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Supplementary Information for

An Endemic Pathway to Sheep and Goat Domestication at Aşıklı Höyük (Central Anatolia, Turkey)

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This PDF file includes:

Table S1. Relative abundance of major prey groups by level in the post-2009 sample as (a) NISP and (b) percentages and Inverse of Simpson's diversity index (1/D).

a. NISP for major prey groups:

Prey group	Level 5	Level 4-low	Level 4	Level 3	Level 2J-D
Fish	606	465	1617	477	56
Hedgehog	41	19	154	17	3
Chelonian	159	85	344	180	21
Hare	1630	989	3909	1284	543
Equidae	92	27	383	213	136
Cervidae	109	76	161	203	123
Aurochs	658	198	1124	491	416
Pig	315	140	523	343	305
Caprines	1374	523	5761	6817	6873
Birds	46	20	151	104	33
Total NISP	5030	2542	14,127	10,129	8509

b. Percent of total NISP for major prey groups and 1/D:

Prey group	%, Lev 5	%, Lev 4-low	%, Lev 4	%, Lev 3	%, Lev 2J-D
Fish	12	18.3	11.4	4.7	0.7
Hedgehog	0.8	0.7	1.1	0.2	0
Chelonian	3.2	3.3	2.4	1.8	0.2
Hare	32.4	38.9	27.7	12.7	6.4
Equidae	1.8	1.1	2.7	2.1	1.6
Cervidae	2.2	3	1.1	2	1.4
Aurochs	13.1	7.8	8	4.8	4.9
Pig	6.3	5.5	3.7	3.4	3.6
Caprines	27.3	20.6	40.8	67.3	80.8
Birds	0.9	0.8	1.1	1	0.4
Total NISP	5030	2542	14,127	10,129	8509
1/D with caprines	4.608	4.202	3.773	2.033	*1.443
1/D without caprines	3.707	3.216	3.450	4.638	4.466

Notes: Because the boundary between lower level 4 and upper 5 is unclear, Level 4 is partitioned to include subset "4 low" for analysis. (*) this calculation used a large sample from 2J-D that includes material from the old excavations.

Table S2. Test of probable (worst case scenario*) recovery biases of pre-2009 excavation campaigns at AH, based on a comparison of the taxonomic contents and small skeletal elements (toe bones and teeth) recovered from the coarse versus fine fractions from post-2009 excavation units in Level 4 (Area 4GH). Fine fraction material was recovered using a combination of 4 mm and 2 mm dry sieve mesh and flotation techniques.

Taxon or skeletal element	% in coarse fraction	% in fine fraction	total NISP
Tortoise/turtle (Chelonians)	4	96	44
Fish	0	100	108
Hare	17	83	215
Other small mammals	10	90	59
Small carnivores	24	76	21
Birds (large & small)	37	63	8
Small-medium ungulates	42	58	846
Large ungulates	64	36	44
Very large ungulates	88	12	51
Permanent teeth	43	57	68
Deciduous teeth	26	74	23
1st phalanx	22	78	59
2nd phalanx	17	83	30
3rd phalanx	27	73	15

(*) The potential impact of differential recovery on species representation is much less severe in Level 2, however, because these faunas overwhelmingly contain caprine remains rather than rich mixes of large and small species (as opposed to Levels 5-4).

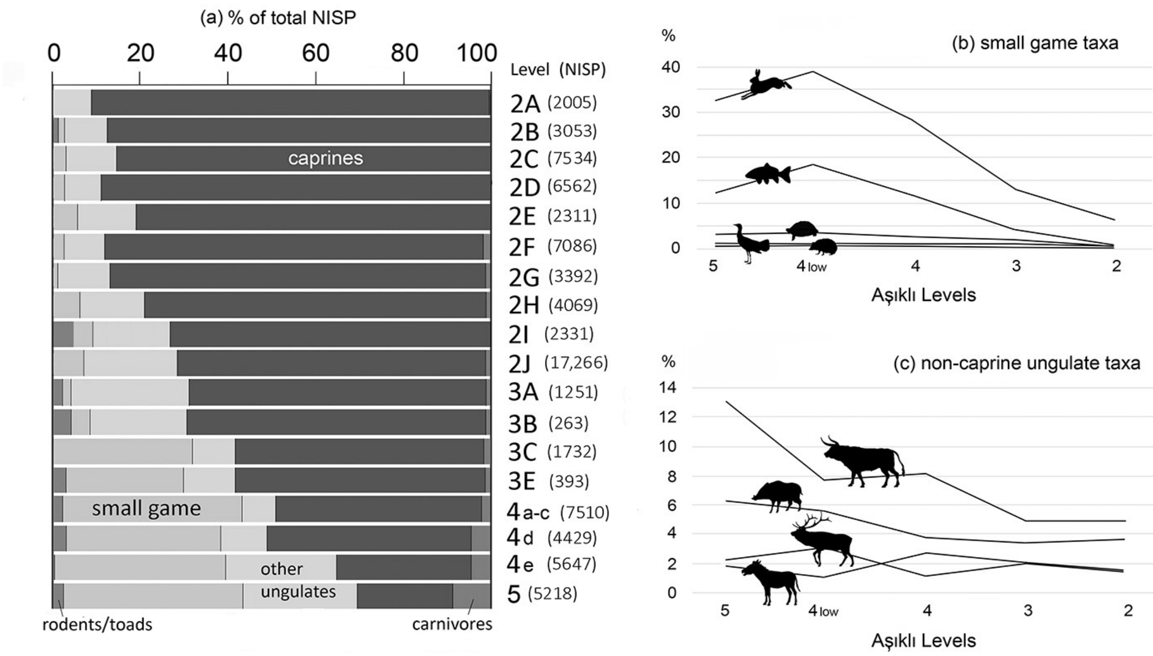

Figure S1. Trends in the importance of prey groups from Level 5 through Level 2 at AH based on counts of NISP: (a) variation in the representation of five major animal categories as percentages of total NISP by level and phase; (b) relative frequency of hare, fish (carp species), tortoise and turtle, hedgehog, and birds within the small game fraction; (c) relative frequency of aurochs, wild boar, various deer species (red, roe and rarely fallow deer), and equines (wild horse and onager) among the non-caprine ungulate remains.

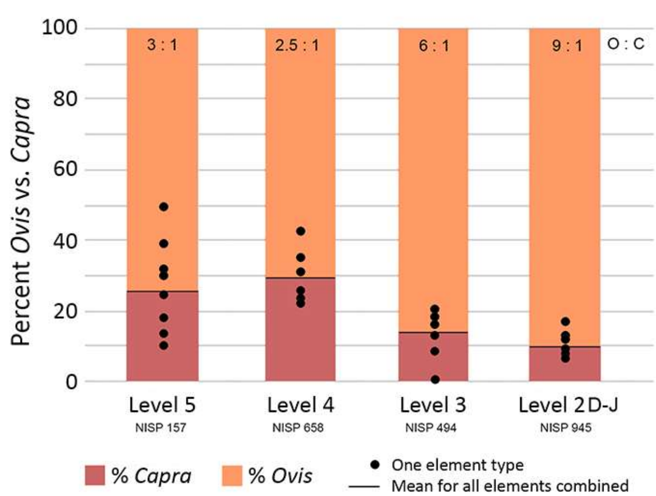

Figure S2. The relative representation of *Ovis* and *Capra* by level in AH based on morphologically diagnostic elements (NISP). Bars reflect the mean difference in the percentages of sheep versus goat for eight diagnostic elements; dots represent percentage values by element type. Only specimens for which genus could be defined with confidence are included. NISP values are appropriate for the comparison since fragmentation is essentially equivalent between the two taxa. (O:C) ratio based on percent *Ovis* vs. percent *Capra*.

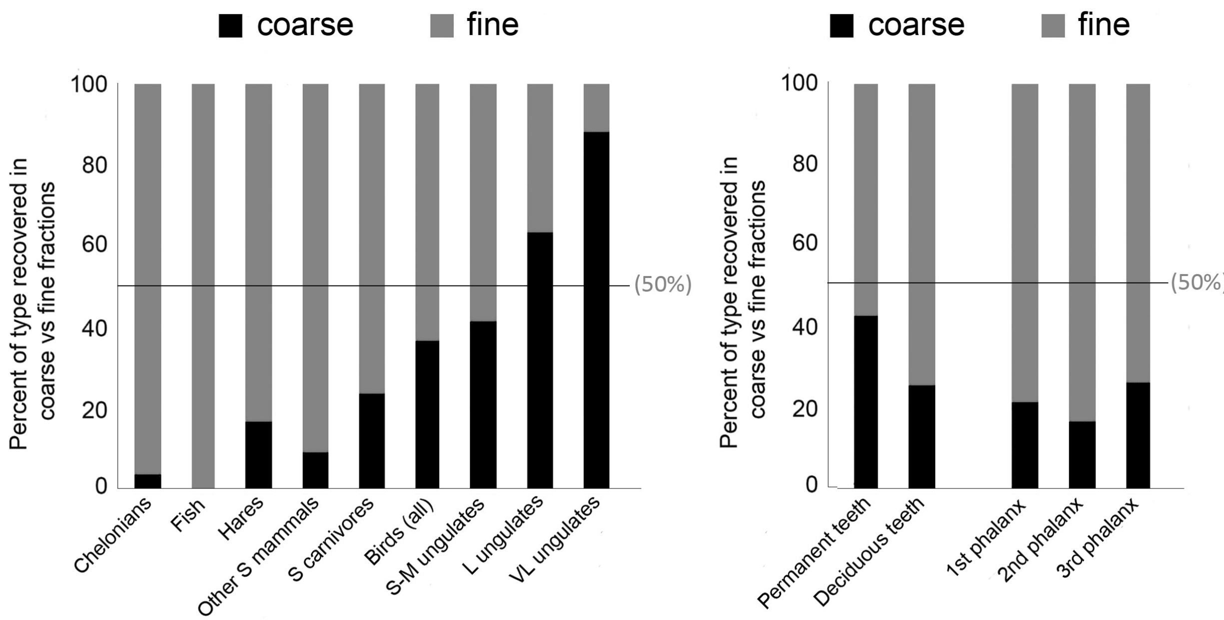

Figure S3. Contrasting taxonomic and body part yields from the "coarse" and "fine" recovery fractions from AH. Fine fraction material is recovered using a combination of 4 mm and 2 mm dry sieve meshes plus flotation. The 50% line represents parity (no recovery bias) between coarse and fine fractions. (S) small; (M) medium; (L) large; (VL) very large.

Table S3. Summary data on pelvic (pubis-acetabulum) fusion state and sex determination for caprine specimens from the post-2009 excavations at AH.

	Total specimens sexed	Fusion state	Female MNE	Females in each cohort	Male MNE	Males in each cohort
Level 2J-D	MNE = 57	unfused	6	19 %	4	15 %
		fused	25	81 %	22	85 %
Level 3	MNE = 36	unfused	2	14 %	13	59 %
		fused	12	86 %	9	41 %
Level 4	MNE = 52	unfused	3	11 %	14	58 %
		fused	25	89 %	10	42 %
Level 5	MNE = 21	unfused	1	14 %	9	64 %
		fused	6	86 %	5	36 %

Note: MNE refers to the minimum number of elements. Percent values were calculated separately for each sex. Fused pelves represent individuals ranging from ca. 7 months of age and older. Data represent only those specimens for which sex could be determined from the morphology of the pubis-acetabulum region of the innominate.

Table S4. Caprine mortality patterns from the post-2009 excavations at AH, using Grant's (1) age-scoring codes for (a) eight age cohorts that span the maximum potential lifespan based on the dP_4-P_4 dental sequence, and (b) a more detailed set of short-interval cohorts that span the first two years of life based on deciduous lower 4th premolar (dP_4). Unworn dP_4 elements were included only if the crown was well developed in comparison to a newborn (full-term) comparative skeleton.

a. Eight cohorts spanning the maximum potential lifespan based on the dP_4-P_4 dental sequence:

Level	dP_4 (a-e)	dP_4 (f-n)	P_4 (-)	P_4 (e)	P_4 (f-g)	P_4 (h-j)	P_4 (k-l)	P_4 (m-n)	Total MNE
2J-I	0	6	0	1	9	7	2	1	26
3	1	11	1	6	16	8	3	0	46
4	5	42	3	4	15	16	7	0	92
5	2	8	0	1	1	0	2	0	14

b. Short-interval cohorts within the first two years of life only, based on development and wear of the deciduous lower 4th premolar (dP_4):

Level	dP_4 (a)	dP_4 (b-c)	dP_4 (d-e)	dP_4 (f-g)	dP_4 (h-j)	dP_4 (k-l)	dP_4 (m-n)	Total MNE
2J-I	0	0	0	1	2	1	2	6
3	0	0	1	4	4	2	1	12
4	2	1	2	20	5	10	7	47
5	0	0	2	4	0	0	4	10

Notes: MNE counts combine right and left sides.

Table S5. AH and comparison mortality data according to the (a) JSA (juvenile-subadult-adult) three-cohort system and (b) JPO (juvenile-prime adult-old adult) three-cohort system by geographic region, based on the dP_4-P_4 dental sequence.

a. JSA SYSTEM:

Culture Period	Region	Site	Level/ Layer/Phase	Taxon	total MNE	% juvenile	% subadult	% adult	Source
Early PPN	Anatolia	Aşıklı	2I-J	*Ovis* +	26	23	4	73	this study
Early PPN	Anatolia	Aşıklı	3	*Ovis* +	46	26	15	59	this study
Early PPN	Anatolia	Aşıklı	4	*Ovis* +	92	51	8	41	this study
Early PPN	Anatolia	Aşıklı	5	*Ovis* +	14	71	7	21	this study
Early PPN	Cyprus	Shillourokambos	(Sa) Ancienne A1-C	*Ovis+Capra*	47	21	13	66	Vigne et al. (2): Guilaine et al. (3)
Early PPN	Cyprus	Shillourokambos	(Sm) Moyenne A1-B	*Ovis+Capra*	56	34	12	54	Vigne et al. (2): Guilaine et al. (3)
PPN	Cyprus	Shillourokambos	(Sr) Recente	*Ovis+Capra*	15	20	13	67	Vigne et al. (2): Guilaine et al. (3)
PPN	Anatolia	Gritille	Late PPNB, phase B	*Ovis+*	40	63	2	35	Stein (4)
PN	Aeg. Greece	Franchthi	(Ff) FN	*Ovis+Capra*	31	65	6	29	Munro & Stiner (5)
PN	Aeg. Greece	Franchthi	(Fl) LN	*Ovis+Capra*	41	66	2	32	Munro & Stiner (5)
PN	Aeg. Greece	Franchthi	(Fm) MN	*Ovis+Capra*	46	59	6	35	Munro & Stiner (5)
PN	Aeg. Greece	Franchthi	(Fe) EN	*Ovis+Capra*	17	82	6	12	Munro & Stiner (5)
PN	Aeg. Greece	Franchthi	(Fi) IN	*Ovis+Capra*	29	93	0	7	Munro & Stiner (5)
PN	Anatolia	Erbaba	all	*Ovis+Capra*	216	75	13	12	Arbuckle (6)
PN	Anatolia	Köşk	II-V	*Ovis+Capra*	328	64	11	25	Arbuckle (7)
PN	Anatolia	Çatalhöyük	(C1) PN North/ BACH/Summit	*Ovis+*	10	70	0	30	Russell & Martin (8)
PN	Anatolia	Çatalhöyük	(C2) South XII-VII	*Ovis+*	28	54	25	21	Russell & Martin (8)
PN	Anatolia	Çatalhöyük	(C3) South pre-XII	*Ovis+*	23	74	4	22	Russell & Martin (8)
PN	Anatolia	Ulucak	(Uiv) IV	*Ovis+Capra*	30	37	13	50	Çarkırlar (9)
PN	Anatolia	Ulucak	(Uvl) V late	*Ovis+Capra*	33	70	12	18	Çarkırlar (9)
PN	Anatolia	Ulucak	(Uve) V early	*Ovis+Capra*	29	52	3	45	Çarkırlar (9)
PN	Anatolia	Ulucak	(Uvi) VI	*Ovis+Capra*	26	50	4	46	Çarkırlar (9)
Epi	Anatolia (M)	Karain B	1	*Ovis* +	93	41	30	29	Atıcı (10)
Epi	Anatolia (M)	Karain B	2	*Ovis* +	46	41	33	26	Atıcı (10)
Epi	Anatolia (M)	Öküzini	2	*Ovis* +	85	35	38	27	Atıcı (10)
Epi	Anatolia (M)	Öküzini	3	*Ovis* +	40	48	25	28	Atıcı (10)
UP	Hatay (NL)	Üçağızlı I	B-B3	*C. capreolus*	24	17	71	12	Stiner (11)
UP	Hatay (NL)	Üçağızlı I	F-I	*C. capreolus*	26	42	58	0	Stiner (11)
UP	Hatay (NL)	Üçağızlı I	F-I	*Capra aegagrus*	54	26	17	57	Stiner (11)
MP	Hatay (NL)	Üçağızlı II	B2	*C. capreolus*	15	7	60	33	Stiner (11)
MP	Hatay (NL)	Üçağızlı II	all	*Capra aegagrus*	35	26	23	51	Stiner (11)
Epi	Israel (SL)	Hayonim Cave	all	*G. gazella*	11	45	28	27	Stiner (12)
Epi-Natuf	Israel (SL)	Hayonim Cave	all	*G. gazella*	19	47	32	21	Munro data, in (12)
Epi-Natuf	Israel (SL)	Hayonim Terrace	all	*G. gazella*	28	46	50	4	Munro data, in (12)

Notes: (*Ovis*+) Mostly sheep but some goats also present; (ePPN) early Pre-Pottery Neolithic; (Epi) Epipaleolithic; (MP) Middle Paleolithic; (UP) Upper Paleolithic. (Epi-Natuf) Natufian is a late Epipaleolithic plant-cultivating culture. Geographic symbols: (NL) Northern Levant; (SL) Southern Levant; (M) Mediterranean. Whereas caprine mortality data are emphasized in this study, comparison data on mountain gazelles (*Gazella gazella*) and roe deer (*Capreolus capreolus*) are included from earlier periods.

Table S5, continued.

b. JPO SYSTEM:

Culture Period	Region	Site	Level/ Layer/Phase	Taxon	total MNE	% juvenile	% prime adult	% old adult	Source
Early PPN	Anatolia	Aşıklı	2I-J	*Ovis* +	26	23	65	12	this study
Early PPN	Anatolia	Aşıklı	3	*Ovis* +	46	26	67	7	this study
Early PPN	Anatolia	Aşıklı	4	*Ovis* +	92	51	41	8	this study
Early PPN	Anatolia	Aşıklı	5	*Ovis* +	14	71	15	14	this study
Early PPN	Cyprus	Shillourokambos	(Sa) Ancienne A1-C	*Ovis+Capra*	47	21	66	13	Vigne et al. (2): Guilaine et al. (3)
Early PPN	Cyprus	Shillourokambos	(Sm) Moyenne A1-B	*Ovis+Capra*	56	34	52	14	Vigne et al. (2): Guilaine et al. (3)
PPN	Cyprus	Shillourokambos	(Sr) Recente	*Ovis+Capra*	15	20	73	7	Vigne et al. (2): Guilaine et al. (3)
PPN	Anatolia	Gritille	Late PPNB, phase B	*Ovis+*	40	62	38	0	Stein (4)
PN	Aeg. Greece	Franchthi	(Ff) FN	*Ovis+Capra*	31	65	22	13	Munro & Stiner (5)
PN	Aeg. Greece	Franchthi	(Fl) LN	*Ovis+Capra*	41	66	24	10	Munro & Stiner (5)
PN	Aeg. Greece	Franchthi	(Fm) MN	*Ovis+Capra*	46	59	39	2	Munro & Stiner (5)
PN	Aeg. Greece	Franchthi	(Fe) EN	*Ovis+Capra*	17	82	18	0	Munro & Stiner (5)
PN	Aeg. Greece	Franchthi	(Fi) IN	*Ovis+Capra*	29	93	7	0	Munro & Stiner (5)
PN	Anatolia	Erbaba	all	*Ovis+Capra*	216	75	23	2	Arbuckle (6)
PN	Anatolia	Köşk	II-V	*Ovis+Capra*	328	64	30	5	Arbuckle (7)
PN	Anatolia	Çatalhöyük	(C1) PN North/ BACH/Summit	*Ovis+*	10	70	30	0	Russell & Martin (8)
PN	Anatolia	Çatalhöyük	(C2) South XII-VII	*Ovis+*	28	54	46	0	Russell & Martin (8)
PN	Anatolia	Çatalhöyük	(C3) South pre-XII	*Ovis+*	23	74	17	9	Russell & Martin (8)
PN	Anatolia	Ulucak	(Uiv) IV	*Ovis+Capra*	30	37	60	3	Çarkırlar (9)
PN	Anatolia	Ulucak	(Uvl) V late	*Ovis+Capra*	33	70	27	3	Çarkırlar (9)
PN	Anatolia	Ulucak	(Uve) V early	*Ovis+Capra*	29	52	41	7	Çarkırlar (9)
PN	Anatolia	Ulucak	(Uvi) VI	*Ovis+Capra*	26	50	46	4	Çarkırlar (9)
Epi	Anatolia (M)	Hallan Çemi	all	*Ovis+Capra*	24	21	71	8	Starkovich & Stiner (13)
Epi	Anatolia (M)	Karain 1	1	*Ovis* +	93	41	57	2	Atıcı (10)
Epi	Anatolia (M)	Karain 2	2	*Ovis* +	46	41	57	2	Atıcı (10)
Epi	Anatolia (M)	Öküzini 2	2	*Ovis* +	85	35	61	4	Atıcı (10)
Epi	Anatolia (M)	Öküzini 3	3	*Ovis* +	40	48	50	2	Atıcı (10)
Epi	Anatolia	Derikli Cave	na	*Capra aegagrus*	?	45	44	11	Arbuckle & Erek (14)
UP	Hatay (NL)	Üçağızlı I	B-B3	*C. capreolus.*	24	17	75	8	Stiner (11)
UP	Hatay (NL)	Üçağızlı I	F-I	*C. capreolus*	26	42	58	0	Stiner (11)
UP	Hatay (NL)	Üçağızlı I	F-I	*Capra aegagrus.*	54	26	63	11	Stiner (11)
MP	Hatay (NL)	Üçağızlı II	B2	*C. capreolus*	15	7	80	13	Stiner (11)
MP	Hatay (NL)	Üçağızlı II	all	*Capra aegagrus*	35	26	68	6	Stiner (11)
Epi-Natuf	Israel (SL)	Hayonim Terrace	all	*G. gazella*	28	46	22	32	Munro data, in (12)
Epi-Natuf	Israel (SL)	Hayonim Cave	all	*G. gazella*	19	47	26	26	Munro data, in (12)
Epi	Israel (SL)	Hayonim Cave	all	*G. gazella*	11	45	55	0	Stiner (12)
UP	Israel (SL)	Kebara Cave	all	*G. gazella*	85	46	46	8	Speth & Tchernov (15)
MP	Israel (SL)	Kebara Cave	all	*G. gazella*	316	30	62	8	Speth & Tchernov (15)
MP	Israel (SL)	Hayonim Cave	all	*G. gazella*	20	25	70	5	Stiner (12)
Epi	Lebanon (NL)	Ksar 'Akil	I-V	*Capra aegagrus*	43	14	56	30	Kersten (16)
Epi	Italy (M)	Grotta Polesini	all	*C. capreolus*	202	21	66	13	Stiner (17)
Epi	Italy (M)	Grotta Polesini	all	*R. rupicapra*	79	48	27	25	Stiner (17)

Epi	Italy (M)	Grotta Polesini	all	*Capra ibex*	13	0	85	15	Stiner (17)
UP	Italy (M)	Riparo Mochi	C-D	*Capra ibex*	11	36	64	0	Stiner (17)
MP	Italy (M)	Grotta Breuil	Br	*Capra ibex*	16	37	26	37	Stiner (17)
MP	Italy (M)	Grotta Breuil	B3/4	*Capra ibex*	30	0	87	13	Stiner (17)

Notes: (*Ovis*+) Mostly sheep but some goats also present; (ePPN) early Pre-Pottery Neolithic; (Epi) Epipaleolithic; (MP) Middle Paleolithic; (UP) Upper Paleolithic. (Epi-Natuf) Natufian is a late Epipaleolithic culture that harvested wild cereals. Geographic symbols: (NL) Northern Levant; (SL) Southern Levant; (M) Mediterranean. Whereas caprine mortality data are emphasized in this study, comparison data on mountain gazelles (*Gazella gazella*) and roe deer (*Capreolus capreolus*) are included from earlier periods.

Table S6. Time frames for key Neolithic sites.

Site	Time range, cal BC	Sources (^{14}C)
Franchthi Cave (Initial-Late)	6800 – 3200	Demoule & Perlès (18); Perlès et al. (19)
Köşk Höyük (V-II)	6300 – 5500	Arbuckle (7)
Erbaba	6500 – 6000	Arbuckle (6)
Gritille (phase B)	6800 – 6400	Stein (4)
Ulucak (VI-IV)	7000 – 5700	Çarkırlar (9)
Çatalhöyük (pre-XII-VII and later)	7150 – 5900	Marciniak et al. (20); Bayliss et al. (21)
Shillourokambos (ancienne-recente)	8400 – 7000	Vigne et al. (2); Guilaine et al. (3)
Aşıklı Höyük, Level 2 (J-A)	7750 – 7300	Quade et al. (22)
Aşıklı Höyük, Level 3	8000 – 7700	Quade et al. (22)
Aşıklı Höyük, Levels 5-4	8400 – 8000	Quade et al. (22)

Table S7. Dental data for AH caprines from the old excavations based on Grant's (1) age-scoring codes by phase groups within Level 2, divided into eight age cohorts.

Level 2 phases	dP_4 (a-e)	dP_4 (f-n)	P_4 (b-c)	P_4 (d-e)	P_4 (f-g)	P_4 (h-j)	P_4 (k-l)	P_4 (m-n)	Total MNE
2SPB	0	11	0	1	7	0	0	0	19
2C-A	2	30	1	13	62	21	1	0	130
2F-D	2	35	1	20	77	13	1	0	149
2H-G	5	30	0	27	34	5	1	0	102
2J-I	2	27	0	23	27	5	0	0	84

Note: (SPB) Special Purpose Building area on south area of mound, coeval with Level 2C-A.

Table S8. Age structures for AH caprines from the old excavations by phase group within Level 2, divided into three-cohorts in the (a) JSA and (b) JPO systems, respectively.

a. JSA (Juvenile-Subadult-Adult) System:

Level 2 phases	% Juvenile	% Subadult	% Adult	Total MNE
2SPB	58	05	37	19
2C-A	25	11	65	130
2F-D	25	14	61	149
2H-G	34	26	39	102
2J-I	35	27	38	84

b. JPO (Juvenile-Prime Adult-Old Adult) System:

Level 2 phases	% Juvenile	% Prime adult	% Old adult	Total MNE
2SPB	58	42	0	19
2C-A	25	75	1	130
2F-D	25	74	1	149
2H-G	34	65	1	102
2J-I	35	65	0	84

Note: (SPB) Special Purpose Building area on south area of mound, coeval with Level 2C-A.

SI Background on pelvic morphology and fusion for sexing young caprines

We used a visual method for separating young female and male caprines that relies on morphological characteristics of the complexly shaped pubis-acetabulum zone of the pelvis (23). The method is not error-proof but is arguably the most appropriate for our purposes. The pelvis is one of the few elements that can be sexed in young caprines. Our goal was to capture sex ratio information in individuals less than 1 year of age at the time of death. At AH and the sister site of Musular, only about 15% of the specimens that could be sexed on morphological criteria could also be measured due to breakage. However, other studies indicate that pelvis character data are as reliable, if not more reliable, than measurement data for this purpose.

Greenfield (24) has evaluated the potential of sexing caprines from pelves, including relatively young specimens, on the basis of both character data and measurement data. He notes some ambiguity in the use of characters to sex the acetabulum, but significant character differences clearly exist between males and females from a relatively young age. His tabulated measurement data show similar levels of ambiguity as do the character data; most of the measurement data fit a clear pattern but some large female measurements fall within the male range and small males fall within the female range. Greenfield used a multiple-age sample in his measurement study, and the number of young animals examined was small. It therefore is impossible to know if the dimorphism he observed in the measurement data for the younger age groups was statistically significant. Importantly, similar degrees of ambiguity were found in character data and measurement data in that study. While males and females can be reliably separated using character or measurement data in most cases, one must recognize that exceptions are not uncommon.

A study by Prummel and Frisch (23) also concludes that the complexly shaped morphological features of the pelvis can be distinguished using characters, and that this approach may be preferable to measurements for sexing animals less than one year of age. There are two reasons for this: (a) young individuals do not yet show statistically observable sexual *size* dimorphism (see also 25), but they do differ in shape; and (b) young individuals experience rapid growth spurts that result in wide, overlapping size ranges between males and females in this age group. We conclude that character traits which focus on shape are probably as reliable, if not more reliable, than measurement data for distinguishing the sexes from pelvic bones in young caprines.

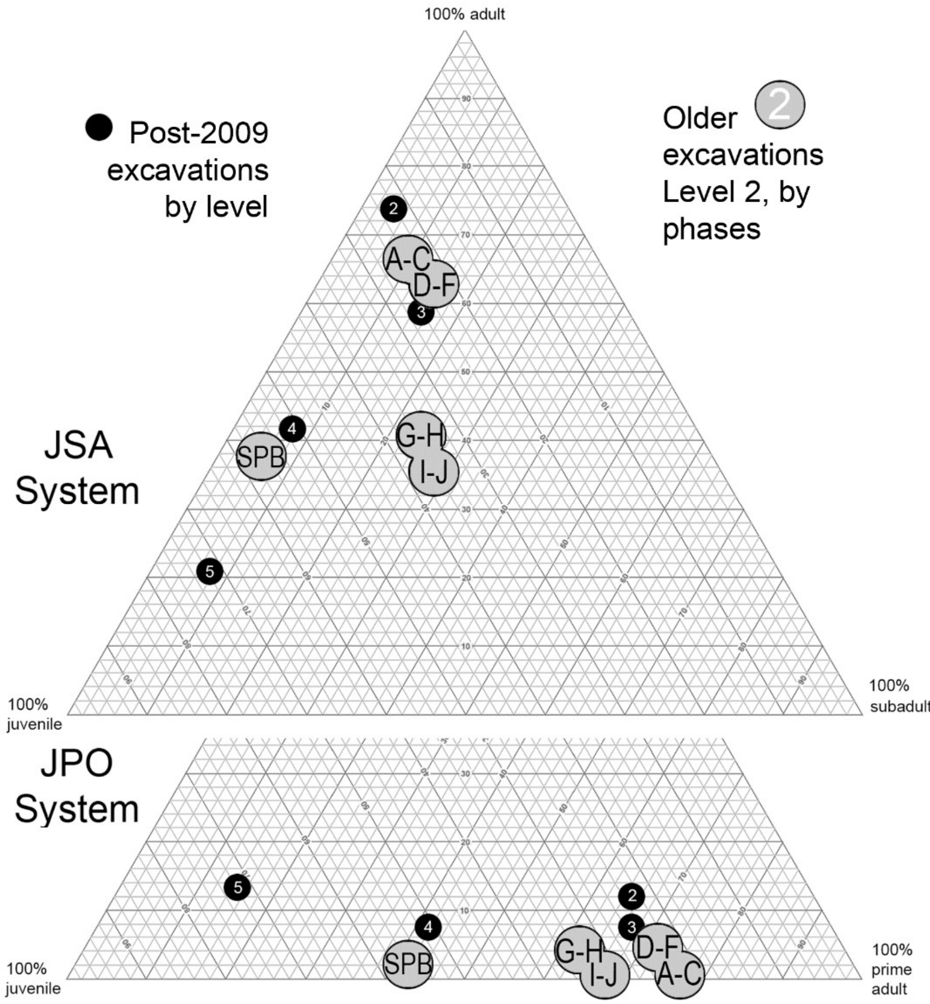

Figure S4. Tri-polar comparison of AH caprine mortality patterns from successive phases of Level 2, using data from the old excavation (sub-optimal recovery), and the post-2009 (full recovery) excavations from all levels. The sample from the Special Purpose Building (SPB) area on the southern end of the mound is coeval with phases 2A-C in the residential areas.

SI Background and results on caprine body size variation

Linear osteometric measurements of bone elements were used to track variation in caprine body mass/size (26) using the Logarithmic Size Index (LSI; 27-28). Wild females of *Ovis* and *Capra* from the Cilician mountains of southern Turkey serve as recent reference individuals for the comparisons. LSI is calculated as log(x/m), where *x* is the measurement of the archaeological bone, and *m* is the equivalent measurement from the reference animal. The LSI values were examined statistically using mixture analysis with the PAST program (29).

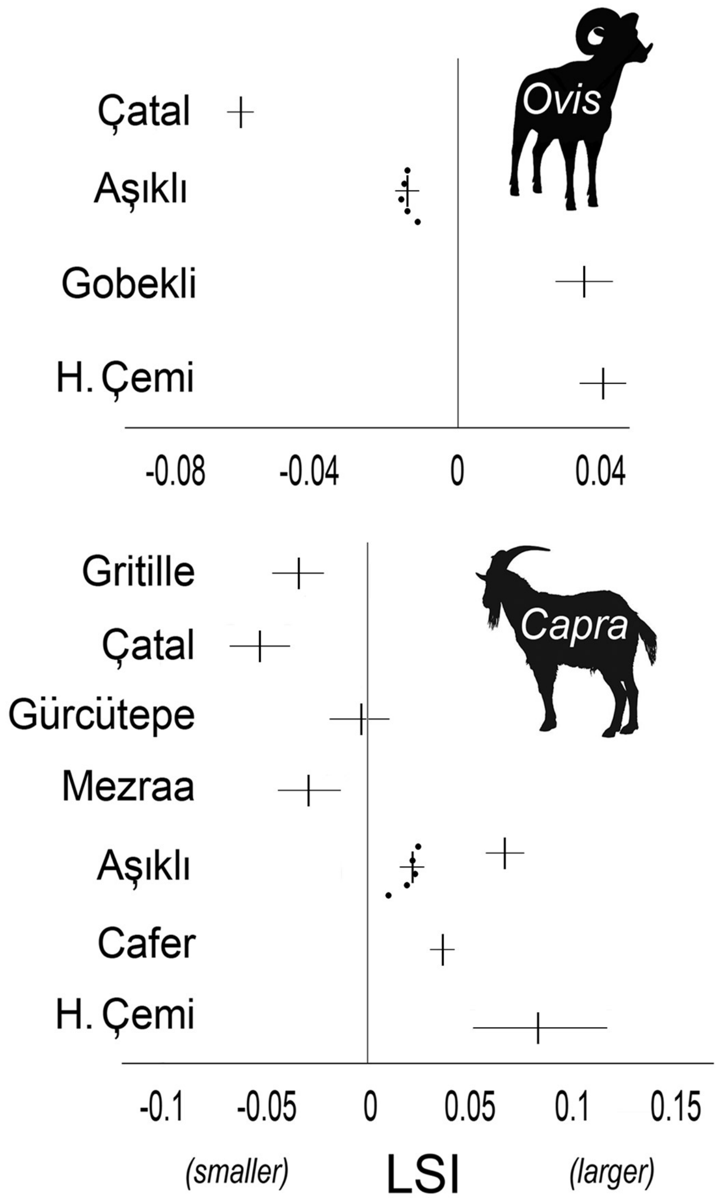

Figure S5. Size variation in sheep and in goats from time-ordered Anatolian Neolithic sites (Hallan Çemi is the oldest) based on LSI. Large crosses are mean LSI values and standard error by site for each species; small circles are mean LSI values by successive levels and phases (Levels 4 through 2C-A) within the AH series. See Tables S9-S10 for more information. Results from (26).

Table S9. Logarithmic Size Index statistics (LSI) for *Ovis* by phase groups in Levels 4 through 2 at AH and for comparison assemblages from other sites (26).

a. *Ovis* LSI statistics by layer in AH and for other sites:

Site/phase group	N	Mean	stand error	median	sd
Aşıklı Höyük series:					
AH 4	176	-0.011	0.002	-0.01	0.031
AH 3E-C	171	-0.015	0.002	-0.015	0.032
AH 3B-2H	1017	-0.017	0.001	-0.014	0.036
AH 2G-D	1472	-0.016	0.001	-0.015	0.034
AH 2C-A	1072	-0.015	0.001	-0.014	0.032
Inter-site comparison:					
Hallan Çemi	390	0.042	0.003	0.038	0.05
Göbekli	50	0.036	0.004	0.035	0.03
AH (all levels)	3909	-0.016	0.001	-0.01	0.034
Çatalhöyük	230	-0.06	0.002	-0.064	0.037

Note: Hallan Çemi is the earliest assemblage (terminal Pleistocene) and Çatalhöyük the youngest.

b. *Ovis* LSI T-test results between level/phase group pairs at AH:

	L4-3E vs 3C	3E-C vs 3B2-H	3B-2H vs 2G-D	2G-D vs 2C-A
DF	344	42	54	50
T-value	1.02676357	-2.121	-1.022	0.194
P(T<=t) 2-sided	0.305	0.040	0.311	0.847

Notes: The AH osteometric data combine samples from the old and the post-2009 excavations.

Table S10. Logarithmic Size Index statistics (LSI) for *Capra* by phase groups in Levels 4 through 2 at AH and for comparison assemblages from other sites (26).

a. *Capra* LSI statistics by layer in AH and for other sites:

Site/phase	N	Mean	stand error	median	sd
Aşıklı Höyük series:					
AH 4	67	0.01	0.005	0	0.045
AH 3E-C	34	0.021	0.007	0.02	0.043
AH 3B-2H	174	0.024	0.003	0.02	0.042
AH 2G-D	297	0.023	0.003	0.02	0.044
AH 2C-A	254	0.027	0.003	0.03	0.046
Inter-site comparison:					
Hallan Çemi	5	0.087	0.017	0.095	0.039
Çafer	180	0.038	0.003	0.043	0.044
AH (all levels)	826	0.023	0.002	0.02	0.045
Mezraa PPNB	33	-0.03	0.008	-0.034	0.045
Gürcütepe	59	-0.004	0.007	-0.014	0.056
Çatalhöyük	24	-0.054	0.007	-0.055	0.033
Gritille	55	-0.035	0.006	-0.043	0.047

Note: Hallan Çemi is the earliest assemblage (terminal Pleistocene) and Gritille the youngest.

b. *Capra* LSI T-test results between level/phase group pairs at AH:

	AH4-3E vs 3C	3E-3C vs 3B-2H	3B-2H vs 2G-2D	2G-2D vs 2C-2A
DF	68	46	374	526
T-value	-1.165	-0.395	0.370	-1.076
P(T<t) 2-sided	0.248	0.695	0.712	0.283

Notes: The AH osteometric data combine samples from the old and the post-2009 excavations.

SI References

1. A. Grant, “The use of tooth wear as a guide to the age of domestic animals” in Ageing and Sexing Animal Bones from Archaeological Sites, B. Wilson, C. Grigson, S. Payne, Eds. (British Archaeological Reports, Oxford, 1982), pp. 91-108.

2. J.-D. Vigne, I. Carrère, F. Briois, J. Guilaine, The early process of mammal domestication in the Near East: New evidence from the Pre-Neolithic and Pre-Pottery Neolithic in Cyprus. *Curr Anthropol* 52, S255-S271 (2011).

3. J. Guilaine, F. Briois, J.-D. Vigne, Eds., Shillourokambos: Un établissement néolithique pré-céramique à Chypre les fouilles du secteur 3. (CNRS Éditions, 2021).

4. G. J. Stein, “Strategies of risk reduction in herding and hunting systems of Neolithic southeast Anatolia” in Early Animal Domestication and Its Cultural Context, P. Crabtree, D. Campana, K. Ryan, Eds. (MASCA, University Museum of Archaeology and Anthropology, Univ. of Pennsylvania, 1989), pp. 87-97.

5. N. D. Munro, M. C. Stiner, A zooarchaeological history of the Neolithic occupations at Franchthi Cave and Paralia in southern Greece. *J Anthropol Arch* 58, 101162 (2020). https://doi.org/10.1016/j.jaa.2020.101162

6. B. S. Arbuckle, “Caprine exploitation at Erbaba Höyük: A Pottery Neolithic village in Central Anatolia” in Archéozoologie de l'Asie du Sud-Ouest et des régions adjacentes. (*Maison de l'Orient et de la Méditerranée*, 49, Lyon, 2008b), pp. 345-365.

7. B. S. Arbuckle, Zooarchaeology at Köşk Höyük. *Kazı Sonuçları Toplantısı* 27, 124-136 (2008a).

8. N. Russell, L. Martin, “The Çatalhöyük mammal remains” in Inhabiting Çatalhöyük: Reports from the 1995-99 seasons, I. Hodder Ed. (McDonald Institute for Archaeological Research, Cambridge, 2005), pp. 33-98.

9. C. Çakırlar, The evolution of animal husbandry in Neolithic central-west Anatolia: The zooarchaeological record from Ulucak Höyük (c. 7040-5660 cal. BC, Izmir, Turkey). *Anatolian Studies* 62, 1-33 (2012).

10. L. Atıcı, Implications of age structures for Epipaleolithic hunting strategies in the Western Taurus Mountains, southwest Turkey. *Anthropozoologica* 44, 13-39 (2009).

11. M. C. Stiner, An unshakeable Middle Paleolithic? Trends versus conservatism in the predatory niche and their social ramifications. *Curr Anthropol* 54, S288-S304 (2013).

12. M. C. Stiner, The Faunas of Hayonim Cave, Israel: A 200,000-Year Record of Paleolithic Diet, Demography, and Society (Peabody Museum Press, Cambridge, 2005).

13. B. M. Starkovich, M. C. Stiner, Hallan Çemi Tepesi: High-ranked game exploitation alongside intensive seed processing at the Epipaleolithic-Neolithic transition in Southeastern Turkey. *Anthropozoologica* 44, 41-61 (2009).

14. B. S. Arbuckle, C. M. Erek, Late Epipaleolithic hunters of the central Taurus: Faunal remains from Direkli Cave, Kahramanmaraş, Turkey. *Internat J Osteoarchaeol* 22, 694-707 (2010).

15. J. D. Speth, E. Tchernov. 2007. “The Middle Paleolithic occupations at Kebara Cave: A faunal perspective” in The Middle Paleolithic Archaeology of Kebara Cave, Mount Carmel, Israel, Part 1, O. Bar-Yosef and L. Meignen, Eds. (Peabody Museum Press, Cambridge, 2007), pp. 165-260.

16. A. M. P. Kersten, Age and sex composition of Epipalaeolithic fallow deer and wild goat from Ksar ‘Akil. *Palaeohistoria* 29, 119–131 (1987).

17. M. C. Stiner, Honor among Thieves: A Zooarchaeological Study of Neandertal Ecology. (Princeton University Press, 1994).

18. J.-P. Demoule, C. Perlès, The Greek Neolithic: A new review. *J World Prehist 7*, 355-416 (1993).

19. C. Perlès, A. Quiles, H. Valladas, Early seventh-millennium AMS dates from domestic seeds in the Initial Neolithic at Franchthi Cave (Argolid, Greece). *Antiquity* 87, 1001-1015 (2013).

20. A. Marciniak, M. Z. Barański, A. Bayliss, L. Czerniak, T. Goslar, et al., Fragmenting times: Interpreting a Bayesian chronology for the late Neolithic occupation of Çatalhöyük East, Turkey. *Antiquity 89*, 154-176 (2015).

21. A. Bayliss, F. Brock, S. Farid, I. Hodder, J. Southon, R. E. Taylor, Getting to the bottom of it all: A Bayesian approach to dating the start of Çatalhöyük. *J World Prehist 28*, 1-26 (2015).

22. J. Quade, M. C. Stiner, A. Copeland, A. E. Clark, M. Özbaşaran M, "Summary of carbon-14 dating of the cultural levels of Aşıklı Höyük" in The Early Settlement of Aşıklı Höyük: Essays in Honor of Ufuk Esin, M. Özbaşaran, G. Duru, M. C. Stiner, Eds. (Ege Yayınları, Istanbul, 2018), pp. pp. 43-56.

23. W. Prummel, H.-J. Frisch, 1986. A guide to the distinction of species, sex and body side in bones of sheep and goats. *J Archaeol Sci* 13, 567–578 (1986).

24. H. J. Greenfield, "Sexing fragmentary ungulate acetabulae" in Recent Advances in Ageing and Sexing Animal Bones, D. Ruscillo Ed. (Oxbow Books, Oxford, 2006), pp. 68-86.

25. M. A. Zeder, A metrical analysis of a collection of modern goats (*Capra hircus aegagrus* and *C. h. hircus*) from Iran and Iraq: Implications for the study of caprine domestication. *J Archaeological Sci* 28(1), 61-79 (2001).

26. H. Buitenhuis, J. Peters, N. Pöllath, M. C. Stiner, N. D. Munro, Ö. Saritaş, "The faunal remains from Level 3 and 2 of Aşıklı Höyük: Evidence for early management practices" in M. Özbaşaran, G. Duru, M. C. Stiner, Eds., The Early Settlement of Aşıklı Höyük: Essays in Honor of Ufuk Esin, (Ege Yayınları, Istanbul, 2018), pp. 281-323.

27. H. P. Uerpmann, Animal bone finds and economic archaeology: A critical study of 'osteo-archaeological' method. *World Archaeol* 4, 307-322 (1979).

28. R. H. Meadow, "The use of size index scaling techniques for research on archaeozoological collections from the Middle East" in Historia animalium ex ossibus: Beiträge zur Paläoanatomie, Archäologie, Ägyptologie, Ethnologie und Geschichte der Tiermedizin, C. Becker, H. Manhart, J. Peters, J. Schibler, Eds. (Verlag Marie Leidorf, Rahden, 1999), pp. 285-300.

29. Ø. Hammer, D. A. T. Harper, P. D. Ryan, PAST: Paleontological statistics software package for education and data analysis. *Palaeontologica Electronica* 4, 9 (2001).