

UNIVERSITY OF WISCONSIN RADIOCARBON DATES XXV

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Procedures and equipment used in the University of Wisconsin laboratory have been described in previous date lists. Except as otherwise indicated, wood, charcoal, and peat samples are pretreated with dilute NaOH—Na₄P₂O₇ and dilute H₃PO₄ before conversion to the counting gas methane; when noted, marls and lake cores are treated with acid only. Very calcareous materials are treated with HCL instead of H₃PO₄. Pretreatment of bone varies with the condition of the bone sample; solid bone with little deterioration is first cleaned manually and ultrasonically. The bone is treated with 8% HCL for 15 minutes, then dilute NaOH—Na₄P₂O₇ for 3 hours at room temperature, washed until neutral, and the collagen extracted according to Longin (1971). Charred bone is treated with dilute HCL, NaOH—Na₄P₂O₇, and then dilute HCL again.

The dates reported have been calculated using 5568 yr as the half-life of ¹⁴C. The standard deviation quoted includes only 1σ of the counting statistics of background, sample, and standard counts. Background methane is prepared from anthracite, standard methane from NBS oxalic acid. The activities of the dated samples for which δ¹³C values are listed have been corrected to correspond to a δ¹³C value of -25‰; the activity of the standard methane has been corrected to -25‰.

Sample descriptions are based on information supplied by those who submitted samples.

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ARCHAEOLOGIC SAMPLES

United States

Illinois

Bauer Branch phase series

Wood charcoal coll 1981-82 from sites in upper Sugar Creek drainage (Schuyler Co) between villages of Littleton and Vermont by W Green, D Esarey, M Malpass, K Stevenson, K Sampson and subm by W Green, Dept Anthropol, Univ Wisconsin-Madison.

WIS-1871. (11Sc264) **1050 ± 70**
 $\delta^{13}C = -26.4\text{‰}$

Sample from Feature 3 (40° 14' 30" N, 90° 34" W), shallow basin-shaped pit directly assoc with Bauer Branch sherds and punctated pipe.

WIS-1872. (11Sc268) **1370 ± 70**
 $\delta^{13}C = -26.5\text{‰}$

Sample from Feature 9 (40° 15' N, 90° 35' W), structure basin directly assoc with Bauer Branch vessels.

WIS-1877. (11Sc348) **1020 ± 70**
 $\delta^{13}C = -26.2\text{‰}$

Sample from Feature 8 (40° 15' N, 90° 35' W), Bauer Branch pottery refits with Feature 13 sherds.

WIS-1878. (11Sc348) **1170 ± 70**
 $\delta^{13}C = -26.3\text{‰}$

Sample from Feature 11 (same as WIS-1877, above), directly assoc with Bauer Branch sherds and triangular point.

WIS-1879. (11Sc348) **1120 ± 70**
 $\delta^{13}C = -26.3\text{‰}$

Sample from Feature 13 (same as WIS-1877, above), directly assoc with notched, stemmed points and Bauer Branch pottery. Sherds refit with Feature 8 pottery.

WIS-1880. (11Sc461) **1050 ± 70**
 $\delta^{13}C = -26.3\text{‰}$

Sample from features exposed in road cut (40° 14' 30" N, 90° 34" W), Late Woodland pottery and stemmed points assoc. *Comment:* age 400 yr younger than artifacts indicate.

WIS-1881. (11Sc466) **1250 ± 70**
 $\delta^{13}C = -26.2\text{‰}$

Sample from feature assoc with paleosol in Sugar Creek flood plain (40° 14' 30" N, 90° 30' 30" W), depth 100 to 110cm, Late Woodland assoc.

General Comment: occupation of Sugar Creek headwater area intensified after demise of Hopewell culture and ended just before Mississippian influence in region. Site density along intermittent streams indicates higher, more stable prehistoric stream flow level. Previous dates WIS-918 (R, 1979, v 21, no. 1, p 120; Esarey, 1982; Green, 1976, 1977, 1987).

Massachusetts

Boylston Street Fish Weir site series

Wood from Boylston Street Fish Weir site Suffolk Co (42° 40' N, 71° 00' W) coll by E De'cima and M Roberts and subm by P Newby, Brown

Univ, Providence. Wooden stakes from area that was once inlet of Charles R (Johnson, 1942, 1949).

WIS-1957. **3890 ± 70**
 $\delta^{13}C = -31.3\text{‰}$
Wood from 481 cm below Boston City base; normal pretreatment.

WIS-1958. **4120 ± 70**
 $\delta^{13}C = -31.1\text{‰}$
Sample treated to remove hydrocarbons, then normal pretreatment (same sample as WIS-1957).

WIS-1959. **5300 ± 70**
 $\delta^{13}C = -26.9\text{‰}$
Sample from 550cm below Boston City base.

Minnesota

WIS-1869. Yucatan Village site (21Hu26) **220 ± 60**
 $\delta^{13}C = -26.6\text{‰}$
Charred wood from Site 21Hu26, Houston Co (43° 40' N, 91° 42' W) coll May 1985 by R M Withrow and subm by E Johnson, Dept Anthropol, Univ Minnesota, Minneapolis. *Comment:* sample is assoc with Orr phase Oneota ceramics from deep bell-shaped pit. European trade items including glass beads and kettle brass were found on surface of site and in subsurface pits lacking Oneota ceramics.

WIS-1870. Archaeological site (21M11) **Modern**
 $\delta^{13}C = -26.1\text{‰}$
Charred wood from Site 21M11, Mille Lacs Co (46° 07' N, 93° 46' W) coll and subm by E Johnson. House structure supporting timbers underlying 15 to 18cm mixed humic soil overburden.

Ohio

WIS-1876. Sand Ridge site (33Ha17) **560 ± 70**
 $\delta^{13}C = -26.4\text{‰}$
Wood charcoal from Sand Ridge site (33Ha17) Hamilton Co (39° 06' 05" N, 84° 23' 45" W) coll 1948 by D Conover and subm by R E Riggs, Dept Anthropol, Univ Wisconsin-Madison. *Comment:* sample dates Fort Ancient tradition component of site. For previous dates from site, see R, 1987, v 29, no. 3, p 400.

Oklahoma

Geren site (34Lf36) series

Samples coll Jan-April 1941 from Geren site, LeFlore Co (34° 18' 37" N, 94° 35' 09" W) by K G Orr and subm by C L Rohrbaugh, Illinois State Univ, Normal (formerly Stovall Mus, Univ Oklahoma).

WIS-1859. **460 ± 70**
 $\delta^{13}C = -25.5\text{‰}$

Wood charcoal from House 9, probably from central hearth of two-center-post rectangular house pattern.

WIS-1860. **420 ± 70**
 $\delta^{13}C = -25.7\text{‰}$

Wood charcoal from House 2, probably from wall post of two-center-post rectangular house patterns with extended entrance.

WIS-1884. **450 ± 70**
 $\delta^{13}C = -26.9\text{‰}$

Wood charcoal from House 10, probably from wall post or central hearth of two-center-post rectangular house.

WIS-1885. **590 ± 70**
 $\delta^{13}C = -27.4\text{‰}$

Same as WIS-1860.

WIS-1889. **330 ± 70**
 $\delta^{13}C = -25.9\text{‰}$

Wood charcoal from House 1, probably from one of exterior wall posts of two-center-post rectangular house.

WIS-1892. **390 ± 60**
 $\delta^{13}C = -9.2\text{‰}$

Carbonized corn from refuse-filled pit in House 2. Same as WIS-1860.

WIS-1893. **670 ± 50**
 $\delta^{13}C = -9.4\text{‰}$

Carbonized corn from one of several refuse-filled pits in circular House 3. Dates are first from circular houses in Arkansas R region of Caddoan area.

WIS-1894. **660 ± 60**
 $\delta^{13}C = -9.4\text{‰}$

Same as WIS-1893.

General Comment: dates on contexts at Geren Site 34Lf35 are interesting because they are unexpected. Houses clearly belong to late part of Caddoan sequence in Arkansas Valley, but those believed to be early date to period of Fort Coffee phase. Circular houses, believed by many to be Fort Coffee features, date to earliest part of Spiro phase (Rohrbaugh, 1985a,b; R, 1981, v 23, p 147–148).

Wisconsin

Fred Edwards site (47Gt377) series

Wood charcoal coll Aug 1985 from Fred Edwards site 47Gt377, Grant Co (42° 43' 30" N, 90° 50' 58" W) by F Finney, C Arzigian, N Mills, C Pope, and subm by J B Stoltman, Dept Anthropol, Univ Wisconsin-Madison. Samples date Middle Mississippi/Late Woodland contact in SW Wisconsin (R, 1986, v 28, no. 3, p 1211; R, 1987, v 29, no. 3, p 403).

WIS-1886.**1010 ± 70** $\delta^{13}C = -25.2\text{‰}$

Sample from Feature 51, rock-filled, 2.5 × 1.5m basin, possible sweat lodge or roast pit. Basin contained diagnostic Late Woodland ceramics.

WIS-1887.**810 ± 70** $\delta^{13}C = -26.1\text{‰}$

Sample from Feature 73, rectangular, shallow, semi-subterranean structure containing Late Woodland and Middle Mississippian (including Ramey Incised) ceramics. *Comment:* WIS-1887 is in conformity with preponderance of dates from site; WIS-1886 is slightly older but is acceptable.

Bachmann site (47Sb202) series

Samples coll July 1986 from Bachmann site, Sheboygan Co (43° 43' N, 87° 48' W) and subm by L Rusch, State Hist Soc Wisconsin-Madison (Rusch & Penman, 1984; R, 1986, v 28, no. 3, p 1211; R, 1987, v 29, no. 3, p 402).

WIS-1890.**2050 ± 70** $\delta^{13}C = -26.9\text{‰}$

Wood charcoal, sample no. 22, gathered from 40cm² of prehistoric living surface.

WIS-1891.**890 ± 50** $\delta^{13}C = -26.2\text{‰}$

Wood charcoal, sample no. 30, coll from large fire pit containing a few chert flakes. This feature had no diagnostic artifacts.

General Comment: sample no. 22 dates Early Woodland habitation. This component represents previously unid. manifestation of Early Woodland. It is characterized by predominance of Durst points in lithic assemblage and ceramics which cannot be assoc with any previously defined type. Sample no. 30 dates Late Woodland component.

WIS-1895. Oneota site (47Lc262)**470 ± 70**

Wood charcoal coll Oct 1986 from Oneota site (47Lc262), LaCrosse Co (43° 56' 30" N, 91° 15' 30" W) by D M Stemper and N Meinholtz and subm by J T Penman, State Hist Soc. *Comment:* dated charcoal is from Fea-

ture 1, burial pit in Unit W98 S01. Burials include three individuals, one of which is extended. Grave goods, including Madison triangular projectile points and rolled copper beads, were found with all three burials. Oneota ceramics and bison scapula hoe were found above burial pit. Burials are probably assoc with large Oneota Tremaine village (47Lc95) W of 47Lc262.

WIS-1913. Kessler's Two site (47Cl18) **330 ± 60**
 $\delta^{13}C = -27.1\text{‰}$

Wood charcoal coll Nov 1986 from Kessler's Two site (47Cl18), Clark Co (44° 34' N, 90° 37' W) by J H Broihahn and subm by J T Penman. Sample from Feature 1 contained no diagnostic artifacts (Broihahn, Penman & Rusch, 1987). *Comment:* Feature 1 is in cultivated field. Charcoal was coll 30 to 35cm below ground surface. Paste characteristics and formal attributes of ceramics taken from feature contiguous to Feature 1 exhibit parallels to Late Woodland pottery. Ceramics could not be assoc with any previously defined type.

Gottschall Site (47Ia80) series

Wood charcoal coll from Gottschall Rockshelter (47Ia80), Iowa Co (43° 06' 19" N, 90° 21' 01" W) by R J Salzer, M Steinhauer, C Phannkuche and subm by R J Salzer, Beloit Coll. Previously dated (R, 1987, v 28, no. 3, p 402; Salzer, 1987).

WIS-1911. **3060 ± 70**
 $\delta^{13}C = -25.5\text{‰}$
Charcoal from Feature 1, sample nol. 86Cl, Late Archaic hearth.

WIS-1912. **3450 ± 70**
 $\delta^{13}C = -26.3\text{‰}$
Charcoal from Feature 1, sample no. 86C2, Late Archaic hearth.

Whitefish Bay View site (47Dr167) series

Wood charcoal from Whitefish Bay View site, Door Co (44° 55' 36" N, 87° 11' 55" W) subm by V Dirst, Wisconsin Dept Nat Resources, Bur Parks & Recreation, Madison (Dirst, V, Archaeological research at Whitefish Dunes State Park, Door County, Wisconsin, ms in preparation).

WIS-1918. **560 ± 60**
 $\delta^{13}C = -25.8\text{‰}$

Sample coll July 1986 by V Dirst and C Waggener from Feature 6, an Oneota trash pit that yielded Green Bay phase ceramics, chert flakes, a large quantity of faunal remains (mostly fish) and some floral remains, including corn.

WIS-1919.**1640 ± 70** $\delta^{13}C = -24.6\text{‰}$

Sample coll Aug 1986 by J A Clark from Feature 8. Dates earlier of two Late Woodland occupations at site. Pottery includes Pt Sauble collared sherds and non-Pt Sauble Madison Ware vessels.

General Comment: WIS-1918 well within range of dates expected. Deflation appears to have resulted in misinterpretation of context of WIS-1919. It is now considered to date earliest occupation of site, which must be Middle Woodland. Sample was assoc with lithic debitage and floral remains (black-berry and bush honeysuckle), but no ceramics. Ceramics noted in initial description were in Late Woodland horizon separated from this sample by disconformity.

“Brussels Hill” Cave series

Charcoal coll 1986 and 1987 from pit cave near Brussels, Door Co (44° 44' 35" N, 87° 35' 21" W) by N Kox, R Howe, M Schleis, C Schleis, G Soule, J Brazowski, K Brown, T Erdman and subm by R Howe, Univ Wisconsin-Green Bay. Cave is deep, irregular fissure of Silurian dolomite shaped somewhat like hour glass yielding much vertebrate skeletal remains (West & Dallman, 1980; Schleis, 1987). Presence of wetland spp below this upland site is particularly curious.

WIS-1888.**670 ± 70** $\delta^{13}C = -26.1\text{‰}$

Date is min for underground deposit of fossil-bearing sediments.

WIS-1965.**1820 ± 70** $\delta^{13}C = -25.6\text{‰}$

Sample from depth 28m.

*Belize***MAYA series**

Wood charcoal coll Jan 1987 from Alabama site, Stann Creek Dist (16° 44' N, 88° 31' W) by J J MacKinnon, M Meyers and L Marten and subm by J J MacKinnon, Anthropol Dept, Univ Wisconsin-Madison.

WIS-1914.**1190 ± 80** $\delta^{13}C = -27.3\text{‰}$

Sample from red-brown sandy clay, depth 173cm, in sealed context beneath intact lime plaster floor, Sq F, central trench, Structure 3. Beneath ceremonial platform of limestone, schist, and granite blocks atop Maya pyramid.

WIS-1915. **1100 ± 70**
 $\delta^{13}C = -27.1\text{‰}$

Sample from dark red-brown sandy clay, beneath wall of S structure (Maya Palace) atop Structure 3 (main pyramid/acropolis) from profile trench no. 1. Wall is largely granite and schist with a few limestone blocks.

WIS-1916. Rum Point Lime site **1570 ± 70**
 $\delta^{13}C = -25.5\text{‰}$

Wood charcoal coll Jan 1984 from Rum Point Lime site, Placencia Lagoon, Stann Creek Dist (16° 31' N, 88° 21' W) by S G Velzy and subm by J J MacKinnon. Sample PL-1-2 from sandy clay carbonate-rich soil. On ancient Maya site where lagoon shells were burned to produce lime. Heavy concentrations of broken pottery and lime concretions in midden on shore of brackish lagoon.

Ecuador

Yumes site series (OG-BL-PL-18)

Wood charcoal from Site OG-BL-PL-18 (01° 36' S, 79° 59' W), Recinto Yumes, Guayas Prov, coll July 1984 and subm by D M Stremper, Anthropol Dept, Univ Wisconsin-Madison (R, 1986, v 28, no. 3, p 1212–1213).

WIS-1974. **3960 ± 260**

Sample from 411 to 431cm below surface, assoc with late Valdivia sherds, one post mold, bone, and burned daub.

WIS-1975. **3530 ± 250**

Sample from 431 to 451cm below surface, assoc with probable late Valdivia midden.

Peru

Cerro Azul site series

Samples coll 1983–1984 from Cerro Azul site, Canete Valley (13° 01' S, 76° 29' W) and subm by J Marcus, Mus Anthropol, Univ Michigan, Ann Arbor (Marcus, 1987).

WIS-1936. **420 ± 70**
 $\delta^{13}C = -26.0\text{‰}$

Small charcoal fragments from Feature 6 of Structure D, large mud-walled compound. *Comment:* feature was midden in courtyard of compound, presumed to represent refuse left behind when building was abandoned following Inca conquest of Cerro Azul, AD 1470.

WIS-1937. **520 ± 70**
 $\delta^{13}C = -26.7\text{‰}$

Small charcoal fragments from floor of S Corridor of Structure D. *Comment:* charcoal assoc with large pile of corn cobs, presumed to have

been left behind when building was abandoned following Inca conquest of Cerro Azul, AD 1470.

WIS-1938. **1150 ± 70**
 $\delta^{13}C = -24.0\text{‰}$

Sec of wooden post from 220cm depth in Terrace 9 of Quebrada 5a. *Comment:* matrix was brown, soft, sandy refuse midden, possibly assoc with wattle-and-daub structure. Overlying level was gray, hard, ashy midden. Previous date from same level (Beta-7796) was 1640 ± 120.

WIS-1939. **480 ± 60**
 $\delta^{13}C = -26.7\text{‰}$

Small charcoal fragments from Feature 20 of Structure 9, mud-walled compound. Feature was midden adjacent to compound, presumed to represent refuse left behind when building was abandoned following Inca conquest of Cerro Azul, AD 1470.

GEOLOGIC SAMPLES

United States

Alaska

Pleasant Island site series

Core coll Sept 1984 from small lake in Tongass Natl Forest (58° 21' N, 135° 39' W) by D R Engstrom and subm by D R Engstrom and H F Wright, Jr, Univ Minnesota, Minneapolis. Lake elev, 150m. All depths in cm from lake surface, water depth 3.64m. Dated to provide stratigraphic pollen record.

WIS-1945. **3320 ± 80**
Fine detritus, 426 to 432cm.

WIS-1946. **6180 ± 90**
Fine detritus, 468 to 476cm.

WIS-1947. **10,110 ± 100**
Fine detritus, 548 to 556cm.

WIS-1948. **11,260 ± 120**
Light brown gyttja, 608 to 616cm.

WIS-1949. **11,950 ± 120**
Green-brown gyttja, 626 to 632cm. Sample overlies Edgecumbe tephra.

WIS-1950. **12,280 ± 120**
Mottled green-brown gyttja, 640 to 646cm. Sample underlies Edgecumbe tephra.

WIS-1951.	13,760 ± 120
Gyttja with coarse detritus, 660 to 666cm. Basal date.	
WIS-1967.	1940 ± 70
Limnic sediment, 384 to 388cm.	
WIS-1968.	8390 ± 80
Limnic sediment, 508 to 514cm.	

*Connecticut***Cedar Swamp series**

Cores coll June 1986 from Cedar Swamp, Pequot Indian Reservation (41° 27' 30" N, 71° 57' 40" W) by R S Webb and T Webb, III. Subm by R S Webb, Brown Univ, Providence, Rhode Island. Depths in cm below surface.

WIS-1874.	10,830 ± 110
Fine grained, felty peat from Core B, 265 to 271cm.	
WIS-1875.	12,690 ± 120
Interbedded organic silt and clay from Core B, 311 to 319cm.	
WIS-1952.	8960 ± 110
Organic silt, rich in fine-grained peat from Core B, 154 to 160cm.	
WIS-1953.	8990 ± 90
Organic silt, rich in fine-grained peat from Core A, 155 to 160cm.	
WIS-1954.	10,620 ± 100
Fine-grained organic silt and detrital peat from Core A, 254 to 264cm.	

Florida

WIS-1943. Camel Lake	>33,000
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Sandy gyttja coll March 1986 from Camel Lake, Appalachian Natl Forest, Liberty Co (30° 15' N, 84° 45' W) by E Grimm, W Watts, D Potteet and subm by H E Wright, Jr, Univ Minnesota, Minneapolis. Sample from 1284 to 1294cm below water surface, water depth 4.0m. Part of ongoing study of vegetation and climate history of Florida and SE United States.

Massachusetts

WIS-1917. Great Pond	12,240 ± 120 $\delta^{13}C = -28.5\text{‰}$
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Livingstone core coll Sept 1986 from Great Pond, Truro, Barnstable Co (42° 00' N, 70° 00' W) by M Winkler, R Webb, J Overpeck, J Portnoy, K

Gajewski and subm by M Winkler, Univ Wisconsin-Madison. Willow wood from 441 to 452 cm below water/sediment interface, water depth 9.88m.

Minnesota

Carda site series

Wood coll March 1987 from Carda site, Kanabec Co (45° 53' 16" N, 93° 26' 05" W) and subm by P L Hamilton, Sci Mus Minnesota, St Paul.

WIS-1955. **2230 ± 70**
 $\delta^{13}C = -24.2\text{‰}$

Sample from water-saturated white pine log coll from 132cm depth in peat.

WIS-1956. **270 ± 60**
 $\delta^{13}C = -24.6\text{‰}$

Sample from cross-section of white pine log unearthed during commercial peat excavations at site.

North Dakota

9240 ± 90

WIS-1873. Rice Lake

Core coll Dec 1985 from Rice Lake, Ward Co (48° 00' N, 98° 10' W) and subm by E C Grimm, Univ Minnesota, Minneapolis. Spruce wood (*Picea*) from basal trash layer, 2028 to 2032cm below ice surface; water depth 863cm. Rice Lake is on transect of sites used for vegetation and climatic history study of N Great Plains.

Paddock Creek series

Samples coll Sept 1985 from terraces along Paddock Creek basin, Billings Co (46° 56' 20" N, 103° 22' 53" W) and subm by M A Gonzalez, Geog Dept, Univ Wisconsin-Madison. Dated to provide geochronology of terrace fm, gullyng and soil fm (Gonzalez, 1987; Muhs, 1985; Clayton, Moran & Bickley, 1976). Acid treatment only. Depths in cm below terrace surface.

WIS-1906. **3240 ± 80**

Sample from second highest fluival terrace, 125 to 138cm. Paleosol is top of alluvial sediment buried by overbank, vertically accreted sediment.

WIS-1907. **3860 ± 70**

Sample from highest fluvial terrace, 160 to 172cm. Same as WIS-1906, above.

WIS-1908. **3830 ± 70**

Sample from highest fluvial terrace, 238 to 255cm. Same as WIS-1906, above.

WIS-1909. **2960 ± 70**

Sample from second highest fluvial terrace, 155 to 165cm. Same as WIS-1906, above.

WIS-1910. **2280 ± 70**

Sample from third highest fluvial terrace, 200 to 220cm. Same as WIS-1906, above.

Pennsylvania

Spring Lake series

Samples coll 1983–1985 from Spring Lake, Bradford Co (41° 37' N, 76° 20' W) by A D Barnosky and subm by C W Barnosky, Carnegie Mus Nat Hist, Pittsburgh. Whole rib bone of mammoth and assoc sediment were dated (Barnosky *et al*, 1986).

WIS-1925. **15,910 ± 160**

Silt containing pollen, plant macrofossils, and fossil beetles surrounding mammoth bones.

WIS-1935. **14,240 ± 150**

Whole rib bone of Newton Mammoth from N end of kettle lake below Walter Newton house.

South Dakota

Cottonwood Lake series

Livingstone core, 5cm diam, from Cottonwood Lake, Sully Co (44° 28' N, 99° 55' W) coll and subm by E C Grimm, Limnol Research Center, Univ Minnesota, Minneapolis. Site is part of study of vegetation and climate history of Northern Great Plains. *Comment:* Cottonwood Lake is on Missouri Coteau in central South Dakota, nearest other sites of paleol studies are several hundred km away. All depths in cm from water surface; water depth 3.2m. Previously dated (R, 1986, v 28, no. 3, p 1220).

WIS-1896. **1300 ± 70**

Organic clay, 337 to 348cm.

WIS-1897. **4550 ± 80**

Organic clay, 403 to 418cm.

WIS-1898. **9810 ± 100**

Organic clay, 460 to 480cm.

WIS-1899. **11,430 ± 110**

Organic clay, 543 to 559cm.

WIS-1900. **9380 ± 100**

Organic clay, 615 to 626cm.

WIS-1901.	11,060 ± 110
Organic clay, 689 to 700cm.	
WIS-1902.	11,060 ± 110
Organic clay, 759 to 770cm.	
WIS-1903.	11,060 ± 110
Organic clay, 835 to 846cm.	
WIS-1904.	12,130 ± 110
Organic clay, 903 to 914cm.	
WIS-1905.	19,860 ± 210
Organic clay, 986 to 977cm.	

WIS-1966. Medicine Lake **7630 ± 80**

Livingstone core coll Feb 1980 from Medicine Lake, Codington Co (44° 59' N, 97° 21' W) by N J Radle and subm by H E Wright, Jr. Calcareous lake sediment from 2004 to 2012cm below water surface; water depth 12.94m. Acid treatment only. Previously dated (R, 1982, v 24, no. 1, p 94).

Wisconsin

WIS-1944. Onion River site **5020 ± 80**

Sample coll Aug 1986 from low terrace on Onion R, Sheboygan Co (43° 43' N, 87° 48' W) and subm by J C Knox, Geog Dept, Univ Wisconsin-Madison. Very dark grayish brown soil from 49 to 64cm below surface. Dates late middle Holocene (Nippissing) high level stage on Lake Michigan (Hansel *et al*, 1985).

WIS-1964. Horicon Marsh **2470 ± 70**
 $\delta^{13}C = -27.2\text{‰}$

Core coll June 1987 from Horicon Marsh, Dodge Co (40° 31' N, 88° 39' W) and subm by J Battista, Dept Geol Geophysics, Univ Wisconsin-Madison. Plant fibers, seeds, and wood from ca 4.48m below 4.58m blue-gray clayey slit.

Wyoming

Hedrick Pond series

Core coll Aug 1986 from Hedrick Pond, Grand Teton Natl Park (43° 45' N, 110° 31' W) and subm by C W Barnosky. Depths in cm from water surface; water depth 5.5m. Glacier Peak B Ash (ca 11,200 yr BP) occurs at 11.52m below water surface.

WIS-1920.	2190 ± 60
Organic clay, 700 to 710cm.	

WIS-1921. **4210 ± 80**

Fine detritus gyttja, 880 to 890cm.

WIS-1922. **11,340 ± 100**

Fine detritus gyttja, 1090 to 1100cm.

WIS-1923. **14,580 ± 150**

Fine detritus gyttja, 1140 to 1152cm.

WIS-1924. **17,160 ± 210**

Organic silty clay, 1206 to 1221cm.

WIS-1926. Emerald Lake **4990 ± 70**

Core coll Aug 1985 from Emerald Lake, Teton Natl Forest (44° 04' 30" N, 110° 17' W) and subm by C W Barnosky. Fine detritus gyttja from 800 to 815cm below water surface; water depth 5.9m. Previously dated (R, 1987, v 29, no. 3, p 410). Acid treatment only.

WIS-1927. Lily Lake **2720 ± 70**

Core coll Aug 1986 from Lily Lake, Teton Natl Forest (46° 12' 50" N, 110° 19' 30" W) and subm by C W Barnosky. Fine detritus gyttja from 956 to 966cm below water surface; water depth 6.95m. Acid treatment only.

Lily Lake Fen series

Core coll Aug 1985 from Lily Lake Fen, Teton Natl Forest and subm by C W Barnosky. Depths in cm from surface. Previously dated (R, 1987, v 29, no. 3, p 411). Acid treatment only.

WIS-1928. **10,170 ± 100**

Fine detritus gyttja, 900 to 920cm. Increase in diploxylon pine pollen dates spread of lodgepole pine near site.

WIS-1929. **10,770 ± 110**

Fine detritus gyttja, 1002 to 1017cm.

WIS-1930. Mariposa Lake **9460 ± 90**

Core coll Aug 1985 from Mariposa Lake, Yellowstone Natl Park (44° 09' N, 110° 17' W) and subm by C W Barnosky. Fine detritus gyttja, 310 to 325cm depth from water surface; water depth 1.43m. Previously dated (R, 1987, v 29, no. 3, p 411). Acid treatment only.

Fallback Lake series

Core coll Aug 1986 from Fallback Lake, Teton Natl Forest (43° 58' N, 110° 26' 30" W) and subm by C W Barnosky. Depths in cm from water surface; water depth 8.8m. Acid treatment only.

WIS-1931. **9510 ± 90**

Coarse detritus gyttja, 446 to 456cm.

WIS-1932. **12,070 ± 120**

Organic silty clay, 500 to 510cm.

WIS-1933. **15,640 ± 160**

Inorganic clay, 558 to 570cm.

WIS-1934. Divide Lake **3970 ± 80**

Core coll Aug 1985 from Divide Lake, Teton Natl Forest (43° 46' 30" N, 110° 14' W) and subm by C W Barnosky. Fine detritus gyttja, 810 to 825cm depth from water surface; water depth 7.2m. Previously dated (R, 1987, v 29, no. 3, p 411). Acid treatment only.

Canada

English Lake series

Livingstone core, 5cm diam, coll Aug 1985 from English Lake (unofficial name), Labrador (53° 49' N, 58° 34' W) by G A King and H E Wright, Jr and subm by G A King, Univ Minnesota, Minneapolis. Dated for time of tree arrival, sediment accumulation rate, and pollen influx. Depths in cm from water surface, water depth 8.58m. Acid treatment only.

WIS-1882. **6080 ± 80**

Brown gyttja, 1099 to 1105cm; dates peak per cent organic matter since deglaciation.

WIS-1883. **7250 ± 80**

Silty gyttja, 1099 to 1105cm; date is min estimate of local deglaciation and time when lowland below Mealy Mts became ice free.

WIS-1960. Traffic Lake **6710 ± 80**

Core coll Aug 1985 from Traffic Lake (unofficial name), Labrador (53° 16' N, 62° 27' W) by G A King and H E Wright, Jr and subm by G A King. Lake elev 460m, water depth 2.52m. Silty gyttja from 538 to 543cm below water surface. Basal date, gives time of local deglaciation (King, 1985). Previously dated (R, 1987, v 29, no. 3, p 413). Acid treatment only.

WIS-1961. Claude Lake **8170 ± 80**

Core coll Aug 1985 from Claude Lake (unofficial name), Labrador (53° 35' N, 58° 35' W) by G A King and H E Wright, Jr and subm by G A King. Lake elev 480m, water depth 9.93m. Silty gyttja from 1339 to 1349cm below water surface. Basal date, gives time of local deglaciation (King, 1985). Previously dated (R, 1987, v 29, no. 3, p 413). Acid treatment only.

WIS-1962. Cirrus Lake **8290 ± 80**

Core coll Aug 1985 from Cirrus Lake (unofficial name), Labrador (52° 18' N, 58° 22' W) by G A King and D R Foster and subm by G A King. Lake elev 360m, water depth 102cm. Silty gyttja from 337 to 343cm below water

surface. Basal date, gives time of local deglaciation (King, 1985). Previously dated (R, 1987, v 29, no. 3, p 412). Acid treatment only.

WIS-1963. Access Lake **7410 ± 80**

Core coll Aug 1985 from Access Lake (unofficial name), Labrador (53° 27' N, 60° 34' W) by G A King and H E Wright, Jr and subm by G A King. Lake elev 200m, water depth 2.89m. Silty gyttja from 542 to 546cm below water surface. Basal date, gives time of local deglaciation (King, 1985). Previously dated (R, 1987, v 29, no. 3, p 414). Acid treatment only.

Peru

WIS-1940. Laguna Tuctua **11,310 ± 110**

Organic lake sediment coll Sept 1986 from Laguna Tuctua, Junin Prov (11° 34' S, 74° 57' W) and subm by H E Wright, Jr, Univ Minnesota, Minneapolis. Basal date, gives time of deglaciation of E cordillera in this area (Wright, 1983, 1984).

WIS-1941. Tunsho site **8430 ± 110**

Sample coll Sept 1986 from Tunsho site, Junin Prov (11° 50' S, 75° 06' W) and subm by H E Wright, Jr. Basal peat from 429 to 433cm depth. Peat growth at this site started as soon as early Holocene glacier retreated from moraine (Wright, 1983, 1984).

WIS-1942. Laguna Paca **2550 ± 80**

Organic lake sediment coll Sept 1986 from Laguna Paca, Junin Prov (11° 45' S, 75° 30' W) and subm by H E Wright, Jr. Dates lake basin believed to have formed as result of outwash fans from Pleistocene glaciers in W cordillera (Wright, 1983, 1984).

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