CALIBRATED RADIOCARBON CHRONOLOGY FOR PINSON MOUNDS AND MIDDLE WOODLAND IN THE MIDSOUTH

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Thirty-nine radiometric determinations are presented and discussed from Pinson Mounds in Madison and Chester Counties, western Tennessee. Calibrations and feature averages (where warranted) are provided. Comparisons to nearby sites in Mississippi with comparable ceramic assemblages—Bynum, Pharr, Ingomar, and Miller—indicate early (first- or second-century B.C.) ceremonial activity at Bynum followed several centuries later by intense Middle Woodland ritual activity in the uplands of western Tennessee and northern Mississippi during the second and third centuries A.D.

The largest Middle Woodland site in the Southeast, Pinson Mounds is located about 80 miles east of Memphis, Tennessee, and includes at least 12 earthen mounds, an earthen geometric enclosure, and associated ritual activity localities within an area of approximately 160 ha (Figures 1, 2). A unique feature of the site is the presence of five large, rectangular platform mounds, ranging in height from 2.5 to 22 m, of Middle Woodland age (Mainfort 1986, 1988a, 1996). The largest of these, Sauls' Mound, is the largest Middle Woodland mound in the Southeast.

Initial surveys and limited test excavations completed in the early 1960s (Fischer and McNutt 1961; Morse and Polhemus 1963) produced some evidence of Mississippian occupation but suggested major use of the site occurred during the Middle Woodland period. This finding was corroborated by excavations in 1974 and 1975 that produced Middle Woodland artifacts and charred organic samples for several radiocarbon assays (Mainfort 1980). Additional investigations in the 1980s provided compelling evidence, including radiocarbon determinations from mound contexts, that all the earthworks at Pinson Mounds were constructed during Middle Woodland times (Mainfort 1986, 1988a, 1996; Mainfort and Walling 1992; Thunen 1990, 1998).

A major focus of long-term research at Pinson Mounds has been radiometric dating. Thirty-nine radiocarbon determinations have been obtained, including multiple assays for all intensively investigated localities (Mainfort 1980, 1986, 1988a, 1996; Mainfort et al. 1982), making the site perhaps the most extensively dated Middle Woodland site in North America. Here we present calibrated ages of all assays, several of which have not been published heretofore, as well as calibrated average dates for several localities and some discussion of the reliability of certain dates.

Because the Pinson Mounds ceramic assemblage is generally similar to ceramics associated with Miller 1 and 2 in northeastern Mississippi (Jenkins and Krause 1986; Mainfort 1980, 1986), we shall also consider dates from the Bynum, Ingomar, Miller, and Pharr sites (Bohannon 1972; Cotter and Corbett 1951; Rafferty 1990; Walling et al. 1991), in order to place the dates from all sites in a broader regional context.

Calibrations were performed with CALIB 4.3 (Stuiver and Reimer 1993). CALIB's sample testing and averaging features also were used. Samples from a given provenience (e.g., the two dates from Mound 5, Feature 4) were compared to determine if they were statistically the same at the 95% confidence level. If so, their average was computed. All 39 conventional radiocarbon ages, calibrated dates, and various averages from Pinson Mounds are presented in Table 1 and Figure 3. The calibrated averages from Pinson Mounds also are shown separately in Figure 4.

In the tables, calibrated date ranges are shown in the conventional manner, that is, calibrated intercepts (single and multiple) are given in parentheses, and both one- and two-sigma date ranges on either side of the intercept(s) are provided. For each calibration, the relative area under the curve for specific date ranges also is given, along with the requisite variation (one or two sigma) to obtain this area; this measure often provides the likelihood for a more restricted date. In the text discussion, all calibrated dates are presented at the two-sigma range unless otherwise stated.

In the figures, the calibrated one-sigma variation for a date is shown as a shaded box. The two-sigma variation is indicated by lines, or "whiskers," extending above and below the boxes.

The calibrated dates do not profoundly alter past interpretations of any of the sites in question but do bring some issues of chronology into sharper focus and, importantly, demonstrate that earthwork construction at Pinson Mounds continued for at least a century longer than previously thought.

Samples and Results: Pinson Mounds

Ozier Mound

Excavations on Ozier Mound (Pinson Mound 5) and subsequent radiometric provided the first unequivocal, well-dated evidence for the construction of large

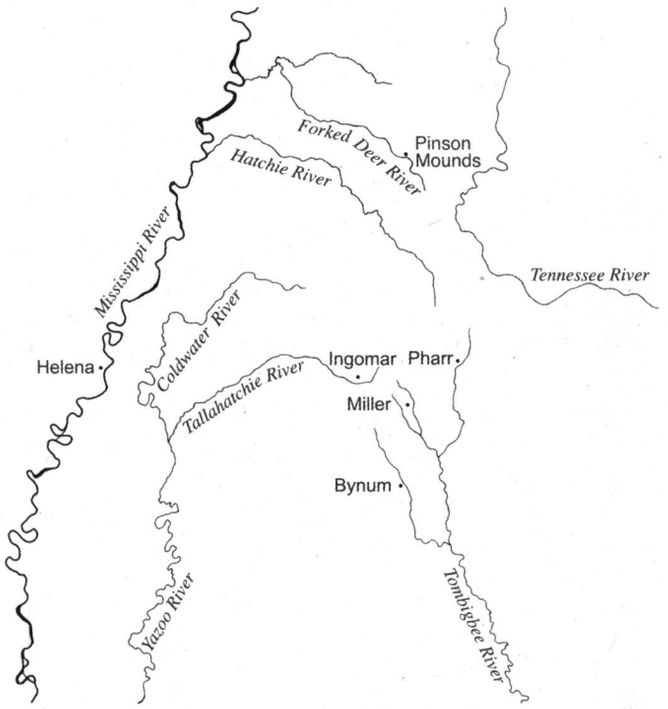

Figure 1. Major Middle Woodland mound sites in the Midsouth.

rectangular platform mounds during the Middle Woodland period (Mainfort 1986, 1988a, 1996; Mainfort and Walling 1992; *contra* Prufer 1996).

This ramped earthwork, approximately 10 m tall, was constructed in at least six stages, with the summit of each stage covered with pale yellow sand. Excavations have been relatively limited in scope and confined to the uppermost intact summit. Mica, copper, and bladelets of nonlocal chert were associated with the summit, linking this locality with ritual activity areas elsewhere within the site. Features were sparse within the areas excavated but included several small hearths and a low, raised clay platform. Although no evidence of a building or other structural remains were encountered, the size of Ozier Mound and the recurrent renewal of the earthwork by additional construction are comparable to characteristics found in later Mississippian substructural mounds.

Five radiocarbon assays have been performed on wood charcoal samples from Ozier Mound. Two samples were obtained in 1981 from hearths associated with the uppermost intact summit. The samples were run as UGa-4542 and UGa-4174 and derive from Features 1 and 2, respectively. TX-6602 and TX-6603 were obtained in 1989 from Feature 4, described by Mainfort and Walling (1992:118) as "a poorly defined, irregularly-shaped basin" and associated with the uppermost summit. A burned tree root system was located above portions of Feature 4, prompting Mainfort and Walling (1992:120) to propose that TX-6603 should be disregarded. There is no statistical basis for doing so, but the time span represented by the two dates and the amorphous nature of F-4 (Mainfort and Walling 1992:118–119) are a bit troubling. A charcoal concentration in a basketload just below the sand-covered summit provided the sample run as TX-4173. In computing the average of calibrated dates for the uppermost summit of Ozier Mound, we did not include the latter because the provenience is not comparable to the other samples. The calibrated average date of the other four assays is A.D. 128 (241) 383, which is later than that proposed by Mainfort and Walling (1992:127) based on assays from the 1981 excavations as well as admittedly limited ceramic data. The two-sigma statistical variation cannot, of course, be taken to indicate actual use of the uppermost summit on Ozier Mound; for this, and reasons set forth immediately below, we favor the older end of the age range.

Twin Mounds

Located about 200 m south of Ozier Mound, the Twin Mounds (Mound 6) are a pair of intersecting conical mounds, each about 7 m tall and 25 m in diameter. Partial excavation of the northern Twin Mound provided an opportunity to record the complexity of a large Middle Woodland burial mound. Approximately one-quarter of the mound was excavated. Documentation of structural details, rather than the recovery of burials and associated artifacts, was emphasized during fieldwork (Mainfort 1986). At the base of the mound, four log- and/or fabric-covered tombs were excavated; two additional tombs were recorded but not excavated. All human remains in these facilities were primary, fleshed inhumations; there is no evidence that the excavated tombs served as mortuary processing crypts. No children are represented among the interred individuals. One tomb contained the remains of at least eight relatively young women, covered with a large quantity of *Marginella* beads; several individuals wore fiber headdresses decorated with copper ornaments and necklaces of freshwater pearls.

Radiocarbon assays were obtained on wood charcoal samples from individual logs associated with each of the four excavated submound tombs, Features 48, 49, 51, and 54 (Table 1). One assay, UGa-4911, has been reported incorrectly as associated with F-54 (Mainfort 1986:90, 1988a:160; Mainfort et al. 1985:58); the dated sample actually was obtained from roofing material that covered F-51. TX-4909 was run on wood charcoal from a roofing timber associated with F-49. Two assays (TX-6965 and 6966) have not been reported in print previously; these are associated with roofing material from Features 54 and 48, respectively, and fall midway between the published dates. The calibrated average of the four assays from the Twin Mounds is A.D. 68 (131) 243, which supports previous assertions that the Twin

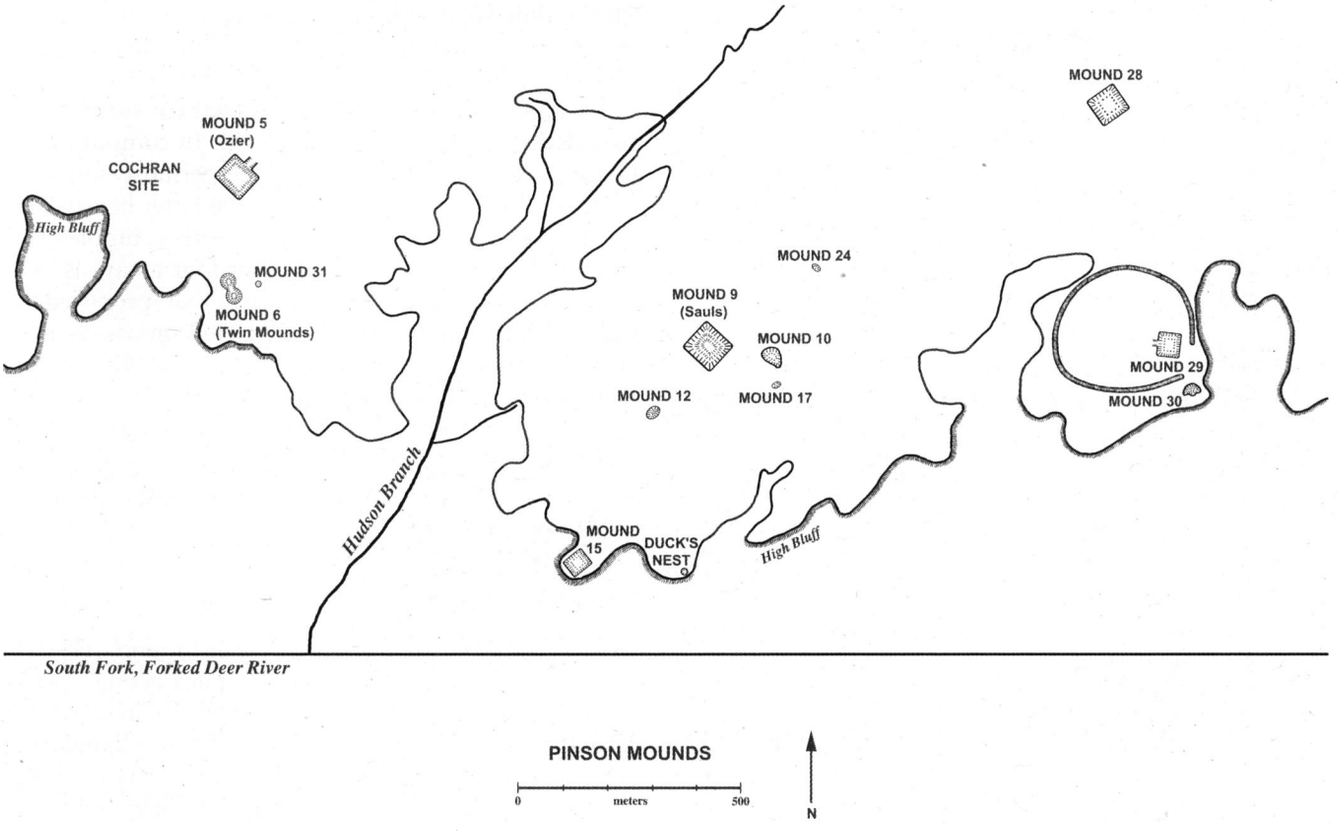

Figure 2. The Pinson Mounds site.

Mounds and the uppermost summit of Ozier Mound were contemporary (e.g., Mainfort and Walling 1992). Averages from Ozier and Twin Mounds do not differ significantly; the calibrated average for the two mounds is A.D. 87 (218) 319.

The Twin Mounds Sector

An area immediately south of the Twin Mounds, the Twin Mounds sector, was tested in 1963 and excavated more intensively in 1974 (Mainfort 1980, 1986; Morse 1986). Charcoal from the circular Feature 12/14 complex, excavated in 1974, provided the material assayed as TX-6605. The associated calibrated date is 167 B.C. (A.D. 69) 318. This suggests general contemporaneity with the Twin Mounds, but clearly some additional dates are needed to confirm or reject this possibility.

Mound 10

Limited testing of Pinson Mound 10, a 1.5 m tall, flat-topped and somewhat polygonal structure located about 100 m east of Sauls' Mound, exposed a large hearth (Feature 21) located immediately below the plowzone near the center of the earthwork (Mainfort 1986, 1988a). No other prehistoric cultural features were located and few artifacts were recovered. Three charcoal samples from F-21B have been assayed radiometrically; one (TX-6605) has not been published heretofore. The calibrated average is A.D. 128 (257, 302, 318) 421. This is in keeping with, but does not confirm, previous interpretations of Mound 10 as postdating the Twin Mounds. Averages from the two locations (Mound 10 and Mound 6) do not actually differ significantly at the 95 percent level; their combined average is A.D. 84 (185, 185 [*sic*], 217) 240. *Statistically*, a case can be made for general contemporaneity in the third century A.D. of the use of the Ozier Mound summit, the burials beneath the northern Twin Mound, the occupational debris in the Twin Mounds sector, and Mound 10. We do not feel, however, that these statistics obviate the chronological implications observed in the excavated ceramics (Mainfort 1988a, 1996; Mainfort and Walling 1992) Rather, we feel that a limited time span of one or two centuries is indicated.

Duck's Nest

The Duck's Nest is a small (about 13 m in diameter), nearly circular embankment located approximately 550 m south of Saul's Mound on a low bluff above the Forked Deer River bottomlands. Near the center of the embankment, a fire pit approximately 2 m in diameter was exposed. At the base was a fairly large deposit of charcoal from which three samples were selected for radiometric dating. Just below ground surface and

Table 1. Conventional Radiocarbon Ages, Calibrated Dates, and Various Averages from Pinson Mounds.

Feature/Lab Number	Provenience	Material	RCYBP	Calibrated Date (1 sigma)	Calibrated Date (2 sigma)	Relative Area, Required Sigma	Reference
Ozier Mound (Mound 5)							
UGa-4174	Mound 5, F-2	Wood charcoal, 10.5g	1760 ± 160	A.D. 78 (256, 303, 317) 431	B.C. 91 (A.D. 256, 303, 317) A.D. 638	A.D. 76–432 1.000, 1 sigma	Mainfort et al. 1982
UGa-4173	Mound 5, N98/E98, L 48	Charcoal, 20g.	2275 ± 180	B.C. 755 (382) 108	B.C. 803 (382) A.D. 81	B.C. 796–A.D. 31 0.993, 2 sigma	Mainfort 1986
UGa-4543	Mound 5, F-1	Charcoal, 9.85g.	1970 ± 110	B.C. 91 (A.D. 28, 41, 50) 131	B.C. 347 (A.D. 28, 41, 50) 320	B.C. 113–A.D. 134 0.932, 1 sigma	Mainfort 1986
TX-6603	Mound 5, F-4	Wood charcoal 12g.	1660 ± 70	A.D. 261 (407) 434	A.D. 237 (407) 556	A.D. 321–440 0.741, 1 sigma	Mainfort and Walling 1992
TX-6602	Mound 5, F-4	Wood charcoal 12g.	1850 ± 80	A.D. 74 (133) 316	B.C. 36 (133) A.D. 383	A.D. 74–247 0.962, 1 sigma	Mainfort and Walling 1992
	Mound 5, F-4 average		1801 ± 41	A.D. 134 (237) 318	A.D. 91 (237) 340	A.D. 126–264 0.761, 2 sigma	
	Mound 5 average (excluding UGa-4173)		1784 ± 46	A.D. 142 (241) 323	A.D. 128 (241) 383	A.D. 128–360 0.977, 2 sigma	
Twin Mounds (Mound 6)							
UGa-4911	Mound 6, F-51	Charcoal, 14g.	1780 ± 95	A.D. 128 (243) 385	A.D. 28 (243) 434	A.D. 131–344 0.966, 1 sigma	Mainfort et al. 1985
UGa-4909	Mound 6, F-49	Charcoal, 16g.	1925 ± 80	B.C. 16 (A.D. 77) A.D. 206	B.C. 93 (A.D. 77) A.D. 317	B.C. 111–A.D. 258 0.984, 2 sigma	Mainfort et al. 1985
TX-6965	Mound 6, F-54	Wood charcoal, 14g.	1870 ± 70	A.D. 68 (129) 238	B.C. 36 (A.D. 129) A.D. 337	A.D. 76–234 1.000, 1 sigma	
TX-6966	Mound 6, F-48	Wood charcoal, 14g.	1840 ± 70	A.D. 81 (134, 159, 170, 196, 209) 316	A.D. 24 (134, 159, 170, 196, 209) 380	A.D. 82–245 0.991, 1 sigma	
GA-TX	Mound 6 average		1858 ± 39	A.D. 85 (131) 227	A.D. 68 (131) 243	A.D. 125–219 0.911, 1 sigma	
The Twin Mounds Sector							
TX-6605	Twin Mounds sector, 12/14	Wood charcoal, 9g.	1940 ± 90	B.C. 41 (A.D. 69) A.D. 133	B.C. 167 (A.D. 69) A.D. 318	B.C. 44–A.D. 135 0.875, 1 sigma	
Mound 10							
UGa-4680	Mound 10, F-21B	Charcoal, 10.5g.	1680 ± 85	A.D. 255 (388) 432	A.D. 132 (388) 560	A.D. 243–437 0.972, 1 sigma	Mainfort 1986
UGa-4679	Mound 10, F-21B	Charcoal, 10g.	1885 ± 130	B.C. 37 (A.D. 93, 96, 127) A.D. 319	B.C. 196 (A.D. 93, 96, 127) A.D. 424	B.C. 1–A.D. 258 0.885, 1 sigma	Mainfort 1986
TX-6607	Mound 10, F-21B	Charcoal, 7+g.	1790 ± 110	A.D. 85 (240) 389	B.C. 36 (A.D. 240) A.D. 531	A.D. 126–360 0.938, 1 sigma	
UGa-TX all	Mound 10, F-21B average		1756 ± 60	A.D. 223 (257, 302, 318) 381	A.D. 128 (257, 302, 318) 421	A.D. 221–362 0.918, 1 sigma	
Duck's Nest							
UGa-4544	Duck's Nest, F-18, upper concentration	Charcoal, 10g.	Modern				Mainfort 1986
UGa-4542	Duck's Nest, F-18, lower concentration	Charcoal, 16g.	2075 ± 90	B.C.200 (89, 78, 57) A.D. 46	B.C.376 (89, 78, 57) A.D. 125	B.C.200–A.D. 24 0.994, 1 sigma	Mainfort 1986
UGa-4618	Duck's Nest, F-18, lower concentration		1535 ± 65	A.D. 430 (539) 603	A.D. 399 (539) 651	A.D. 461–853, 0.815, 1 sigma	Mainfort 1986
UGa-4910	Duck's Nest, F-18, lower concentration	Charcoal, 14g.	1345 ± 135	A.D. 600 (664) 803	A.D. 426 (664) 983	A.D. 597–830 0.867, 1 sigma	Mainfort 1986
UGa 4618, 4910	Duck's Nest, F-18, average		1498 ± 60	A.D. 533 (563, 590, 596) 639	A.D. 425 (563, 590, 596) 659	A.D. 530–641 0.921, 1 sigma	
The Duck's Nest Sector							
UGa-4678	Duck's Nest Sector, F-20B	Charcoal, 12g.	1705 ± 70	A.D. 244 (343, 372, 377) 420	A.D. 133 (343, 372, 377) 533	A.D. 208–443 0.875, 2 sigma	Mainfort 1986

Table 1. Conventional Radiocarbon Ages, Calibrated Dates, and Various Averages from Pinson Mounds (continued).

Feature/Lab Number	Provenience	Material	RCYBP	Calibrated Date (1 sigma)	Calibrated Date (2 sigma)	Relative Area, Required Sigma	Reference
UGa-4677	Duck's Nest Sector, F-20A	Charcoal, 12g.	1825 ± 105	A.D. 74 (219) 339	B.C. 42 (A.D. 219) A.D. 427	A.D. 78–325 0.965, 1 sigma	Mainfort 1986
TX-6606	Duck's Nest Sector, F-20B	Wood charcoal, 11g.	1770 ± 90	A.D. 131 (245, 310, 315) 389	A.D. 34 (245, 310, 315) 434	A.D. 53–438 0.989, 2 sigma	
Ga4678, TX	Duck's Nest Sector, average F-20B		1729 ± 56	A.D. 241 (261, 278, 324 331, 336) 396	A.D. 133 (261, 278, 324 331, 336) 427	A.D. 208–425 0.936, 2 sigma	
UGa-TX	Duck's Nest Sector, average		1750 ± 50	A.D. 237 (258, 284, 287, 300, 320) 379	A.D. 132 (258, 284, 287 300, 320) 415	A.D. 237–345 0.880, 1 sigma	
Cochran Site							
UGa-3602	Cochran site, F-10	Charcoal, 13g.	1650 ± 70	A.D. 263 (412) 527	A.D. 240 (412) 560	A.D. 2339–562, 0.998, 2 sigma	Mainfort et al. 1982
UCLA-2341D	Cochran site, F-14, L2	Charcoal, 4g.	2365 ± 500	B.C. 1009 (402) A.D. 130	B.C. 1682 (402) A.D. 661	B.C. 1045–A.D. 133, 1.00, 1 sigma	Mainfort 1986
	Cochran Site average		1664 ± 71	A.D. 260 (404) 433	A.D. 236 (404) 556	A.D. 318–439 0.739, 1 sigma	
Mound 12							
UGa-3600	Mound 12, F-55	Charcoal, 11g.	1475 ± 60	A.D. 539 (601) 645	A.D. 431 (601) 663	A.D. 527–660 0.811, 2 sigma	Mainfort et al. 1982
UGa-3601	Mound 12, F-55	Charcoal, 8g.	1495 ± 60	A.D. 534 (564, 569, 579, 588, 597) 640	A.D. 426 (564, 569, 579, 588, 597) 660	A.D. 531–642 0.938, 1 sigma	Mainfort et al. 1982
Uga 12/55	Mound 12, F-55 average		1484 ± 44	A.D. 540 (599) 638	A.D. 437 (599) 656	A.D. 541–621 0.941, 1 sigma	
UGa-3715	Mound 12, Stratum 5, L1	Charcoal, 5g.	1695 ± 80	A.D. 244 (357, 368, 381) 427	A.D. 132 (357, 368, 381) 540	A.D. 208–536 0.94, 2 sigma	Mainfort et al. 1982
UGa-3716	Mound 12, Stratum 5, L2, below F-61	Charcoal, 5.5g.	2155 ± 115	B.C. 381 (198, 188, 180) 4	B.C. 405 (198, 188, 180) A.D. 77	B.C. 409–A.D. 84 0.996, 2 sigma	Mainfort et al. 1982
UCLA-2341C	Mound 12, F-66	Charcoal, 5.5g.	1870 ± 250	B.C.167 (A.D. 129) A.D. 425	B.C. 403 (A.D. 129) A.D. 660	B.C. 119–A.D. 421 0.96, 1 sigma	Mainfort et al. 1982
UCLA-2341A	Mound 12, F-61	Charcoal, 4g.	1950 ± 200	B.C. 197 (A.D. 34, 36, 61) 320	B.C. 400 (A.D. 34, 34, 61) 536	B.C. 180–A.D. 258 0.924, 1 sigma	Mainfort et al. 1982
UCLA-2341A&C	Mound 12, F-61 and 66 average		1918 ± 156	B.C. 89 (A.D. 79) 317	B.C. 358 (A.D. 79) 429	B.C. 95–A.D. 258, 0.961, 1 sigma	
The Mound 12 Sector							
UGa-977	Mound 12 sector, F-39	Wood charcoal, 200g.	1680 ± 70	A.D. 258 (388) 428	A.D. 219 (388) 539	A.D. 256–431 1.000, 1 sigma	Broster et al. 1980
UGa-976	Mound 12 sector, F-35	Wood charcoal, 150g.	1660 ± 70	A.D. 261 (407) 434	A.D. 237 (407) 556	A.D. 321–440 0.741, 1 sigma	Broster et al. 1980
UGa-978	Mound 12 sector, F-37	Wood charcoal, 120g.	1175 ± 135	A.D. 686 (886) 1015	A.D. 620 (1064) 1159	A.D. 764–984 0.868 1 sigma	Broster et al. 1980
UGa-980	Mound 12 sector, F-48	Wood charcoal, 200g.	1825 ± 65	A.D. 90 (219) 318	A.D. 32 (219) 382	A.D. 126–257 0.879, 1 sigma	Broster et al. 1980
UGa-876, 77, 80	Mound 12 sector average, (excluding UGa-978)		1725 ± 41	A.D. 253 (262, 277, 337) 385	A.D. 235 (262, 277, 337) 418	A.D. 256–361 0.856, 1 sigma	
Mound 31							
UGa-4214	Mound 31, N998/E998, F-6	Charcoal, 10g.	1570 ± 125	A.D. 356 (442, 448, 468, 482, 530) 637	A.D. 221 (442, 448, 468, 482, 530) 685	A.D. 382–620 0.968, 1 sigma	Mainfort et al. 1982
UGa-4213	Mound 31, F-11A	Burned cane, 20g.	1210 ± 160	A.D. 620 (781, 793, 802) 997	A.D. 540 (781, 793, 802) 1162	A.D. 682–905, 0.779, 1 sigma	Mainfort 1986
UGa-4176	Mound 31, F-6	Wood charcoal, 15.5g.	2545 ± 115	B.C. 813 (785) 413	B.C. 916 (785) 394	B.C. 805–518 0.989, 1 sigma	Mainfort 1986
TX-5486	Mound 31, F-2	Wood charcoal, 16g.	1480 ± 60	A.D. 538 (600) 643	A.D. 429 (600) 663	A.D. 537–664 1.00, 1 sigma	Mainfort 1988
UGa-4214, 13, TX	Mound 31 average, (excluding UGa-4176)		1466 ± 53	A.D. 542 (603) 645	A.D. 438 (603) 663	A.D. 558–643 0.943, 1 sigma	

Table 1. Conventional Radiocarbon Ages, Calibrated Dates, and Various Averages from Pinson Mounds (continued).

Feature/Lab Number	Provenience	Material	RCYBP	Calibrated Date (1 sigma)	Calibrated Date (2 sigma)	Relative Area, Required Sigma	Reference
The Mound 14 Sector							
UGa-979	Mound 14 sector, F-46	Wood charcoal, 25g.	1890 ± 380	B.C. 380 (A.D. 91, 98, A.D. 559	B.C. 806 (A.D. 91, 98, 126) A.D. 942	B.C. 235–A.D. 533 0.931, 1 sigma	Broster et al. 1980
M-1362B	Mound 14 sector, wall-trench house	Charcoal	1100 ± 120	A.D. 779 (904, 910, 976) 1025	A.D. 665 (904, 910 976) 1209	A.D. 778–1028 1.000, 1 sigma	Crane and Griffin 1966:270
M-1362A	Mound 14 sector, wall-trench house	Charcoal	820 ± 120	A.D. 1040 (1221) 1290	A.D. 990 (1221) 1398	A.D. 1001–1327 0.942, 2 sigma	Crane and Griffin 1966:270
M-1362 A, B	Mound 14 sector, wall-trench house average		960 ± 85	A.D. 998 (1034) 1186	A.D. 896 (1034) 1260	AD 1005–1165 1.000, 1 sigma	

above the fire pit, the remains of a relatively modern fire were discovered, the base of which was about 40 cm above the base of the large fire pit. Two of the three conventional radiocarbon dates (UGa-4681 and UGa-4910) are statistically different from the third (UGa-4542), but not from each other. These were averaged and produced a calibrated date of A.D. 425 (563, 590, 596) 659. The three dates for the Duck's Nest are obviously quite variable. They would suggest that the Duck's Nest is either one of the earliest features at Pinson Mounds (ca. first century B.C.), one of the latest features on the site (late sixth century A.D.), or both. Mainfort (1986:27) has argued that the two more recent dates should be dismissed; the dated samples were obtained two to four weeks after the first, perhaps resulting in contamination by material from the modern fire above. The two cord-marked ceramic vessels recovered from the Duck's Nest could date anywhere between about 100 B.C. and A.D. 700. Thus, the age of the Duck's Nest remains ambiguous.

The Duck's Nest Sector

One of several nonmound ritual activity areas at Pinson Mounds that has been investigated, the Duck's Nest Sector, located about 150 m north of the Duck's Nest, yielded portions of a number of stylistically nonlocal ceramic vessels. These include varieties of Swift Creek Complicated Stamped, McLeod Simple Stamped, limestone tempered wares from the Tennessee River valley, and several other types with no known local counterparts (Mainfort 1986, 1988a). Identification of these vessels as "nonlocal" has been the subject of some discussion (Mainfort et al. 1997; Stoltman and Mainfort 2002). The function of the Duck's Nest Sector remains unclear, though domestic habitation is very unlikely. Within the 72 m^2 excavation area, only a single identifiable feature (F-20) was recorded, but over 2,000 ceramic sherds, nearly 900 chert flakes, over 450 siltstone flakes, and a large amount of sandstone were recovered; no bladelets of Flint Ridge or other nonlocal cherts were found. Radiocarbon ages have been obtained on three samples of charred wood from F-20; one (TX-6606) has not been published previously (Table 1). The calibrated average date of the three assays is A.D. 132 (258, 284, 287, 300, 320) 415, which supports, but does not confirm, previous interpretations of the Duck's Nest sector as contemporary with Mound 10 and postdating the Twin Mounds. Again, statistical confirmation of significant differences between the averages for the Duck's Nest sector and Twin Mounds is lacking.

Cochran Site

The Cochran site (40MD23), located some 200 meters west of Ozier Mound, was given a separate site

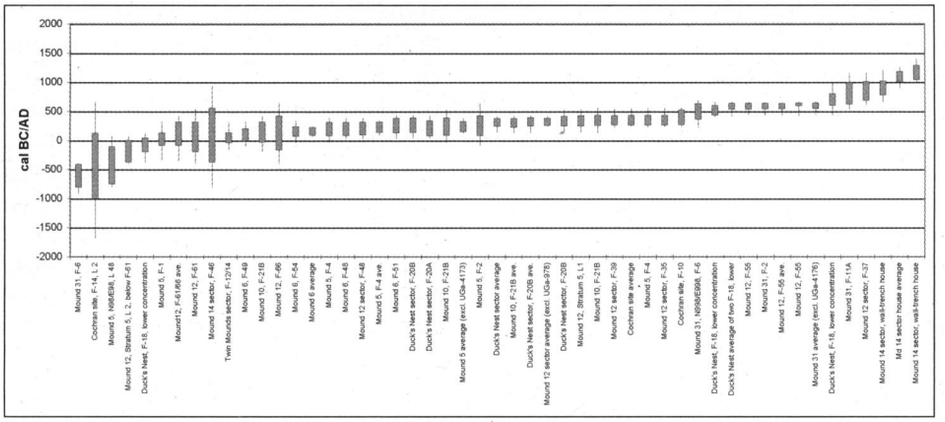

Figure 3. Calibrated dates and averages from Pinson Mounds.

designation largely because it lay just beyond the "breastworks" shown to the west of Ozier Mound on William Myer's (1922) map of Pinson Mounds (Broster et al. 1980; Morse 1986). No trace of the putative embankment is visible today, although in 1990 limited testing of a low rise east of Ozier Mound produced stratigraphic evidence of artificial construction; additional excavation will be necessary to determine if this locality represents part of an earthen embankment or a mound. At any rate, excavations at the Cochran site disclosed one complete and two partial oval bent-pole structure patterns, as well as a number of nonlocal materials and artifacts.

This locality has been interpreted variously as a mortuary camp, a center for craft specialties, and even a regional exchange center (Broster and Schneider 1975:46–48; Mainfort 1980:31–32; Mainfort 1986:14). Specific function(s) aside, the designation of this activity area as a separate site is unfortunate and confusing. It would be preferable to refer to 40MD23 as the "Cochran area of the Pinson Mounds site," as this area will be understood only in the context of the Pinson Mounds site as a whole. A charcoal sample from F-10, the central support post for an oval, bent-pole structure, assayed as UGa-3602, produced a calibrated age of A.D. 240 (412) 560. The standard deviation associated with a second sample (UCLA-2341D) is too large (±500) for the date to be of any interpretive value, but the date qualifies for computation of an average calibrated date for the Cochran area (Table 1). Based on the presence of Flint Ridge chert bladelets and fabric marked ceramics, this date seems several centuries too late for use of the Cochran site area. Some additional excavations might clarify matters.

Mound 12

With a height of about 1.5 m, Pinson Mound 12 was constructed on a natural knoll into which several human burials were placed prior to the start of mound construction (Mainfort 1986, 1988a). Over 800 ceramic sherds, many fabric-marked, were recovered from pre-mound cultural deposits (Strata 5 and 6). The activities represented are unclear. Stratum 5 was excavated in two

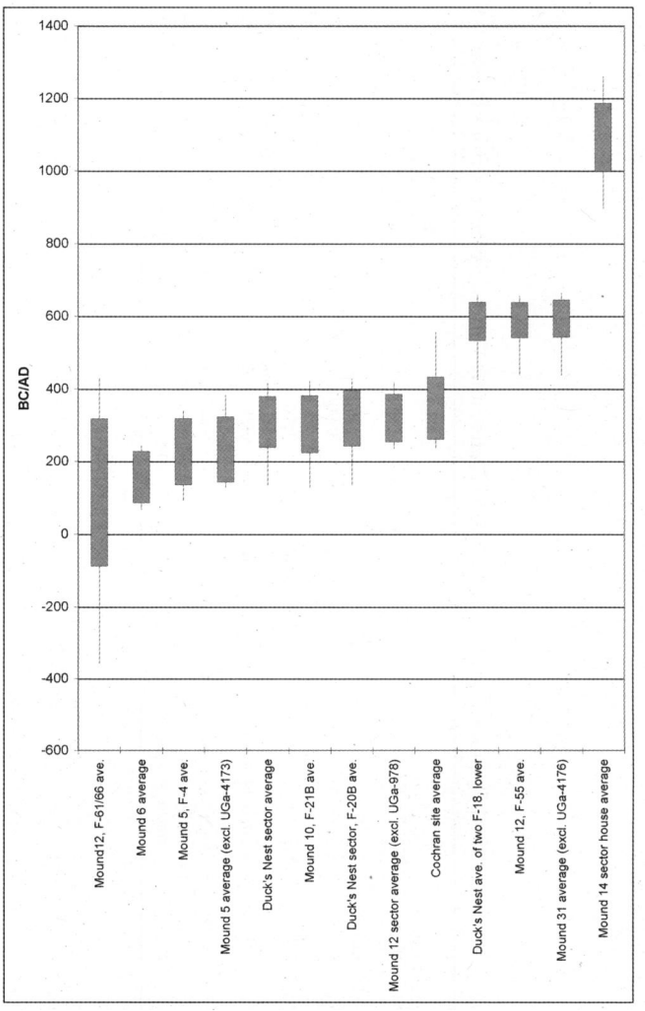

Figure 4. Calibrated average dates from Pinson Mounds.

arbitrary levels that exhibit pronounced differences in the associated ceramic assemblages (Mainfort 1980:24). Radiocarbon assays were performed on two samples of unidentified charcoal obtained from nonfeature contexts within Stratum 5. Associated with the lower portion of the stratum, the calibrated range of UGa-3176 falls within the first several centuries B.C., which is consistent with the predominance of fabric-marked ceramics. The ceramic assemblage of the upper arbitrary level of Stratum 5 is dominated by cord-marked wares; at two sigma, the calibrated range of UGa-3175 suggests an age of between A.D. 200 and 500. Radiometric dates were obtained from two features (F-61 and 66) associated with Stratum 5. The calibrated average of these is B.C. 258 (A.D. 79) 429, with the actual age probably falling between about 100 B.C. and A.D. 260 (Table 1).

Mound 12 covered a low clay platform, in the center of which was a probable crematory facility (Feature 55) containing the calcined remains of one or two individuals (Broster et al. 1980). The calibrated average of two nearly identical radiocarbon determinations on unidentified charcoal from F-55 is A.D. 427 (599) 656, with the actual date probably falling between A.D. 540 and 620 (Table 1). Thus, Pinson Mound 12 has produced evidence of both the earliest and most recent use of the site as a Middle Woodland ceremonial center. The admittedly unsatisfactory dates from the Duck's Nest are at least analogous.

The Mound 12 Sector

In 1974, an area northeast of Mound 12 was excavated, disclosing the remains of two bent-pole structures and other cultural features but very few artifacts (Mainfort 1980:15–18, 58; the published interpretation of the southern structure probably is incorrect). Four samples of unidentified wood charcoal were submitted for radiometric dating. UGa-978, associated with Feature 37 (a post), is a statistical outlier. At two sigma, the calibrated average date of the other three samples is A.D. 235 (262, 277, 337) 418, which is plausible for the paltry artifact assemblage. These dates and the presence of bent pole structures in both this sector and the Cochran area are compatible with an earlier date for the latter.

Off-mound excavations have documented activity areas characterized by the presence of large, ovoid, bent-pole structures and, in several instances, mortuary features at the "Cochran site," the Twin Mounds sector, and the Mound 12 sector. Various nonlocal materials, including copper, mica, and galena, and Flint Ridge chert microblades, are associated with these localities, strengthening the case for use within the ritual sphere rather than as domestic dwellings (Mainfort 1980, 1986, 1996; B. Smith 1992).

Mound 31

Mound 31, located about 100 m east of the Twin Mounds, was tested by Morse (1986; Morse and Polhemus 1963) in 1963 and excavated more extensively in 1981 (Mainfort 1986). Near the center of the mound was an essentially rectangular pit containing the extended remains of an elderly adult male. Numerous deposits of unidentified calcined bone, along with some small mica fragments and ceramic sherds, were located around the periphery of the pit and covered with a U-shaped ring of subsoil, open on the northeast side. This feature is reminiscent of the recently reported Bullock Mound in Kentucky (Schlarb 2002). Several burned areas and post holes were identified at the base of the mound. A human skull was recovered from a pit intrusive into the mound (Morse 1986).

A total of four radiocarbon determinations have been obtained from various contexts in Mound 31. One of these (UGa-4176) clearly is a statistical outlier; in fact, it is the earliest date for the Pinson Mounds site. UGa-4213 is somewhat problematic, as the dated sample consisted of charred cane and the assay was not corrected for isotopic fractionation; there is no statistical reason for dismissing the date, however. Mainfort feels that TX-5486 is the most reliable assay for Mound 31 because, in contrast to UGa-4214, the dated material consisted of large pieces of charcoal. The calibrated average of three of the four dates from Mound 31 is A.D. 438 (603) 663, with the actual age probably in the A.D. 550–645 range (Table 1) (cf. Mainfort 1986, 1988a; Mainfort and Walling 1992).

The Mound 14 Sector

For many years, Pinson Mounds was considered to be of Mississippian age, and for good reason (see Mainfort 1986, 1988a; Faulkner 1967, 1972), namely, the presence of large, rectangular, flat-topped mounds at the site. Support for this interpretation was found during the first professional excavations at the site, during which the remains of a wall-trench house were exposed in the Mound 14 sector (Fischer and McNutt 1961; Morse 1986). Later excavations and surface collections have produced virtually no additional evidence of Mississippian occupation at Pinson Mounds, and the wall-trench house is now regarded as an isolated farmstead (Mainfort 1986; Mainfort et al. 1982). Two charcoal samples from the structure produced a calibrated average date of A.D. 896 (1034) 1260.

Samples and Results: Related Sites

As noted above, the Pinson Mounds ceramic assemblage is generally similar to ceramics associated with

Table 2. Conventional Radiocarbon Ages, Calibrated Dates, and Averages for Bynum, Pharr, Miller, and Ingomar, and the "Pinson Centroid."

Site/Lab Number	Provenience	Material	RCYBP	Calibrated Date (1 sigma)	Calibrated Date (2 sigma)	Relative Area, Required sigma	Referemce
Bynum							
TX-6481	Mound B, F-10		2010 ± 100	B.C. 62 (36, 34, 18, 13, A.D. 1) A.D. 115	B.C. 352 (36, 34, 18, 13, A.D. 1) A.D. 236	B.C. 121–A.D. 83 0.870, 1 sigma	Walling et al. 1991
TX-6482	Mound A, F-3	Wood charcoal or bark	2110 ± 130	B.C. 360 (161, 130, 120) A.D. 47	B.C. 403 (161, 130, 120) A.D. 133	B.C. 405–A.D. 137 0.986, 2 sigma	Walling et al. 1991
Beta 33591, Eth 5910 AMS	Mound B, F-8	Persimmon seed	2200 ± 85	B.C. 386 (349, 318, 228, 221, 207) 122	B.C. 403 (349, 318, 228, 221, 207) 2	B.C. 377–195 0.80, 1 sigma	Walling et al. 1991
Bynum average			2117 ± 58	B.C. 338 (166, 126, 124) 49	B.C. 359 (166, 126, 124) A.D. 16	B.C. 202–49 0.960, 1 sigma	
Pharr							
TX-6459	Mound E, F-10	Charcoal	1930 ± 100	B.C. 41 (A.D. 75) 216	B.C. 170 (A.D. 75) 336	B.C. 3–A.D. 181 0.801, 1 sigma	Walling et al. 1991
TX-6460	Mound E, F-11	Charcoal	1940 ± 90	B.C. 41 (A.D. 69) A.D. 133	B.C. 167 (A.D. 69) A.D. 318	B.C. 44–A.D. 135 0.875, 1 sigma	Walling et al. 1991
TX-6461	Mound E, F-11 #2	Charcoal	1830 ± 70	A.D. 85 (182, 188, 215) 318	A.D. 27 (182, 188, 215) 384	A.D. 122–256 0.855, 1 sigma	Walling et al. 1991
Mound E F-11 average			1880 ± 38	A.D. 78 (128) 209	A.D. 31 (128) 238	A.D. 58–236 0.994, 2 sigma	
Pharr average			1886 ± 49	A.D. 71 (93, 97, 127) 212	A.D. 5 (93, 97, 127) 241	A.D. 21–242 0.997, 2 sigma	
Miller							
TX 6455	Mound B	Charcoal	1680 ± 80	A.D. 256 (388) 431	A.D. 134 (388) 556	A.D. 208–542 0.958, 2 sigma	Walling et al. 1991
TX-6456	Mound B, F-2	Charcoal	1720 ± 110	A.D. 180 (263, 275, 338) 428	A.D. 68 (263, 275, 338) 596	A.D. 211–430 0.895, 1 sigma	Walling et al. 1991
TX-6457	Mound B, posthole	Charcoal	1720 ± 60	A.D. 252 (263, 275, 338) 408	A.D. 134 (263, 275, 338) 432	A.D. 206–431 0.933, 2 sigma	Walling et al. 1991
TX-6458	Mound B, above old humus	Charcoal	1800 ± 70	A.D. 129 (238) 336	A.D. 68 (238) 409	A.D. 130–261 0.775, 1 sigma	Walling et al. 1991
Miller average			1734 ± 38	A.D. 244 (261, 279, 294, 296, 323) 381	A.D. 224 (261, 279, 294, 296, 323) 412	A.D. 245–344 0.913, 1 sigma	
Ingomar							
Beta 23197	Mound 14, F-9	Wood charcoal	1740 ± 80	A.D. 221 (260, 281, 291, 297, 322) 408	A.D. 84 (260, 281, 291, 297, 322) 527	A.D. 117–441 0.962, 2 sigma	Rafferty 1990
Beta 23198	Mound 10, base		1940 ± 110	B.C. 46 (A.D. 69) 216	B.C. 199 (A.D. 69) 339	B.C. 201–A.D. 342 0.999, 2 sigma	Rafferty 1990
Ingomar average			1810 ± 66	A.D. 128 (235) 322	A.D. 67 (235) 392	A.D. 73–365 0.977, 2 sigma	
The Pinson centroid			1781 ± 18	A.D. 237 (242) 318	A.D. 180 (242) 335	A.D. 230–320 1.000, 2 sigma	

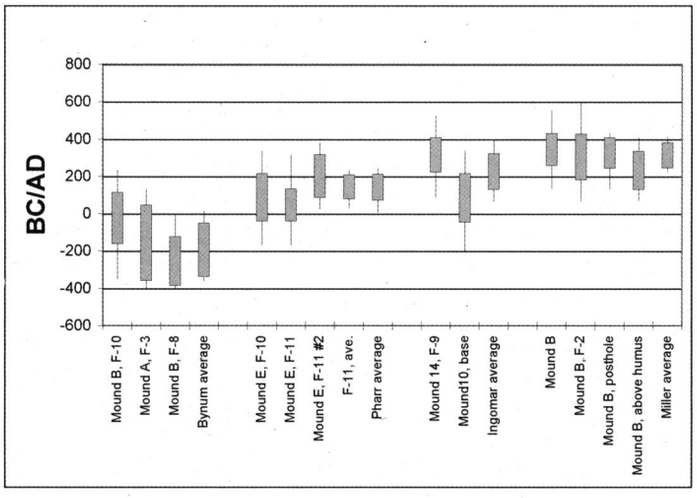

Figure 5. Calibrated dates and averages for Bynum, Pharr, Ingomar, and Miller.

Miller 1 and 2 complexes in northeastern Mississippi (Jenkins and Krause 1986; Mainfort 1980, 1986). We here consider dates from the Bynum, Pharr, Miller, and Ingomar sites (Rafferty 1990; Walling et al. 1991) in order to place the dates from all sites in a broader regional context. Conventional radiocarbon ages, calibrated dates, and averages for features and sites are presented in Table 2 and Figure 5. Site averages are also presented separately in Figure 6.

Bynum

Bynum, the southernmost of the Mississippi sites discussed here, includes six conical mounds and an early Middle Woodland habitation area within an area of about 8 ha. In the late 1940s, five mounds and part of the occupation area were excavated. Among the more noteworthy findings were the remains of a charnel house beneath the largest mound, a heavy concentration of nonmound structural remains, and some Hopewellian artifacts (Cotter and Corbett 1951).

Two of the dates that Walling et al. (1991) reported for the Bynum site are associated with the charnel house beneath Mound B (TX-6481 and Beta-33591). The calibrated average of these is B.C. 364 (167) A.D. 22. A small amount of charred wood/bark from a log at the base of Bynum Mound A produced a calibrated date of B.C. 403 (161, 130, 120) A.D. 133. These three dates do not differ statistically, and their two-sigma calibrated average is B.C. 359 (166, 126, 124) A.D. 16. A sample of "vegetal material" from the Mound B structure was assayed by the University of Chicago in the early 1950s and yielded a conventional radiocarbon age of 1267 ± 150 years (UC-INS 154; see Griffin 1952:367); this is an obvious outlier and was not used in computing the calibrated average for Bynum (Figure 5).

Pharr

Located about 90 km northeast of Bynum, the larger Pharr site encompasses approximately 30 ha and includes eight conical mounds. Four mounds were excavated in 1966. Off-mound testing disclosed sparse occupation remains (Bohannon 1972; Kardwesky 1980). Several mounds were constructed over low earthen platforms representing an extended mortuary program. As at Bynum, some Hopewellian artifacts were found in mound contexts. Also like Bynum, the bulk of the ceramics from Pharr are sand-tempered plain or fabric-marked (see Walling et al. 1991 for ceramic summaries).

Walling et al. (1991) reported three dates from Pharr, all from Mound E contexts. Two are associated with Feature 11; a charcoal sample from this feature had previously produced a questionable conventional radiocarbon age of 2345 ± 90 B.P. (Bohannon 1972:78). The average calibrated date of the two more recently obtained dates is A.D. 5 (129) 319 (note associated probability in Table 2), while the calibrated average of the three dates reported by Walling et al. (1991) is A.D. 5 (93, 97, 127) 241 (Figure 5).

Miller

The type site of the "Miller culture" (Jennings 1941, 1944), Miller is the smallest (3.5 ha) of the sites discussed here, but it includes a pair of moderately large conical burial mounds as well as a substantial occupation area. One mound covered the remains of a burned charnel structure (Walling et al. 1991:59). The only potential Hopewellian commodity consisted of several copper scraps found in a relic hunter's pit atop one of the mounds. In contrast to Bynum and Pharr, the Miller ceramic assemblage is dominated by cord-marked and

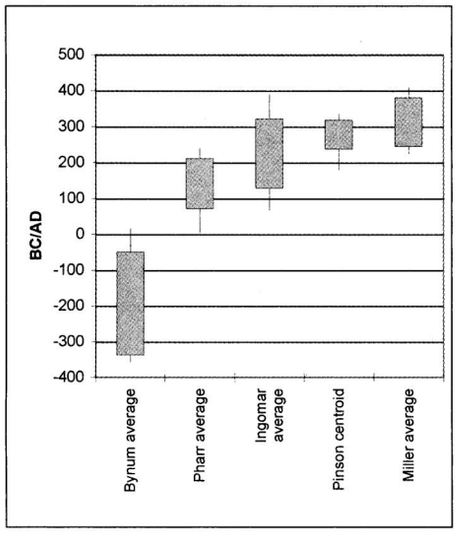

Figure 6. Calibrated average dates from Bynum, Pharr, Ingomar, and Miller, and the "Pinson centroid."

plain surfaces, with a meager (8%) representation of fabric-marked wares.

All four available dates for the Miller site are associated with Mound B. The conventional radiocarbon ages vary by only 120 years, so averaging the entire group is appropriate. At two sigma, the average calibrated date is A.D. 224 (261, 279, 294, 296, 323) 412 (Figure 5).

Ingomar

While Bynum, Pharr, and Miller are located within the Tombigbee River drainage, Ingomar lies a few kilometers west of the Tombigbee–Mississippi River divide in the Little Tallahatchie drainage. Among the 12 mounds at the site is a 9 m tall ramped platform mound and several conical burial mounds. Site area is about 20 ha. As at Miller, fabric-marked ceramics constitute a small minority, but plain-surfaced wares are much more common (Rafferty 1990).

Ashy basketloads located about 30 cm below the surface of Ingomar Mound 14 included "numerous small pieces of wood charcoal" that were combined into a sample for radiometric assay (Rafferty 1990:100). The associated calibrated date is A.D. 84 (260, 281, 291, 297, 322) 527. Burned material from two ashy basketloads at the base of Mound 10 returned a calibrated date of B.C. 199 (A.D. 69) A.D. 339 (Figure 5). The two dates do not differ significantly, but they do suggest that Ingomar, like Pinson Mounds, was used over a period of several generations.

Conclusions

As can be seen in Figure 4, the calibrated average dates from Pinson Mounds decrease very gradually from the first through the third century A.D.; three later averages (including the troublesome Duck's Nest) cluster at A.D. 600. The considerably later dates for the wall-trench house are of interest but not relevant to our current concerns. Because of the gradual changes, no two (or three or four) adjacent dates differ significantly. In fact, the averages from the first through third centuries do not differ significantly as a group. We could not resist calculating this average to produce what McNutt insists on calling "the Pinson centroid—a rather grand term to indicate that this is an average of averages: the central point of a group of averages." (After all, it has to have *some* name.) The resulting calibrated date is A.D. 180 (242) 335 (Table 2 and Figure 6).

From the Pinson Mounds site itself, we could ask for additional dates. Certainly we need determinations from the earthen enclosure known as the Eastern Citadel and the associated Mounds 29 and 30 (Thunen 1990, 1998). Additional dates from the Duck's Nest and Mound 12, both of which have produced very early and very late dates, would be especially useful. It is quite possible, of course, that these features were initiated early and (re-)used later. Indeed, it may well be that construction of two smaller burial mounds (Mound 12 and Mound 31) took place after the peak activity at the Pinson Mounds.

From the nearby region, additional dates will always be useful, particularly from Pharr and Ingomar. Such dates as we have, however, strongly suggest earliest major activity at the Bynum site, followed several centuries by major activity at Pharr, Ingomar, Pinson, and Miller (Figure 6). Because of the markedly earlier date for Bynum, the averages for the group of five sites differ significantly. The averages for the latter four sites, however, do not differ significantly, with an average of A.D. 141 (241) 323.

The very early date for Bynum seems quite important. It is as early as the Cement Hollow phase and earlier than the Holding phase in the American Bottom (Fortier et al. 1989) and on a par with developments in the Illinois River valley, such as Elizabeth (Charles et al. 1988). The early date for Bynum also predates the poorly dated "early Marksville" Anderson Landing phase construct in the southern Yazoo basin (Phillips 1970; Williams and Brain 1983). *If* the Bynum dates hold, then the site is fodder for questions raised by the junior author regarding priority of Illinois River valley Middle Woodland (Havana) or Marksville (McNutt 1996:209–217; we of course recognize that none of the sites considered here are properly regarded as "Marksville" per se).

The dates from Pharr, Ingomar, Pinson, and Miller indicate rather intense Middle Woodland ceremonial activity in the uplands east of the Mississippi River valley and west of the (western) Tennessee-Tombigbee Rivers in the second and third centuries A.D. Note that the averages of Bynum and its nearest chronological neighbor (Pharr) differ significantly ($p < 0.05$).

Finally, it should be observed in passing that the averages for Pharr, Ingomar, Pinson Mounds, and Miller are roughly comparable with the average date for Helena Crossing in the Mississippi valley (Ford 1963; McNutt 1996; Mainfort 1988b, 1996)—A.D. 2 (133) 380; this is particularly true for the Pharr site. Additional dates for the Dorr phase sites in the central and western portion of the upper Yazoo basin, and from Dorr Mound in particular, will be of special interest to a panregional picture. It will be increasingly important to test Phillips's (1970:890) feeling that the Dorr phase sites as a group are somewhat earlier than Helena Crossing. If this proves to be the case, light may well be shed on regional cultural developments during the apparent hiatus between Bynum and the subsequent developments at Pharr, Ingomar, Pinson Mounds, and Miller.

Notes

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