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Radiocarbon Dates from Late Neolithic and Early Bronze Age Settlements at Hemmed, Højgård and Trappendal, Jutland, Denmark

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INTRODUCTION

Radiocarbon dates are reported for 21 samples from excavations at Hemmed (Hemmed Church, Hemmed Plantation and Egehøj), 6 samples from the excavation at Højgård and 4 samples from the excavation at Trappendal, all dated by the Carbon-14 Laboratory in Copenhagen. In addition the results are given of the AMS-dating in Uppsala of 8 samples from Højgård.

Late Neolithic to Early Bronze Age house remains and settlements have been excavated in Hemmed parish, Randers county in Jutland, Denmark. 21 samples from three locations: Hemmed Church, Hemmed Plantation and Egehøj, have been radiocarbon dated. A paper interpreting the dates from Hemmed is printed elsewhere in this volume (Boas 1993 and 1983). Højgård, Haderslev county is a separate locality in Jutland where excavations revealed Bronze Age house remains and settlements. Conventional radiocarbon dates for 6 samples and AMS-dates for 8 samples from the excavations at Højgård are reported here. 4 samples from Trappendal, Hejls parish, Vejle county are also listed (Boysen & Andersen 1983). A paper interpreting the dates from Højgård and Trappendal is printed elsewhere in this volume (Ethelberg 1993).

SAMPLE TREATMENT

The conventionally-dated samples were, as is the usual procedure in the Copenhagen Carbon-14 Dating Laboratory, treated by the AAA chemical treatment prior to analysis. The samples were converted to carbon dioxide (CO_2) by burning in pure oxygen, precipitated as carbonate, and kept in sealed flasks for more than 21 days in order to let the bulk of the radioactive ^{222}Rn decay. Following this, the samples were reconverted to CO_2, purified in a calcium oxide oven and counted for at least 20 hours in a 2 litre 1.5 atm. conventional proportional counter equipped with a guard counter.

Stable isotope fractionation ($\delta^{13}C$) was measured on samples K-3475-78, K-3782, K-4614-15, K-5018-21, K-5168-70, K-5781-87 and K-5797-5801. The determined ages for these samples have been corrected for isotopic fractionation to the terrestrial value ($\delta^{13}C = -25‰$ PDB). Samples K-2223 and K-2238-42 were dated before it was common practice to measure stable isotopes, and therefore they were not measured for stable isotopes and thus not corrected for isotopic fractionation. The latter samples have been assigned an extra uncertainty to compensate for the lack of knowledge about their $\delta^{13}C$-values.

Samples Ua-705-12 were also not measured for stable carbon isotopes. These samples were corrected to the terrestrial value according to some average isotopic compositions for the material in question. No extra uncertainty has been assigned to these samples.

The results are reported below as conventional radiocarbon ages (based on the Libby half-life) ± one standard deviation.

All samples have been calibrated to calender years using 20 years averages of the calibration curves in Radiocarbon (1986) by means of the University of Washington program. The interval of calibrated ages corresponding to ± 1 standard deviation is also reported. The datings are summarized in Table I and II.

Wood and charcoal identifications were performed on representative portions of the samples (Malmros 1991).

SAMPLES FROM THE HEMMED EXCAVATIONS

Unless otherwise stated the samples were submitted by N. A. Boas.

Egehøj

K-2223 2400 ± 100 BP C-14 y
Charcoal, Egehøj, Randers county. Found in *hearth bac within the remains of house I. Pottery of Bronze Age type* was found in the hearth, which is secondary in relation to the house remains, which are Early Bronze Age. The hearth is linked to a clearly separate occupation in Late Bronze Age, per. V–VI. Submitted by B. Stürup. Sample bai, j.nr. 160/69; Pd 11699. NM VIII A 5677.
Calibrated (Stuiver & Pearson 1986): 410 BC Cal.
Calibrated ± 1 stand. dev.: 770–390 BC Cal.

K-2238 3160 ± 100 BP C-14 y
Charcoal, Egehøj, Randers county. Found on *settlement site* from *Early Bronze Age, Per. I.* The charcoal originates from a concentration, which is interpreted as remains of a burnt post in the southern long side in *house III.* Found in the natural c. 0.2 m below plough layer. Submitted by B. Stürup. Sample byf, j.nr. 160/69; Pd 11738. NM VIII A 5677.
Calibrated (Pearson & Stuiver 1986): 1430 BC Cal.
Calibrated ± 1 stand. dev.: 1520–1320 BC Cal.

K-2240 3240 ± 100 BP C-14 y
Charcoal, Egehøj, Randers county. From the same settlement site as K-2238, *Early Bronze Age, Per. I.* Found at a depth of c. 1 m near the bottom of *well II.* This material is considered a sealed find, as only material from *the early phase of the dwelling* was found. Submitted by B. Stürup. Sample cgg, j.nr. 160/69; Pd 11624. NM VIII A 5677.
Calibrated (Pearson & Stuiver 1986): 1520 BC Cal.
Calibrated ± 1 stand. dev.: 1640–1420 BC Cal.

K-2239 3340 ± 100 BP C-14 y
Charcoal, Egehøj, Randers county. From the same settlement site as K-2238, *Early Bronze Age, Per. I.* The sample was recovered near the bottom of *well I*, at a depth of 1.0–1.3 m. Well I constituted a sealed find with material belonging solely to the *early phase of the dwelling.* Submitted by B. Stürup. Sample cgd, j.nr. 160/69; Pd 11625. NM VIII A 5677.
Calibrated (Pearson & Stuiver 1986): 1640 BC Cal.
Calibrated ± 1 stand. dev.: 1750–1520 BC Cal.

Average of K-2238-40, Egehøj: 3250 ± 60 BP C-14 y
Calibrated (Pearson & Stuiver 1986): 1520 BC Cal.
Calibrated ± 1 stand. dev.: 1610–1450 BC Cal.

K-2241 2550 ± 100 BP C-14 y
Charcoal, Egehøj, Randers county. From the same site as K-2238. Found near the bottom of cooking pit bzå, which extended 0.3 to 0.4 m down into the moraine deposits (natural). The pit is considered to be a sealed feature linked to *a later phase of the dwelling, Bronze Age, per. V–VI.* A solid flint sickle of Late Bronze Age type was found in the pit. Submitted by B. Stürup. Sample båe, j.nr. 160/69; Pd 11737. NM VIII A 5677.
Calibrated (Pearson & Stuiver 1986): 790 BC Cal.
Calibrated ± 1 stand. dev.: 810–530 BC Cal.

Hemmed Church

K-5170 2810 ± 75 BP C-14 y
Charcoal (Quercus sp., Fraxinus sp., Corylus sp.), Hemmed Church, Randers county. From the fill of *cooking pit* A19, which was sealed by the clay floor in house I. Could possibly have been used in the house as the clay floor had been re-established after the pit went out of use. Sample DJM 2215, X681; Pd 23036. NM VIII A 6864.
Calibrated (Pearson & Stuiver 1986): 990–940 BC Cal.
Calibrated ± 1 stand. dev.: 1050–900 BC Cal.
$\delta^{13}C = -26.6‰$ PDB.

K-5169 2840 ± 75 BP C-14 y
Charcoal (Quercus sp., Tilia sp., Fraxinus sp., Betula sp., Alnus sp.), Hemmed Church, Randers county. Taken from sandy layer (layer d) around *hearth* A3. The layer constitutes the original floor level in the east end of house I. Sample DJM 2215, X689 og X573a; Pd 23037. NM VIII A 6864.
Calibrated (Pearson & Stuiver 1986): 1000 BC Cal.
Calibrated ± 1 stand. dev.: 1120–910 BC Cal.
$\delta^{13}C = -25.8‰$ PDB.

Average of K-5169-70, house I: 2830 ± 55 BP C-14 y
Calibrated (Pearson & Stuiver 1986): 1000 BC Cal.
Calibrated ± 1 stand. dev.: 1040–920 BC Cal.

K-5786 3040 ± 80 BP C-14 y
Charcoal (Betula, Populus, Corylus, Alnus and Acer), Hemmed Church, Hemmed, Randers county. Taken from the lower part of *cooking pit* A203 (cf. K-5782). Pottery (X2017) was found in the pit (c. 2 m in diam. and 0.7 m deep), which showed great resemblance to pottery from house I, which has been dated to 940–1000 BC Cal. (cf. K-5169-70). Expected age: Middle Bronze Age. Sample DJM 2215: A203, X2224; Hg 26924. NM VIII A 6864.
Calibrated (Pearson & Stuiver 1986): 1310 BC Cal.
Calibrated ± 1 stand. dev.: 1420–1220 BC Cal.
$\delta^{13}C = -26.4‰$ PDB.

K-5168 3270 ± 80 BP C-14 y
Charcoal (Quercus sp., Tilia sp., Fraxinus sp., Corylus sp.), Hemmed Church, Randers county. Taken from the two lowest layers in a c. 8 m wide *depression* under house I from the Early Bronze Age. Cooking-stones, flint and pottery, possibly from the Late Single Grave Culture were found in the layers. Sample DJM 2215, X630 og X804; Pd 23038–39. NM VIII A 6864.
Calibrated (Pearson & Stuiver 1986): 1530 BC Cal.
Calibrated ± 1 stand. dev.: 1670–1450 BC Cal.
$\delta^{13}C = -25.6‰$ PDB.

K-5783 3150 ± 80 BP C-14 y
Charcoal (Quercus sp.), Hemmed Church, Hemmed, Randers county. Taken from *post-hole in southern wall of house III.* The sample is from the postpipe in the natural. *The post-hole* was 0.3 m in diam. and 0.65 m deep. A type V–dagger and pottery were

found in layer over, and in the house. Expected age: Late Neolithic/Early Bronze Age. Sample DJM 2215: A265, X2217; Pd 23344. NM VIII A 6864.
Calibrated (Pearson & Stuiver 1986): 1430 BC Cal.
Calibrated ± 1 stand. dev.: 1520–1330 BC Cal.
$\delta^{13}C = -24.6‰$ PDB.

K-5785 3330 ± 80 BP C-14 y
Charcoal (Quercus sp.), Hemmed Church, Hemmed, Randers county. Taken from a *postpipe in south wall of house III* at a depth of c. 0.1–0.3 m. *The post-hole* was c. 0.4 m in diam. and 0.6 m deep. Expected age: Late Neolithic/Early Bronze Age. Sample DJM 2215: A279, X2255; Pd 23346. NM VIII A 6864.
Calibrated (Pearson & Stuiver 1986): 1630 BC Cal.
Calibrated ± 1 stand. dev.: 1740–1520 BC Cal.
$\delta^{13}C = -25.6‰$ PDB.

K-5782 3350 ± 80 BP C-14 y
Charcoal (Quercus sp.), Hemmed Church, Hemmed, Randers county. Taken from *core of roof-bearing post-hole in house III. The post-hole* which was 0.5 m in diam. and 0.7 m deep, was intersected by pit A203 (from Middle Bronze Age), (cf. K-5786). Expected age: Late Neolithic/Early Bronze Age. Sample DJM 2215: A259, X2178; Pd 23343. NM VIII A 6864.
Calibrated (Pearson & Stuiver 1986): 1670 BC Cal.
Calibrated ± 1 stand. dev.: 1740–1530 BC Cal.
$\delta^{13}C = -25.4‰$ PDB.

K-5784 3370 ± 80 BP C-14 y
Charcoal (Quercus sp.), Hemmed Church, Hemmed, Randers county. Taken from *post-hole in south wall of house III.* The charcoal originates from the *post* itself at a depth of 0.1–0.3 m in the c. 0.6 m deep hole. The house was covered by a 0.3 m thick layer containing abundant flint debris and pottery. Expected age: Late Neolithic/Early Bronze Age. Sample DJM 2215: A266, X2218; Pd 23345. NM VIII A 6864.
Calibrated (Pearson & Stuiver 1986): 1680 BC Cal.
Calibrated ± 1 stand. dev.: 1750–1530 BC Cal.
$\delta^{13}C = -24.6‰$ PDB.

Average of K-5782-85, house III: 3300 ± 40 BP C-14 y
Calibrated (Pearson & Stuiver 1986): 1610–1540 BC Cal.
Calibrated ± 1 stand. dev.: 1670–1520 BC Cal.

K-5781 3400 ± 100 BP C-14 y
Charcoal (Quercus, Tilia, Corylus, Alnus, Acer, bark and unindentified), Hemmed Church, Hemmed, Randers county. From central circular pit A95 (diam. 1.75 m depth 0.25 m) in house III with single central row of roof-bearing posts. The pit was used as *earth oven/cooking pit* and contained flint and pottery. In the fill there were cooking-stones besides burnt bones and a flake scraper. Expected age: Late Neolithic/Early Bronze Age. Sample DJM 2215: A95, X1538; Pd 23350. NM VIII A 6864.
Calibrated (Pearson & Stuiver 1986): 1730–1700 BC Cal.
Calibrated ± 1 stand. dev.: 1880–1540 BC Cal.
$\delta^{13}C = -26.9‰$ PDB.

K-5787 3560 ± 85 BP C-14 y
Charcoal (Quercus, Tilia, Fraxinus, Corylus, Alnus, Acer, bark and unidentified) and carbonised grain, Hemmed Church, Hemmed, Randers county. Wet-sieved from soil sample from *pit at northern wall of house III. The pit* was 0.7 m in diam. and 0.6 m deep. It contained some carbonised grain, flint and pottery of the same type as found over house III. The pit lay in a cluster of similar pits. Expected age: Late Neolithic/Early Bronze Age. Sample DJM 2215: A480, X2839; Pd 23347. NM VIII A 6864.
Calibrated (Pearson and Stuiver, 1986): 1910 BC Cal.
Calibrated ± 1 stand. dev.: 2030–1770 BC Cal.
$\delta^{13}C = -26.0‰$ PDB.

Hemmed Plantation

K-5799 3360 ± 80 BP C-14 y
Charcoal (Quercus), Hemmed Plantation, Hemmed, Randers county. Taken from *postpipe* in Late Neolithic long-house I. The sample was taken c. 0.1–0.3 m below surface of the natural in c. 0.5 m deep post-hole. Expected age: Late Neolithic C. Sample DJM 2049: A88, X945; Hg 26922. NM VIII A 7170.
Calibrated (Pearson & Stuiver 1986): 1680 BC Cal.
Calibrated ± 1 stand. dev.: 1750–1530 BC Cal.
$\delta^{13}C = -24.9‰$ PDB.

K-5798 3390 ± 85 BP C-14 y
Charcoal (Quercus), Hemmed Plantation, Hemmed, Randers county. Taken from the side and bottom of the *postpipe of a roof post.* The sample is taken at c. 0.2–0.6 m below surface of the natural in a c. 1 m deep post-hole. The post is the fourth from the west in Late Neolithic long house I. Expected age: Late Neolithic C. Sample DJM 2049: A117, X841; Hg 26920. NM VIII A 7170.
Calibrated (Pearson & Stuiver 1986): 1730–1690 BC Cal.
Calibrated ± 1 stand. dev.: 1870–1550 BC Cal.
$\delta^{13}C = -23.8‰$ PDB.

K-5800 3470 ± 85 BP C-14 y
Charcoal (Quercus), Hemmed Plantation, Hemmed, Randers county. Taken from *postpipe of wall post* in Late Neolithic long-house I. The sample was taken c. 0.3–0.5 m below surface of the natural. Expected age: Late Neolithic C. Sample DJM 2049: A78, X969; Pd 23341. NM VIII A 7170.
Calibrated (Pearson & Stuiver 1986): 1870–1770 BC Cal.
Calibrated ± 1 stand. dev.: 1900–1690 BC Cal.
$\delta^{13}C = -24.3‰$ PDB.

K-5797 3480 ± 80 BP C-14 y
Charcoal (Quercus), Hemmed Plantation, Hemmed, Randers county. Taken from *postpipe of roof post* in Late Neolithic long-house I. The sample is taken 0.2–0.7 m below surface of the natural in c. 1 m deep post-hole. Expected age: Late Neolithic C. Sample DJM 2049: A119, X970; Hg 26921. NM VIII A 7170.
Calibrated (Pearson & Stuiver 1986): 1870–1780 BC Cal.
Calibrated ± 1 stand. dev.: 1910–1700 BC Cal.
$\delta^{13}C = -24.7‰$ PDB.

Average of K-5797-5800, house I: 3420 ± 40 BP C-14 y
Calibrated (Pearson and Stuiver, 1986): 1740 BC Cal.
Calibrated ± 1 stand. dev.: 1860–1690 BC Cal.

K-5801 3680 ± 85 BP C-14 y
Charcoal (Unidentified, Quercus, Tilia, Fraxinus, Corylus including hazelnuts, Alnus, Pomoideae, Acer), Hemmed Plantation, Hemmed, Randers county. Taken from the lower c. 0.2 m of an almost 4 × 3 m wide and 0.3 m deep *central depression* at the base of longhouse I. The function of the pit is unknown. Expected age: Late Neolithic C. Sample DJM 2049: A126, X1065; Pd 23342. NM VIII A 7170.
Calibrated (Pearson & Stuiver 1986): 2120–2040 BC Cal.
Calibrated ± 1 stand. dev.: 2200–1950 BC Cal.
$\delta^{13}C = -25.3‰$ PDB.

SAMPLES FROM THE HØJGÅRD EXCAVATION

The samples have been submitted by S. W. Andersen og P. Ethelberg.

K-4614 1330 ± 65 BP C-14 y
Charcoal (Quercus sp.), Højgård, Haderselv county. From *cooking pit 214*, which is thought to belong to house III, from Early Bronze Age, period II/III. Sample 1706 × 252, sb. 170; Hg 25662. NM VIII A 6646.
Calibrated (Stuiver & Pearson 1986): AD 670 Cal.
Calibrated ± 1 stand. dev.: AD 650–760 Cal.
$\delta^{13}C = -25.3‰$ PDB.

K-4615 2850 ± 75 BP C-14 y
Charcoal (Quercus sp.), Højgård, Haderslev county. From *pit 388*, the fill of which covered a post-hole from a roof post belonging to house IV. Pottery of *Early Bronze Age* character was found in the pit. Sample 1706 × 390, sb. 170; Hg 25661. NM VIII A 6646.
Calibrated (Pearson & Stuiver 1986): 1010 BC Cal.
Calibrated ± 1 stand. dev.: 1150–920 BC Cal.
$\delta^{13}C = -24.4‰$ PDB.

K-5018 2860 ± 75 BP C-14 y
Charcoal (Quercus sp.), Højgård, Haderslev county. From *hearth*, which possibly is connected to *house XIX* from *Late Bronze Age* on account of its central position in the house. Cf. K-4615. Sample 1706, X 948, sb. 170; Hg 26309. NM VIII A 6646.
Calibrated (Pearson & Stuiver 1986): 1020 BC Cal.
Calibrated ± 1 stand. dev.: 1160–920 BC Cal.
$\delta^{13}C = -23.6‰$ PDB.

K-5019 3180 ± 75 BP C-14 y
Charcoal (Quercus sp.), Højgård, Haderslev county. From wall and roof posts in *longhouse XIV* from *Early Bronze Age*, period II/III. Sample 1706, X 967; Hg 26310. NM VIII A 6646.
Calibrated (Pearson & Stuiver 1986): 1450 BC Cal.
Calibrated ± 1 stand. dev.: 1520–1410 BC Cal.
$\delta^{13}C = -23.9‰$ PDB.

K-5020 3320 ± 75 BP C-14 y
Charcoal (Quercus sp.), Højgård, Haderslev county. From wall and roof posts in *longhouse XIV* from *Early Bronze Age*. Sample 1706, X 974; Hg 26312. NM VIII A 6646.
Calibrated (Pearson & Stuiver 1986): 1620 BC Cal.
Calibrated ± 1 stand. dev.: 1730–1520 BC Cal.
$\delta^{13}C = -25.5‰$ PDB.

K-5021 3290 ± 75 BP C-14 y
Charcoal (Quercus sp.), Højgård, Haderslev county. From wall and roof posts in *longhouse XIV* from *Early Bronze Age*. Sample 1706, X 985; Hg 26313. NM VIII 6646.
Calibrated (Pearson & Stuiver 1986): 1600–1530 BC Cal.
Calibrated ± 1 stand. dev.: 1680–1510 BC Cal.
$\delta^{13}C = -24.6‰$ PDB.

Average of K-5019, K-5020 and K-5021: 3260 ± 45 BP C-14 y
Calibrated (Pearson & Stuiver 1986): 1520 BC Cal.
Calibrated ± 1 stand. dev.: 1610–1510 BC Cal.

Samples from the Højgård excavation dated by accelerator mass spectroscopy

Accelerator mass spectroscopy has been carried out in the radiocarbon laboratory in Uppsala. The isotopic fractionation has not been measured on these samples, which are prefixed Ua. The dates have been corrected for isotopic fractionation to $\delta^{13}C = -25‰$ according to assumed values of their $\delta^{13}C$-value.

Ua-705 3115 ± 110 BP C-14 y
Burnt food remains, Højgård, Haderslev county. Burnt food remains on pottery from house I. Sample 1706 ×200.
Calibrated (Pearson & Stuiver 1986): 1410 BC Cal.
Calibrated ± 1 stand. dev.: 1520–1260 BC Cal.

Ua-706 3450 ± 100 BP C-14 y
Charcoal (Corylus), Højgård, Haderslev county. From cooking pit from house II. Sample 1706 ×324.
Calibrated (Pearson & Stuiver 1986): 1750 BC Cal.
Calibrated ± 1 stand. dev.: 1900–1670 BC Cal.

Ua-707 3475 ± 95 BP C-14 y
Charcoal (Alnus), Højgård, Haderslev county. From post-hole in house II. Sample 1706 ×331.
Calibrated (Pearson & Stuiver 1986): 1870–1780 BC Cal.
Calibrated ± 1 stand. dev.: 1930–1690 BC Cal.

Ua-708 3355 ± 100 BP C-14 y
Charcoal (Betula), Højgård, Haderslev county. From post-hole in house I. Sample 1706 ×321.
Calibrated (Pearson & Stuiver 1986): 1680 BC Cal.
Calibrated ± 1 stand. dev.: 1760–1520 BC Cal.

Ua-709 2880 ± 75 BP C-14 y
Charcoal (Alnus), Højgård, Haderslev county. From post-hole in house II. Sample 1706 ×333.

Calibrated (Pearson & Stuiver 1986): 1040 BC Cal.
Calibrated ± 1 stand. dev.: 1250–940 BC Cal.

Ua-710 1150 ± 80 BP C-14 y
Charcoal (Quercus), Højgård, Haderslev county. From post-hole in house I. Sample 1706 ×477.
Calibrated (Stuiver & Pearson 1986): 890 BC Cal.
Calibrated ± 1 stand. dev.: 780–980 BC Cal.

Ua-711 3180 ± 95 BP C-14 y
Charcoal (Corylus), Højgård, Haderslev county. From cooking pit from house I. Sample 1706 ×480.
Calibrated (Pearson & Stuiver 1986): 1450 BC Cal.
Calibrated ± 1 stand. dev.: 1530–1400 BC Cal.

Ua-712 3250 ± 110 BP C-14 y
Charcoal (Quercus), Højgård, Haderslev county. From cooking pit from house I. Sample 1706 ×485.
Calibrated (Pearson & Stuiver, 1986): 1520 BC Cal.
Calibrated ± 1 stand. dev.: 1680–1420 BC Cal.

SAMPLES FROM THE TRAPPENDAL EXCAVATION

Submitted by S. W. Andersen.

K–3475 3050 ± 80 BP C-14 y
Charcoal, Trappendal, Vejle county. From remains of *longhouse* with partition walls, under burial mound with 4 burials, the oldest a cremation grave from *Early Bronze Age*, per. III. Sample collected from several post-holes. Sample 21.863, split 1; Pd 19001. HM 704. NM VIII A 6291.
Calibrated (Pearson & Stuiver 1986): 1380–1320 BC Cal.
Calibrated ± 1 stand. dev.: 1420–1220 BC Cal.
$\delta^{13}C = -26.0‰$ PDB.

K–3476 3300 ± 80 BP C-14 y
Charcoal, Trappendal, Vejle county. From the same *longhouse* as K–3475. Collected in the same post-holes as K–3475. Sample 21.863, split 2; Pd 19002. HM 704. NM VIII A 6291.
Calibrated (Pearson & Stuiver 1986): 1610–1540 BC Cal.
Calibrated ± 1 stand. dev.: 1690–1510 BC Cal.
$\delta^{13}C = -24.7‰$ PDB.

K-3477 3060 ± 80 BP C-14 y
Charcoal, Trappendal, Vejle county. From the same *longhouse* as K–3475. Collected in post-hole 245, with diam. 22 cm and depth 42 cm. The post could have been part of a partition wall or a replacement for a roof post. Sample 21.874, split 1; Pd 19003. HM 704. NM VIII A 6291.
Calibrated (Pearson & Stuiver 1986): 1380–1320 BC Cal.
Calibrated ± 1 stand. dev.: 1420–1230 BC Cal.
$\delta^{13}C = -26.6‰$ PDB.

K-3478 3130 ± 80 BP C-14 y
Charcoal, Trappendal, Vejle county. From the same *longhouse* as K–3475. Collected in the same post-hole, 245, as K–3477. Consisted mainly of twigs up to 1.2 cm in diameter. Sample 21.874, split 2; Pd 19004. HM 704. NM VIII A 6291.
Calibrated (Pearson & Stuiver 1986): 1420 BC Cal.
Calibrated ± 1 stand. dev.: 1510–1320 BC Cal.
$\delta^{13}C = -26.3‰$ PDB.

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K-no.	Locality	House	House type	C-14 age	Calibrated	Calibrated ± 1 std.
				C-14 years BP	BC Cal.	BC Cal.
K-2223	Egehøj Oven bac			2400±100	410	770–390
K-2241	Egehøj Cooking pit bzå			2550±100	790	810–530
K-5170	Hemmed Church Cooking pit A19	I	three – aisled	2810± 75	990–940	1050–900
K-5169	Hemmed Church Hearth A3	I	three – aisled	2840± 75	1000	1120–910
K-5786	Hemmed Church Pit A203	I	three – aisled	3040± 80	1310	1420–1220
K-2238	Egehøj Post in South wall byf	III	two – aisled	3160±100	1430	1520–1320
K-2240	Egehøj Well II cgg	I–III	two – aisled	3240±100	1520	1640–1420
K-2239	Egehøj Well I cgd	I–III	two – aisled	3340±100	1640	1750–1520
K-5168	Hemmed Church Depression A32	III	two – aisled	3270± 80	1530	1670–1450
K-5783	Hemmed Church Post in South wall A265	III	two – aisled	3150± 80	1430	1520–1330
K-5785	Hemmed Church Post in South wall A279	III	two – aisled	3330± 80	1630	1740–1520
K-5782	Hemmed Church Roof post A259	III	two – aisled	3350± 80	1670	1740–1530
K-5784	Hemmed Church Post in South wall A266	III	two – aisled	3370± 80	1680	1750–1530
K-5781	Hemmed Church, A95 Central depression	III	two – aisled	3400±100	1730–1700	1880–1540
K-5799	Hemmed Plantation Wall post A88	I	two – aisled	3360± 80	1680	1750–1530
K-5798	Hemmed Plantation Wall post A117	I	two – aisled	3390± 85	1730–1690	1870–1550
K-5800	Hemmed Plantation Wall post A78	I	two – aisled	3470± 85	1870–1770	1900–1690
K-5797	Hemmed Plantation Roof post A119	I	two – aisled	3480± 80	1870–1780	1910–1700
K-5787	Hemmed Church, A480 Pit at North wall	III	two – aisled	3560± 85	1910	2030–1770
K-3782	Hemmed Bog oak			3660± 90	2040	2190–1920
K-5801	Hemmed Plantation A126 Central depression	I	two – aisled	3680± 85	2120–2040	2200–1950

Table I. Summary of radiocarbon dates from Egehøj, Hemmed Church and Hemmed Plantation.

K-no.	Locality	House no.	C-14 age	Calibrated	Calibrated ± 1 std.
			C-14 years BP	BC Cal.	BC Cal.
K-4614	Højgård Cooking pit 214	III	1330± 65	AD 670	AD 650–760
K-4615	Højgård Pit 388	IV	2850± 75	1010	1150–920
K-5018	Højgård Hearth 170	XIX	2860± 75	1020	1160–920
K-5019	Højgård Post-hole 967	XIV	3180± 75	1450	1520–1410
K-5020	Højgård Post-hole 974	XIV	3320± 75	1620	1730–1520
K5021	Højgård Post-hole 985	XIV	3290± 75	1600–1530	1680–1510
Ua-705	Højgård Food remains	I	3115±110	1410	1520–1260
Ua-706	Højgård Cooking pit	II	3450±100	1750	1900–1670
Ua-707	Højgård Post-hole	II	3475± 95	1870–1780	1930–1690
Ua-708	Højgård Post-hole	I	3355±100	1680	1760–1520
Ua-709	Højgård Post-hole	II	2880± 75	1040	1250–940
Ua-710	Højgård Post-hole	I	1150± 80	890	780–980
Ua-711	Højgård Cooking pit	I	3180± 95	1450	1530–1400
Ua-712	Højgård Cooking pit	I	3250±110	1520	1680–1420
K-3475	Trappendal longhouse		3050± 80	1380–1320	1420–1220
K-3476	Trappendal longhouse		3300± 80	1610–1540	1690–1510
K-3477	Trappendal longhouse		3060± 80	1380–1320	1420–1230
K-3478	Trappendal longhouse		3130± 80	1420	1510–1320

Table II. Summary of radiocarbon dates from Højgård and Trappendal.