' 30" W). Coll and subm 1973 by O H Pilkey. *Comment* (OHP): sample is from a pelagic sequence, overlying a sharp drop in CaCO₃ found in most rise cores from this area. Date probably represents a point at which sea level rose over edge of

shelf and caused a sudden reduction in sedimentation rate. Hence higher CaCO_3 content.

UM-158. Surf City beach shell **7845 \pm 135**
5895 BC

Composite, loose shell material from beach, Surf City, North Carolina ($34^\circ 24' \text{ N}$, $77^\circ 38' \text{ W}$). Sample from hightide line. Coll 1973 by Piotrowski; subm 1973 by O H Pilkey. *Comment* (OHP): date reinforces conclusion that Surf City beach is composed of basically relict shell material.

UM-159. Plum Island beach shell **420 \pm 75**
AD 1530

Composite, loose shell material from beach on Plum Island, Massachusetts ($42^\circ 45' \text{ N}$, $70^\circ 47' \text{ W}$). Coll 1973 by Piotrowski; subm 1973 by O H Pilkey. *Comment* (OHP): sample from hightide line. Plum Island beach is basically recent shell material.

Platt Shoals series

Samples dated to establish evolution of Platt Shoals complex, Platt Shoals, North Carolina. Coll 1973 by P C Sears; subm 1973 by W L Stubblefield, NOAA, Miami, Florida.

UM-117. Platt Shoals PGL **4400 \pm 160**
2450 BC

Shell hash cored 4m beneath water and sediment interface, inner crest of Platt Shoals ($35^\circ 45' 06'' \text{ N}$, $75^\circ 26' 30'' \text{ W}$).

UM-118. Platt Shoals P1M **5618 \pm 100**
3668 BC

Shell hash cored 3m beneath water and sediment interface, outer ridge of Platt Shoals ($35^\circ 45' 06'' \text{ N}$, $75^\circ 19' 18'' \text{ W}$).

Atlantic City series

Samples cored 48km SE of Atlantic City, New Jersey. Coll 1972 by D J Swift; subm 1973 by W L Stubblefield.

UM-103. Atlantic City 1B-V2 **29,700 \pm 650**
27,750 BC

Shells from 83cm beneath surface ($39^\circ 04' 54'' \text{ N}$, $73^\circ 55' 00'' \text{ W}$). *Comment* (WLS): sample from littoral deposit of early Holocene. Date brackets top of Pleistocene and establishes sedimentation rate during Holocene.

UM-104. Atlantic City 1B-V2 **32,150 \pm 600**
30,200 BC

Shells from 215cm beneath surface, same core as UM-103.

UM-134. Atlantic City 1B-156 **10,050 \pm 170**
8100 BC

Shells from scoured trough of ridge and swale topography ($39^\circ 05' \text{ N}$, $73^\circ 55' \text{ W}$). *Comment* (WLS): dated to help establish scouring action.

- 10,950 \pm 360**
9000 BC
- UM-105. Atlantic City 1B-V3**
Shells from 8cm beneath surface (39° 06' N, 73° 49' W). *Comment* (WLS): dates from core establish Pleistocene contact and amount of sand movement above underlying clay contact. Sample from lower littoral zone of early Holocene.
- 22,035 \pm 665**
20,085 BC
- UM-133. Atlantic City 1B-V3**
Shells from 150cm beneath surface, same core as UM-105.
- +1040**
25,300
-1200
- UM-106. Atlantic City 1B-V3**
Shells from 250cm beneath surface, same core as UM-105.
- >36,600**
- UM-107. Atlantic City 1B-V3**
Shells from 370cm beneath surface, same core as UM-105.
- <500**
- UM-108. Atlantic City 1B-V4**
Shells from 60cm beneath surface (39° 07' N, 73° 51' W). *Comment* (WLS): dates from core determine sedimentation rate of sand during Holocene and sand movement in ridge and swale topography.
- 3760 \pm 70**
1810 BC
- UM-109. Atlantic City 1B-V4**
Shells from 125cm beneath surface, same core as UM-108.

C. Haiti

Caicos-Hispaniola Basin series

Cores from Caicos-Hispaniola Basin, N of Haiti, dated to determine frequency of turbidity currents and their affects on basin sedimentation. A yellow pelagic layer at intervals ranging from 118 to 187cm within core and a gray turbidite layer ranging from 42 to 125cm within core, were dated. Coll 1972 by Bennetts; subm 1973 by O H Pilkey.

General Comment (OHP): sedimentation rate of yellow pelagic layer is 2.5 to 4cm/1000 yr. Source area of gray turbidite layer is W side of basin near Great Inagua Island, Bahamas. Gray turbidite overlies yellow pelagic; inversion of dates indicates tectonic disturbances basically from Puerto Rican Trench and Hispaniola volcanic activity.

- 12,855 \pm 145**
10,905 BC
- UM-163. Caicos-Hispaniola Basin,**
core 19253
Yellow pelagic mud from 118 to 122cm beneath surface (21° 02' 12" N, 72° 28' 30" W).
- 16,580 \pm 190**
14,630 BC
- UM-162. Caicos-Hispaniola Basin,**
core 21414
Gray turbidite from 52 to 60cm beneath surface (20° 39' 12" N, 72° 44' 12" W).

UM-164. Caicos-Hispaniola Basin, 16,400 ± 320
core 21423 14,450 BC

Gray turbidite from 120 to 125cm beneath surface (20° 32' 00" N, 71° 56' 00" W). *Comment:* duplicate run other side of core, UM-172, gave 16,780 ± 780 BP.

UM-165. Caicos-Hispaniola Basin, 13,110 ± 200
core 21418 11,160 BC

Yellow pelagic mud from 183 to 187cm beneath surface (20° 47' 12" N, 72° 14' 30" W). *Comment:* duplicate run on other side of core, UM-173, gave 14,010 ± 195 BP.

UM-160. Caicos-Hispaniola Basin, 20,520 ± 305
core 21417 18,570 BC

Gray turbidite from 42 to 51cm beneath surface (20° 46' 30" N, 72° 32' 00" W).

UM-169. Caicos-Hispaniola Basin, 15,925 ± 235
core 21417 13,975 BC

Yellow pelagic mud from 140 to 146cm beneath surface, same core as UM-160. *Comment:* duplicate run on other side of core, UM-171, gave 15,565 ± 440 BP.

D. Bahamas

Berry Islands series

Four series of marine-derived carbonates dated. Samples represent intertidal beachrock, beachsand, and eolian dune deposits selected from emergent portions of islands. Dates provide temporal framework for interpretation of Holocene sea-level history of Berry Is. Place names used in description of islands derived from Berry Is Ed 1, Scale 1:25,000; contour interval 6.1m, Lands and Surveys Dept, Nassau, Bahamas. Coll and subm 1972 by D Pasley, RSMAS, Univ Miami.

Interior Bank, Island series

Lithified, well-sorted oolitic pelleted calcarenite from back beach and beach-rock ridges.

UM-6. "Bushes," 8-1A 1030 ± 100
AD 920

Sample from back beach dune on N side of island, NE of Rum Cay, alt 1.5m above MSL (25° 27' 47" N, 78° 00' 45" W).

UM-7. South Stirrup Cay, 8-3 1785 ± 100
AD 165

Sample from back beach dune on SE corner of island, alt 1m above MSL (25° 25' 42" N, 77° 55' 30" W).

UM-8. "Bushes," P-4 1340 ± 180
AD 610

Sample from beach-rock ridge on beach, SW side of island, NE of Rum Cay (25° 27' 46" N, 78° 00' 45.3" W).

Bank-edge Island series

UM-5. Chub Cay, 7-1A **2465 ± 75**
515 BC

Whole rock sample of lithified oolitic-pelletoidal calcarenite from exposure on S side of boat channel leading to Chub Cay Marina, Crown Colony Club, 80m S of marina, alt MSL (25° 34' 31" N, 77° 54' 42" W).

UM-95. Chub Cay, 73-129-A **2135 ± 65**
185 BC

Pelecypod shells, same location as UM-5.

UM-10. Holmes Cay, P-10 **4010 ± 60**
2060 BC

Lithified, well-sorted oolitic-pelletoidal calcarenite exposed in leeward dipping beds of single eolianite ridge parallel to seaward side, S end of island, alt 4m above MSL (25° 36' 58" N, 77° 44' 00" W).

UM-44. Haines Cay, 72-806-5A **5535 ± 95**
3585 BC

Lithified pelletoidal-oolitic calcarenite from windward-dipping eolianite bed on seafacing bluff, extreme N part of island, alt 2m above MSL (25° 44' 22" N, 77° 49' 06" W).

UM-54. Haines Cay, 72-806-5B **2680 ± 60**
730 BC

Poorly lithified, well-sorted pelletoid skeletal calcarenite forming beachdune ridge ca 11m high. Crest ca 30m W of seaward lithified ridge (samples UM-44 and -94), alt 2.5m above MSL (25° 44' 22" N, 77° 49' 06" W).

UM-94. Hawks Nest, 72-806-4A; 1&2 **5170 ± 150**
3220 BC

Lithified pelleted oolitic calcarenite from windward-dipping eolianite bed of farthest-seaward dune ridge, alt 1.5m above MSL (25° 44' 42" N, 77° 49' 02" W).

UM-97. Little Harbour Cay, 72-721-1A4 **4295 ± 90**
2345 BC

Holocene pelletoidal oolitic eolianite from backset beds dipping 35°N 300°W, seaward side of island, 3.5m above MSL (25° 34' 44" N, 77° 43' 04" W).

UM-81. Great Harbour Cay, 73-129-B3 **1170 ± 65**
AD 780

Well-sorted unconsolidated pelletoidal sand from incipient dune located at nodal point of beach (25° 45' 50" N, 77° 51' 00" W).

UM-84. Great Harbour Cay, 73-122-B3 **290 ± 100**
AD 1660

Well-sorted pelletoidal and skeletal sand from pocket beach, base of Pleistocene section. Sample from upper beach covered only during high tide (25° 48' 33" N, 77° 52' 58" W). *Comment* (DP): sand probably

deposited as a result of annual longshore depositional regime commencing when prevailing winds are from SE.

UM-96. Frazers Hog Cay, 72-126-C3 **2500 ± 75**
550 BC

Oolitic beach sand from base of Holocene eolianite along strandline, S side of island (25° 24' 30" N, 77° 51' 13" W).

UM-85. Frazers Hog Cay, 73-125-E **2165 ± 90**
215 BC

Oolitic beach sand from base of Holocene eolianites along strandline, NW side of island (25° 26' 25" N, 77° 49' 38" W).

UM-80. Frazers Hog Cay, 73-126-C2 **2445 ± 65**
495 BC

Oolitic limestone lithified from shallow windward- (N90°E) dipping bed, alt 2.4m above MSL (25° 24' 30" N, 77° 51' 13" W).

Suger Beach Cove Holocene dune series

Vertical sequence of whole rock samples from an eroded lithified eolianite Holocene dune, 11.1m high, cave area, seaward side of island. Part of a series of seaward fronting dunes (25° 47' 30" N, 77° 52' 37" W).

UM-91. Sugar Beach Cove, 72-805-1A2 **4880 ± 105**
2930 BC

Pelleted skeletal calcarenite, alt 0.3m above MSL.

UM-92. Sugar Beach Cove, 72-805-1A5 **5195 ± 125**
3245 BC

Pelleted limestone from well-sorted cross-bedded zone, 2.5m above MSL.

UM-93. Sugar Beach Cove, 72-805-1A7 **5550 ± 85**
3600 BC

Pelleted limestone from highest accessible alt, 4.9m above MSL.

UM-88. Sugar Beach Cove, 72-805-1A8 **1060 ± 80**
AD 890

Oolitic beach sand from front of cliff base. *Comment* (DP): represents reworked, lithified Holocene sediments derived from receding coastal dunes mixed with recently formed sediments.

UM-89. Sugar Beach Cove **4975 ± 80**
3025 BC

Pelleted skeletal calcarenite from base of dune face, alt MSL.

General Comment (DP): ¹⁴C ages exhibit a reversed trend in order of superposition.

Clubhouse series

Traverse with dates of Holocene depositional sequence starting with beach on E side of island across lithified dunes on W side.

1530 ± 80

UM-90. Great Harbour Cay, 72-807-1A **AD 420**

Unconsolidated abraded skeletal sand mixed with pelletoid sand, from upper beach, alt ca MSL (25° 44' 53" N, 77° 51' 48" W).

1330 ± 85

UM-45. Great Harbour Cay, 72-807-1C **AD 620**

Oolitic pelletoidal calcarenite, poorly lithified, from dune ridge 70m E of Great Harbour Dr, approx alt 3m above MSL (25° 44' 53" N, 77° 50' 53" W). *Comment* (DP): no evidence of beach facies bubbles, burrows, or beach bedding appear in sample.

2010 ± 95

UM-55. Great Harbour Cay, 72-807-1D **60 BC**

Oolitic pelletoidal calcarenite, poorly lithified, well-sorted, from exposed road cut through dune ridge on N side of Royal Palm Dr, alt ca 3.5m above MSL (25° 44' 52" N, 77° 50' 57" W).

1765 ± 75

UM-56. Great Harbour Cay, 72-807-1E **AD 185**

Oolitic pelletoidal calcarenite, poorly lithified, well sorted, from N side of Royal Palm Dr, 79m E of Pinta Dr, alt ca 4m above MSL (25° 44' 05" N, 77° 51' 07" W).

1955 ± 70

UM-79. Great Harbour Cay, 73-124-B **5 BC**

Oolitic pelletoidal calcarenite, well sorted, from sandy lens 3.2m below apex of highest (15.2m) dune in dune field. Exposure on N side of Royal Palm Dr, Great Harbour Cay Golf Club House, alt ca 9m above MSL (25° 44' 43" N, 77° 51' 19" W).

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