[Supplementary material]

Early agropastoral settlement and cultural change in central Tibet in the first millennium BC: excavations at Bangga

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Bangga: radiocarbon dating and the statistics of polished ceramics

There are 20 radiocarbon dates available from the Bangga site, 18 of which come from the early phase. To compare the chronology of archaeological sites in Central Tibet in the second and first millennium BC, all dates from the previously published Qugong sand Changguogou sites as well as Bangga were calibrated with Oxcal 4.3.2 and IntCal 13 calibration and are presented in Table S1 (Bronk Ramsey 2009; Reimer *et al.* 2013). The percentage of polished ceramics is one of the diagnostic characteristics that distinguishes the Bangga ceramic assemblage from those of the Qugong culture. We visually inspected the ceramics from the early phase of the Bangga site for evidence of surface polishing and present the results in Table S2 and Figure S1. Some layers yielded very few ceramics, and so we merged the number of ceramics from certain layers together to better depict the trend of the data (e.g. L1 and L2 of stone enclosure F7 were lumped together). Only one of the features (F7–L4) had a percentage of polished ceramics higher than 20 per cent, approximating the percentage of polished ceramics from the Qugong site (22 per cent; see Chinese Academy of Social Science 1999). The percentages in other features are considerably lower than those from Qugong, ranging from 4–18 per cent. Notably, L13 and L14, which are stratigraphically more recent than all the stone enclosures, also have a percentage of

polished ceramics lower than most of the stone enclosures (4 and 6 per cent, respectively). This might indicate that the hypothesized phenomenon of the decline of polished ceramics persisted until the end of the first millennium BC.

Table S1. Radiocarbon dates of Bangga, Changguogou and Qugong sites in central Tibet (the calibrations use Oxcal 4.3 and IntCal13 calibration curve, Bronk Ramsey 2009; Reimer *et al.* 2013; F = household; T = trench; J = sacrificial pit; M = burial; H = pit; L = layer; Z = hearth).

Site	Laboratory code	Context	Conventional age	Calibrated age (95.4%)	Material	References
Bangga (late phase)	Beta-439868	L7	910±30 BP	AD 1033–1204	Barley	This article
Bangga (late phase)	Beta-471994	L10	1790±30 BP	45 BC–85 AD	Barley	This article
Bangga (early phase)	Beta-425894	L13	2280±30 BP	403–211 BC	Cerealia	This article
Bangga (early phase)	Beta-471995	F7L2	2420±30 BP	748–402 BC	Wheat	This article
Bangga (early phase)	Beta-543785	F1H36	2440±30 BP	751–408 BC	Barley	This article
Bangga (early phase)	Beta-425895	15T1H2	2450±30 BP	754–411 BC	Cerealia	This article
Bangga (early phase)	Beta-471997	F1Z1	2450±30 BP	754–411 BC	Wheat	This article
Bangga (early phase)	Beta-471996	F6	2460±30 BP	758–429 BC	Barley	This article
Bangga (early phase)	Beta-543786	F8H20	2460±30 BP	758–429 BC	Barley	This article
Bangga (early phase)	Beta-543791	F1R1H25	2480±30 BP	774–434 BC	Animal Bone	This article

Bangga (early phase)	Beta-471998	F4Z1	2480±30 BP	774–434 BC	Barley	This article
Bangga (early phase)	Beta-543796	H15	2500±30 BP	788–537 BC	Animal Bone	This article
Bangga (early phase)	Beta-543793	F8L5	2500±30 BP	788–537 BC	Animal Bone	This article
Bangga (early phase)	Beta-543792	F8L3	2560±30 BP	805–553 BC	Animal Bone	This article
Bangga (early phase)	Beta-543787	H21	2560±30 BP	805–553 BC	Barley	This article
Bangga (early phase)	Beta-448782	F2L1	2590±30 BP	820–595 BC	Wheat	This article
Bangga (early phase)	Beta-543788	H22	2630±30 BP	838–777 BC	Wheat	This article
Bangga (early phase)	Beta-543784	F7H31	2730±30 BP	930–812 BC	Barley	This article
Bangga (early phase)	Beta-543795	L15	2730±30 BP	930–812 BC	Animal Bone	This article
Bangga (early phase)	Beta-425896	F5L5	2820±30 BP	1055–899 BC	Barley	This article
Changguogou	ZK-2815	T305L1	Modern	N/A	Animal Bone	Chinese Academy of Social Science 1996
Changguogou	ZK-2816	T305H2	2896±99 BP	1383–842 BC	Animal Bone	Chinese Academy of Social Science 1996

Changguogou	ZK-2814	H2	3044±102 BP	1513–1003 BC	Charcoal	Chinese Academy of Social Science 1996
Changguogou	Beta-408847	N/A	3070±30 BP	1415–1236 BC	Wheat	Lu 2016
Changguogou	Beta-408848	N/A	3100±30 BP	1431–1283 BC	Wheat	Lu 2016
Changguogou	Beta-408849	N/A	3120±30 BP	1451–1491 BC	Wheat	Lu 2016
Changguogou	OxA-30942	N/A	3122±29 BP	1450–1295 BC	Wheat	Liu *et al.* 2016
Qugong (early phase)	ZK-2543	T110H1	3440±95 BP	2012–1518 BC	Charcoal	Chinese Academy of Social Science 1992, 1999
Qugong (early phase)	ZK-2544	T102H8	3275±80 BP	1750–1398 BC	Charcoal	Chinese Academy of Social Science 1992, 1999
Qugong (early phase)	ZK-2545	T101H9	3030±80 BP	1449–1031BC	Charcoal	Chinese Academy of Social Science 1992, 1999

Qugong (early phase)	ZK-2547	T110L3	3160±90 BP	1683–1232 BC	Charcoal	Chinese Academy of Social Science 1992, 1999
Qugong (early phase)	ZK-2549	T111L4	2980±110 BP	1451–914 BC	Charcoal	Chinese Academy of Social Science 1992, 1999
Qugong (early phase)	ZK-2550	M111	3185±185 BP	1915–977 BC	Charcoal	Chinese Academy of Social Science 1992, 1999
Qugong (sacrificial pit)	ZK-2552	J1	1375±80 BP	AD 435–879	Charcoal	Chinese Academy of Social Science 1992, 1999
Qugong (stone-cist burial phase)	ZK-2560	M3	2480±60 BP	777–416 BC	Charcoal	Chinese Academy of Social Science 1992, 1999

Table S2. Number of polished ceramics in the early phase of Bangga site (F = household; R = room; L = layer)

Archaeological feature	Number of polished ceramics	Percentage	Total
L13	14	0.04	386
L14	24	0.06	391
L15	2	0.07	28
F7L1	42	0.04	996
F7L2	151	0.07	2067
F7L3	74	0.07	1133
F7L4	32	0.21	154
F7L5	7	0.18	38
F7L6L7	2	0.09	23
F8L1L2	71	0.11	674
F8L3	26	0.16	159
F1R2L1L2	22	0.16	139
F1R2L3L4L5	17	0.14	119
F1R2L6L7	14	0.14	103
F1R1L3	57	0.16	366
F4L4	1	0.02	59
F4L5	2	0.08	24

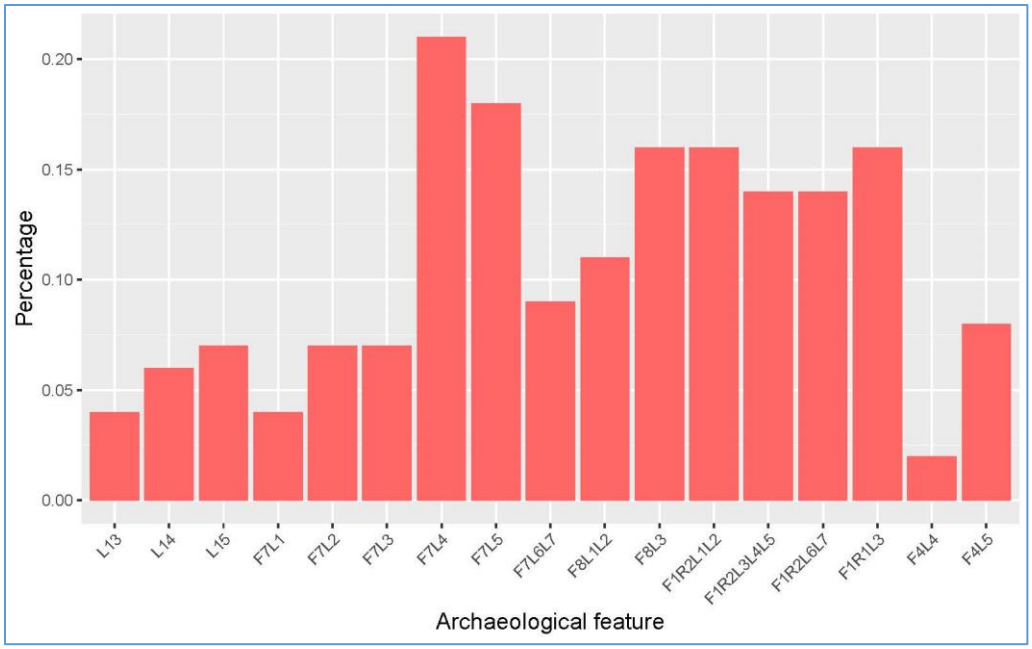

Figure S1. Percentage of polished ceramics in the early phase of the Bangga site (F = household; R = room; L = layer).

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