Uruk Colonies and Anatolian Communities: An Interim Report on the 1992–1993 Excavations at Hacınebi, Turkey

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Abstract

The first Mesopotamian city-states in the Uruk period (ca. 3800–3100 B.C.) pursued a strategy of commercial expansion into neighboring areas of the Zagros Mountains, Syria, and southeastern Anatolia. Recent research in these areas has located several Uruk outposts, in what is apparently the world's earliest-known colonial system. Although some Uruk "colonies" have been excavated, virtually nothing is known about either the operation of this system or its role in the development of local polities in Anatolia.

Excavations at the site of Hacınebi, on the Euphrates River trade route, investigate the effects of the "Uruk Expansion" on the social, economic, and political organization of southeastern Anatolia during the fourth millennium B.C. Hacınebi has two main Late Chalcolithic occupations—a pre-contact phase A and a later contact phase B with high concentrations of Uruk ceramics, administrative artifacts, and other Mesopotamian forms of material culture. The Hacınebi excavations thus provide a rare opportunity to investigate the relationship between the Uruk colonies and the local populations with whom they traded, while clarifying the role of long-distance exchange in the development of complex societies in Anatolia.

Several lines of evidence suggest that the period of contact with Mesopotamia began in the Middle Uruk period, earlier than the larger colonies at sites such as Habuba Kabira-South and Jebel Aruda in Syria. The concentrations of Uruk material culture and the patterns of food consumption in the northeastern corner of the Local Late Chalcolithic settlement are consistent with the interpretation that a small group of Mesopotamian colonists lived as a socially distinct enclave among the local inhabitants of Hacınebi. There is no evidence for either Uruk colonial domination or warfare between the colonists and the native inhabitants of Hacınebi. Instead, the presence of both Anatolian and Mesopotamian seal impressions at the site best fits a pattern of peaceful exchange between the two groups. The evidence for an essential parity in long-term social and economic relations between the Mesopotamian merchants and local inhabitants of Hacınebi suggests that the organization of prehistoric Mesopotamian colonies differed markedly from that of the better-known 16th–20th century European colonial systems in Africa, Asia, and the Americas.*

* The 1992 and 1993 field seasons of the Joint Şanlıurfa Museum–Northwestern University salvage excavations at Hacınebi Tepe, Turkey were codirected by Gil Stein (Northwestern University) and Adnan Mısır (Şanlıurfa Museum). The excavations were funded with support from the National Endowment for the Humanities, National Geographic Society, the Metropolitan Museum of Art, Northwestern University, and generous private donors.

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The following abbreviations are used:

Adams and Nissen	R. McC. Adams and H. Nissen, *The Uruk Countryside* (Chicago 1972).
Algaze 1989	G. Algaze, "The Uruk Expansion: Cross-cultural Exchange in Early Mesopotamian Civilization," *CurrAnthr* 30 (1989) 571–608.
Algaze 1993	G. Algaze, *The Uruk World System* (Chicago 1993).
Deve Hüyük	P.R.S. Moorey, *Cemeteries of the First Mil-*

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HACINEBI TEPE 1993: ARCHAEOBOTANICAL REPORT

Naomi F. Miller

During the 1993 excavation season at Hacınebi, approximately 83 soil samples were taken from Late Chalcolithic and Achaemenid–Hellenistic contexts. The floated material is now at the University of Pennsylvania Museum (MASCA). The examination of 19 of these samples supplements the results obtained from seven samples analyzed in 1992.[77] This report repeats some of the data presented earlier because information has been added from the heavy fractions sorted in the field in 1993 and some of the 1992 determinations have been corrected (table 8).[78]

Hacınebi Tepe lies on the border between steppe and open oak forest.[79] Today, pistachio groves cover the surrounding countryside and the site itself. A variety of plants common to the Anatolian *Artemisia* and grassy steppe and other open ground plant associations grow on Hacınebi Tepe. Archaeobotanical analysis has concentrated on the Late Chalcolithic (fourth-millennium) deposits. It was hoped that distinctive chronological, ethnic, or functional aspects of ancient plant use would become apparent because 1) the Late Chalcolithic deposits include an early (phase A) and a late (phase B) component, 2) the late component includes a physically distinct "Uruk" area, and 3) several different simple "domestic" areas were excavated. At this point it is only possible to say either that no such distinctions existed or that too few samples bearing on these questions have been studied.

As was true of the samples analyzed in 1992, the plant remains consist of charred wood, seeds, and other plant parts (mainly cereal straw and rachis fragments). There is also a small component of uncharred, possibly ancient seeds. The seed types include cultigens and wild plants. No pure caches of crop plants were encountered (table 9).

CROP AND FOOD PLANTS

Barley (*Hordeum vulgare*) is the most common and numerous crop seed type in these samples, about 80% of the cereal identified to species. The barley may belong to the six-row type; among the recognizable intact grains, 23 could be twisted and 13 are definitely straight. Rachis internodes also occur. Three kinds of domesticated wheat have been recognized. Einkorn (*Triticum monococcum*) and emmer (*Triticum dicoccum*) are of approximately equal importance in the Hacınebi assemblage, about 8% each of the cereal identified to species. Spikelet forks might come from either of these two types. Bread wheat or durum (*Triticum aestivum/durum*) is a minor component. Two pulses have been identified, lentil (*Lens*) and grasspea (*Lathyrus*). Today lentils are generally reserved for human food. Grasspea is almost invariably fed to animals, because consumption of large quantities of this pulse leads to lathyrism, a potentially fatal condition.[80]

The only unequivocal fruit remains are the few remains of grape (*Vitis vinifera*) pips or peduncles. Most of this evidence comes from the possibly mixed sample, HN333, but we can now add a fragment from HN1150 (Late Chalcolithic phase A). Grape is not unexpected, because it grows naturally in the Euphrates valley.[81] Elsewhere along the Euphrates (e.g., at Kurban Höyük), there are a few finds of Late Chalcolithic grape. Grape does not seem to have become an important part of the economy anywhere in the Near East until the third millennium,[82] by which time it was domesticated. Some tentatively identified fig (*Ficus*) seeds occur. Fig trees occur in the native vegetation of the area in a wide variety of habitats.[83]

Small quantities of nutshell have been found. Surface pitting on some suggests that these may be almond (*Prunus* sp.). Other fragments may include pistachio (*Pistacia* sp.). Had the heavy fraction been left unsorted, almost no nutshell would have been found. Only a few seed fragments of flax (*Linum* sp.) were found. The remains do not allow one to determine whether it was the fiber or oil crop, or just a naturally occurring wild plant.

Crop and food plants that occur primarily in fragmentary form have been recorded by weight. For those who prefer to see seed counts, plausible conversion figures based on whole seeds from Hacınebi appear in table 10.

[77] N.F. Miller, "Appendix 1: Some Archaeobotanical Remains from the 1992 Excavation Season at Hacınebi Tepe," *Anatolica* 20 (1994) 168–72.

[78] Guillermo Algaze kindly offered to have the Titriş Project process the Hacınebi samples. Abbas Kartal floated the samples using the system built by Mark Nesbitt, then of the British Institute of Archaeology in Turkey. Kartal also sorted the heavy fraction larger than about 5 mm. I extracted plant remains from the residue that remained in a 2-mm mesh sieve. Soil volume was recorded in liters at the time of processing, and is reported in table 9.

In the laboratory, the flotation samples were poured into a set of nested sieves (4.75 mm, 2 mm, 1 mm, 0.5 mm, and 0.088 mm). All whole seeds larger than 0.5 mm were separated out, as were seed and identifiable rachis fragments larger than 1 mm. Material larger than 2 mm was completely sorted. A binocular stereoscopic microscope (7.5–75 ×) was used. Identifications are based on seed illustrations from seed atlases, archaeobotanical reports, and modern comparative material.

[79] M. Zohary, *Geobotanical Foundations of the Middle East* (Stuttgart 1973).

[80] W. Lewis and M. Elvin-Lewis, *Medical Botany* (New York 1977) 44.

[81] D. Zohary and P. Spiegel-Roy, "Beginnings of Fruit Growing in the Old World," *Science* 187 (1975) 319–27.

[82] N.F. Miller, "The Near East," in W. van Zeist, K.-E. Behre, and K. Wasylikowa eds., *Progress in Old World Palaeoethnobotany* (Rotterdam 1991) 133–60, 150.

[83] Cf. P. Davis ed., *Flora of Turkey* 7 (Edinburgh 1982) 644.

Table 8. Catalogue of Analyzed Flotation Samples from Hacınebi

Op.	Locus	Lot	HN no.	Date Analyzed	Late Chalcolithic Phase	Deposit Type
1	11	11	226	10/8/92	B	fill
1	13	16	241	10/9/92	B-Local	fill
1	20	27	326	10/7/92	B	fill
1	21	25	320	10/16/92	B	fill
1	30	30	333	10/28/92	B	pit
1	34	37	388	10/16/92	B	fill
1	98	112	1150	11/29/93	A2	pit
1	101	115	1162	11/29/93	A2	trash
2	28	69	888	11/23/93	A2	ash
2	29	70	927	11/29/93	A2	ash
2	31	71	932	11/24/93	A2	?
4	34	77	2149	11/17/93	B-Late Local	ash
4	46	106	2442	12/6/93	B	fire
4	49	111	2463	12/3/93	B	pit
4	52	115	2477	12/6/93	B	pit
5	25	47	1528	11/15/93	–	trash
5	37	63	1582	11/16/93	–	ash
5	46	81	1973	11/12/93	–	trash
5	49	89	1988	11/15/93	–	trash
5	57	98	2026	11/15/93	–	ash
5	58	100	2028	11/11/93	–	fire
6	46	56	2688	11/30/93	B-Local	fill
1	12	10	205	10/15/92	B-Uruk	fill
4	33	75	2138	12/2/93	B-Uruk	pit
4	36	83	2173	11/24/93	B-Uruk	pit
7	27	38	2236	11/24/93	B-Uruk	pit

WILD PLANTS

The small amount of wood charcoal identified so far is primarily oak (*Quercus*),[84] but the area around Hacınebi was not dense forest. For that reason, the wild plants probably represent a combination of steppe-forest plants, field weeds, and riparian vegetation. Most of the genera are known from other sites in southeastern Turkey and northern Syria. Some of the taxa found archaeologically today grow on the bluff top and slope surrounding Hacınebi's grove (e.g., grasses such as *Hordeum murinum*-type, *Hordeum spontaneum*-type, *Aegilops*, *Taeniatherum caput-medusae*, *Avena*; small-seeded legumes such as *Astragalus*, *Medicago*; and *Hypericum* [St. John's wort] and *Papaver* [poppy]), or in the grove itself (e.g., *Heliotropium*). Many of the plants characteristic of the uncultivated area today (e.g., *Artemisia*, *Capparis spinosa*) or the disturbed areas (e.g., *Prosopis*, *Peganum harmala*, *Cynodon dactylon*, *Tribulus terrestris*) have not been seen in the archaeological samples examined to date.

The most numerous seeds tend to be the most ubiquitous. Grasses dominate the assemblage, especially *Lolium* and as yet undetermined Gramineae 1 (cf. *Phleum*-type) and Gramineae 2. A small-seeded legume, clover or melilot (*Trifolium/Melilotus*), is widespread, though not particularly numerous.

Uncharred seeds, primarily members of the borage family, were also encountered. They are listed in table 9, but have not been included in the numerical comparisons. There is a good chance that many are not ancient, and even if ancient, their numbers are not directly comparable to the charred seeds due to different circumstances of preservation.[85]

DISTRIBUTION OF TYPES IN SPACE AND TIME

At Hacınebi, 61 taxa have been recognized to genus or species. A cumulative frequency graph of these 61 seed types shows that as more samples are analyzed, taxa are likely to be added to the assemblage, though at a diminishing rate. Now, after 26 samples have been analyzed, the rate of the addition of new taxa seems to be leveling off. The trend of data in figure 33 suggests that new types will continue to be discovered; only two-thirds of these types were found in the first 12 samples analyzed. This means that we are just beginning to understand the range of types found in the Late Chalcolithic levels. (The Achaemenid–Hellenistic samples are especially likely to include new taxa.) Most of the types represent only minor components of the assemblage (e.g., about a third occur in only one sample apiece). For that reason presence/absence differences among the minor components are more readily explained by chance than by major functional or environmental variables. Examination of only the most frequent taxa

[84] Miller (supra n. 77) and general impression from scanning 1993 samples.

[85] For mineralization vs. charring, see discussion in W. van Zeist and H. Buitenhuis, "Palaeobotanical Studies of Neolithic Erbaba, Turkey," *Anatolica* 10 (1983) 47–89; Miller (supra n. 82) 155.

Table 9. Plant Remains from Hacınebi Tepe

HN no.	226	241	326	320	333	388	1150	1162	888
Op., Locus, Lot	1,11,11	1,13,14	1,20,27	1,21,25	1,30,30	1,34,37	1,98,112	1,101,115	2,28,69
Date	LC B	LC B	LC B	LC B	LC B	LC B	LC A	LC A	LC A
Volume (l)	9	9	9	9	2.8	9	7	7.5	12
Charcoal >2 mm (g)	1.52	1.79	0.61	0.72	2.52	1.09	0.56	0.12	1.64
Seed >2 mm (g)	0.17	0.21	0.15	0.08	0.40	0.13	0.12	0.07	1.81
Rachis etc. >2 (g)	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.07
Charcoal density (g/l)	0.17	0.20	0.07	0.08	0.90	0.12	0.08	0.02	0.14
Seed/charcoal (g/g)	0.11	0.12	0.25	0.11	0.16	0.12	0.21	0.58	1.10
Weed seed (no.)	21	30	20	40	197	17	33	6	548
Weed seed/charcoal (no./g charcoal)	14	17	33	56	78	16	59	50	334
Crop and food plants									
Hordeum vulgare (g)	0.06	0.07	0.02	+	0.10	0.02	0.04		0.74
Triticum aestivum/durum (g)			0.01						0.01
T. dicoccum (g)	0.01	0.01	0.02		0.04	0.03			0.03
T. monococcum (g)	0.01						0.06		0.09
Triticum sp. (g)	0.02	0.03		0.01		0.01	+		0.12
Cereal (g)	0.10	0.14	0.15	0.09	0.39	0.09	0.06	0.05	1.47
Lathyrus (g)				0.01					
Lens (g)	0.01	0.02	0.02				0.02		0.04
Leguminosae indet. (g)		0.02		+	0.08	0.01			
Vitis (g)					0.03		+		
cf. *Prunus* (g)									
cf. *Pistacia* (g)		0.01							
nutshell/fruit pit indet.									
Ficus?									
Linum (minimum no.)							2		
Wild plants									
Heliotropium									
Gypsophila									
Silene							1		
Vaccaria		1							
Centaurea							1		
cf. *Helianthemum*									
Compositae 1					23				2
Compositae indet.									2
Cruciferae indet.									
cf. *Carex*				1					
Cyperaceae 1					3				
Euphorbia					1				
Aegilops			2	1	1		1		7
Avena									
cf. *Echinaria*									4
Hordeum murinum-type									1
Hordeum spontaneum-type									1
Lolium cf. *remotum*	17	13	4	8	4	3	16	1	106
Lolium (long)		4	1				4		2
Phalaris					1				
cf. *Taeniatherum*									34
Triticoid									
cf. *Triticum boeoticum*	1		1	1					1
Gramineae 1		6	1	6	58	7		1	23
Gramineae 2					22	1		2	98
Gramineae 3									6
Gramineae 4					3				4
Gramineae 6									
Gramineae 7									8
Gramineae 8									
Gramineae indet.			6	2	20	3	6	1	63
Hypericum				1					
cf. *Mentha*									

(continued)

Table 9. (*continued*)

HN no.	226	241	326	320	333	388	1150	1162	888
Op., Locus, Lot	1,11,11	1,13,14	1,20,27	1,21,25	1,30,30	1,34,37	1,98,112	1,101,115	2,28,69
Date	LC B	LC B	LC B	LC B	LC B	LC B	LC A	LC A	LC A
Teucrium				1					
Labiatae 1									1
Labiatae indet.									
Alhagi									1
Astragalus						1			3
Coronilla	1				6				1
Medicago									3
Trifolium/Melilotus	1	1	2	3	2	1	1	1	10
Trigonella astroites-type				1	2		1		25
Trigonella									38
Vicia/Pisum									
Leguminosae (misc.)									7
Bellevalia									1
Ornithogalum-type									
Malvaceae indet.									
Papaver					4				
Adonis									
Galium		1	1	1	1	1			5
Thymelaea					1				
Bupleurum?									
Umbelliferae indet.		2							
Valerianella									
Valerianella dentata-type									
Verbena officinalis					1				
Unknowns	1	2	2	14	44		2		91
Uncharred seeds									
Alkanna									1
Arnebia decumbens									
Lithospermum tenuifolium	1	4	6		3	5	6		5
Boraginaceae indet.									
Labiatae indet.		1							
Fumaria									
Plant parts									
Hordeum internode					6				6
Triticum aestivum/durum internode									
Triticum mono/dicoccum spikelet fork	3	6	25	3	369	7	2		24
Aegilops glume base				1					10
cf. *Taeniatherum* rachis frag.									3
Grass culm node					2				4
Vitis penduncle					3				
Misc. unk.									2

HN no.	927	932	2149	2442	2463	2477	1528	1582	1973
Op., Locus, Lot	2,29,70	2,31,71	4,37,77	4,46,104	4,49,111	4,52,11	5,25,47	5,37,63	5,46,81
Date	LC A	LC A	LC B	LC B	LC B	LC B	LC	LC	LC
Volume (l)	8	8.75	1	9.25	8.5	9	6	7	9
Charcoal >2 mm (g)	0.66	1.30	9.98	0.56	0.75	0.20	0.07	0.24	1.68
Seed >2 mm (g)	0.04	0.30	0.01	0.10	0.41	0.13	0.02	0.08	0.36
Rachis etc. >2 (g)	0.01	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.03
Charcoal density (g/l)	0.08	0.15	9.98	0.06	0.09	0.02	0.01	0.03	0.19
Seed/charcoal (g/g)	0.06	0.23	0.00	0.18	0.55	0.65	0.29	0.33	0.21
Weed seed (no.)	30	89	0	13	23	12	9	32	89
Weed seed/charcoal (no./g charcoal)	45	68	0	23	31	60	129	133	53

(continued)

Table 9. (*continued*)

HN no. **Op., Locus, Lot** **Date**	927 2,29,70 LC A	932 2,31,71 LC A	2149 4,37,77 LC B	2442 4,46,104 LC B	2463 4,49,111 LC B	2477 4,52,11 LC B	1528 5,25,47 LC	1582 5,37,63 LC	1973 5,46,81 LC
Crop and food plants									
Hordeum vulgare (g)	0.04	0.13	+	0.04	0.29	0.07	+	0.03	0.13
Triticum aestivum/durum (g)								0.02	0.01
T. dicoccum (g)		0.02							
T. monococcum (g)					0.01			+	0.02
Triticum sp. (g)	+	0.04			0.01	0.03	+		0.02
Cereal (g)	0.04	0.17		0.07	0.16	0.18	0.06	0.07	0.29
Lathyrus (g)		0.03							0.01
Lens (g)		+	+	0.01					
Leguminosae indet. (g)		+							
Vitis (g)									
cf. *Prunus* (g)				+					0.01
cf. *Pistacia* (g)									
nutshell/fruit pit indet.		0.01			0.01				
Ficus?									
Linum (minimum no.)									1
Wild plants									
Heliotropium									
Gypsophila									1
Silene									1
Vaccaria		1			1				2
Centaurea									
cf. *Helianthemum*						1			
Compositae 1				1		1			
Compositae indet.									
Cruciferae indet.									4
cf. *Carex*		1						1	
Cyperaceae 1									
Euphorbia									
Aegilops		4							3
Avena									
cf. *Echinaria*						1			2
Hordeum murinum-type		1							1
Hordeum spontaneum-type									
Lolium cf. *remotum*	3	16		3	4	1	3	13	12
Lolium (long)					1				
Phalaris									
cf. *Taeniatherum*		8							
Triticoid									
cf. *Triticum boeoticum*									
Gramineae 1	3	3		9			2		21
Gramineae 2	19	18							
Gramineae 3								1	
Gramineae 4		1							2
Gramineae 6								2	
Gramineae 7		7							
Gramineae 8	1								
Gramineae indet.	2	15			1	3		12	17
Hypericum									
cf. *Mentha*									
Teucrium					3				1
Labiatae 1									
Labiatae indet.									
Alhagi		1							
Astragalus		1			2				
Coronilla									
Medicago						1			
Trifolium/Melilotus		1			3				3
Trigonella astroites-type	2	2						1	1

(*continued*)

Table 9. (*continued*)

HN no. **Op., Locus, Lot** **Date**	927 2,29,70 LC A	932 2,31,71 LC A	2149 4,37,77 LC B	2442 4,46,104 LC B	2463 4,49,111 LC B	2477 4,52,11 LC B	1528 5,25,47 LC	1582 5,37,63 LC	1973 5,46,81 LC
Trigonella		6				1			2
Vicia/Pisum									
Leguminosae (misc.)					3		2		
Bellevalia									
Ornithogalum-type									1
Malvaceae indet.							1		
Papaver									
Adonis					1				
Galium					1		1		
Thymelaea								2	
Bupleurum?									
Umbelliferae indet.					2				
Valerianella									
Valerianella dentata-type		1							
Verbena officinalis									
Unknowns		2			1	3			15
Uncharred seeds									
Alkanna									
Arnebia decumbens	1	1			1				
Lithospermum tenuifolium	5			2	1	6	4	8	42
Boraginaceae indet.									
Labiatae indet.									
Fumaria								1	
Plant parts									
Hordeum internode		1							
Triticum aestivum/durum internode									1
Triticum mono/dicoccum spikelet fork	2	7		1		6	1	6	8
Aegilops glume base		2					1	1	3
cf. *Taeniatherum* rachis frag.									
Grass culm node	1	2							2
Vitis penduncle									
Misc. unk.									

HN no. **Op., Locus, Lot** **Date**	1988 5,49,89 LC	2026 5,57,98 LC	2028 5,58,100 LC	2688 6,46,56 LC B	205 1,12,10 Uruk	2138 4,33,75 Uruk	2173 4,36,83 Uruk	2236 7,27,38 Uruk	
									Average
Volume (l)	6.5	8	6.75	15	9	8.75	8.5	14	
Charcoal >2 mm (g)	0.40	0.85	3.82	1.06	0.53	0.72	1.88	0.09	1.36
Seed >2 mm (g)	0.03	0.26	0.12	0.11	0.01	0.05	0.08	0.02	0.20
Rachis etc. >2 (g)	0.01	0.00	0.00	+	0.00	+	0.00	0.00	0.01
Charcoal density (g/l)	0.06	0.11	0.57	0.07	0.06	0.08	0.22	0.01	0.52
Seed/charcoal (g/g)	0.08	0.31	0.03	0.10	0.02	0.07	0.04	0.22	0.24
Weed seed (no.)	18	74	25	29	2	26	0	7	53.00
Weed seed/charcoal (no./g charcoal)	45	87	7	27	4	36	0	78	57.00
Crop and food plants									Sum
Hordeum vulgare (g)	0.02	0.11	0.05	0.06		0.02	0.02		2.06
Triticum aestivum/durum (g)						0.01			0.06
T. dicoccum (g)		+	0.02	0.01					0.19
T. monococcum (g)	+	0.02							0.21
Triticum sp. (g)		0.01		0.01			0.01		0.32
Cereal (g)	0.07	0.40	0.08	0.05	+	0.05	0.03	+	4.26

(*continued*)

Table 9. (*continued*)

HN no. Op., Locus, Lot Date	1988 5,49,89 LC	2026 5,57,98 LC	2028 5,58,100 LC	2688 6,46,56 LC B	205 1,12,10 Uruk	2138 4,33,75 Uruk	2173 4,36,83 Uruk	2236 7,27,38 Uruk	
									Sum
Lathyrus (g)		0.01	0.01						0.07
Lens (g)		+					0.01		0.13
Leguminosae indet. (g)									0.11
Vitis (g)									0.03
cf. *Prunus* (g)					0.01				0.02
cf. *Pistacia* (g)									0.01
nutshell/fruit pit indet.	+		0.05						0.07
Ficus?						8	1		9
Linum (minimum no.)		1							4
Wild plants									Sum
Heliotropium				1					1
Gypsophila									1
Silene									2
Vaccaria								1	6
Centaurea									1
cf. *Helianthemum*									1
Compositae 1									27
Compositae indet.						1			3
Cruciferae indet.									4
cf. *Carex*									3
Cyperaceae 1									3
Euphorbia									1
Aegilops		1							20
Avena		1							1
cf. *Echinaria*		1	1			1			10
Hordeum murinum-type			2			1			6
Hordeum spontaneum-type		1							2
Lolium cf. *remotum*	5	13	2	9		2		1	259
Lolium (long)				1					13
Phalaris									1
cf. *Taeniatherum*									42
Triticoid								1	1
cf. *Triticum boeoticum*									3
Gramineae 1	4	8	1	2					155
Gramineae 2				1				1	162
Gramineae 3									7
Gramineae 4		1							11
Gramineae 6									2
Gramineae 7		2							17
Gramineae 8									1
Gramineae indet.	4	24	12	4		2		3	200
Hypericum	1								2
cf. *Mentha*				1					1
Teucrium				1					6
Labiatae 1									1
Labiatae indet.						1			1
Alhagi									2
Astragalus									7
Coronilla				1					9
Medicago									4
Trifolium/Melilotus	1	7		1	2				40
Trigonella astroites-type				1					36
Trigonella	1	1	1						50
Vicia/Pisum		1							1
Leguminosae (misc.)									12
Bellevalia									1
Ornithogalum-type			3						4
Malvaceae indet.									1

(*continued*)

Table 9. (*continued*)

HN no. Op., Locus, Lot Date	1988 5,49,89 LC	2026 5,57,98 LC	2028 5,58,100 LC	2688 6,46,56 LC B	205 1,12,10 Uruk	2138 4,33,75 Uruk	2173 4,36,83 Uruk	2236 7,27,38 Uruk	
									Sum
Papaver									4
Adonis									1
Galium		2							14
Thymelaea									3
Bupleurum?		1							1
Umbelliferae indet.			1						5
Valerianella		1	1						2
Valerianella dentata-type									1
Verbena officinalis									1
Unknowns	2	9	1	6		18			213
Uncharred seeds									Sum
Alkanna								2	3
Arnebia decumbens									3
Lithospermum tenuifolium	4	16	3	2		1	4	12	140
Boraginaceae indet.		1							1
Labiatae indet.							1		2
Fumaria		4				1			6
Plant parts									Sum
Hordeum internode		1		1					15
Triticum aestivum/durum internode									1
Triticum mono/dicoccum spikelet fork	3	28	4	3	1	2	2		513
Aegilops glume base	1					1			20
cf. *Taeniatherum* rachis frag.		1							4
Grass culm node				1					12
Vitis penduncle									3
Misc. unk.									2

(those occurring in at least four samples) reveals no discernible differences between the various time periods and excavation areas (table 11).

DEPOSITIONAL AND CHRONOLOGICAL FACTORS

The samples have been assigned to different depositional types, which can be categorized roughly as fire installation (e.g., oven), pit, ash deposit, trashy fill, and building collapse/fill. At a gross level, the deposits are for the most part quite similar to one another, and therefore seem to reflect similar depositional processes, namely, mixed trash disposal. Two deposits stand out: HN888 (ash) and HN2149 (ash pit). HN888 has an unusually high concentration of both wild and cultivated seeds. The proportion of wild seeds to seed fragments greater than 2 mm (primarily cereals) is no different from that of other samples, and like most of the other samples, the weed seed assemblage includes all size fractions. In short, the high density of charred seeds in this deposit is likely to reflect a relatively intact trash deposit filled with the remains of burnt dung fuel and perhaps crop-processing debris.[86] Sample HN2149 has an unusually high concentration and proportion of wood charcoal, which might suggest it is the relatively intact remains of a wood-fueled fire.

The four Uruk samples examined to date are not unique in any way, in quantity of material, relative

Table 10. Average Weight of Whole Crop Seeds at Hacınebi Tepe

Type	No. (whole)	Total Wt. (g) (whole)	Average Wt. (g)
Hordeum	93	0.94	0.01
Triticum monococcum	18	0.18	0.01
Triticum dicoccum	18	0.15	0.008
Triticum aestivum/durum	7	0.05	0.007
Lens	12	0.12	0.01
Lathyrus	2	0.02	0.01
Vitis	2	0.02	0.01

Note: the samples contain no whole *Pistacia* or *Prunus*.

[86] For discussion see Miller (supra n. 82) 154.

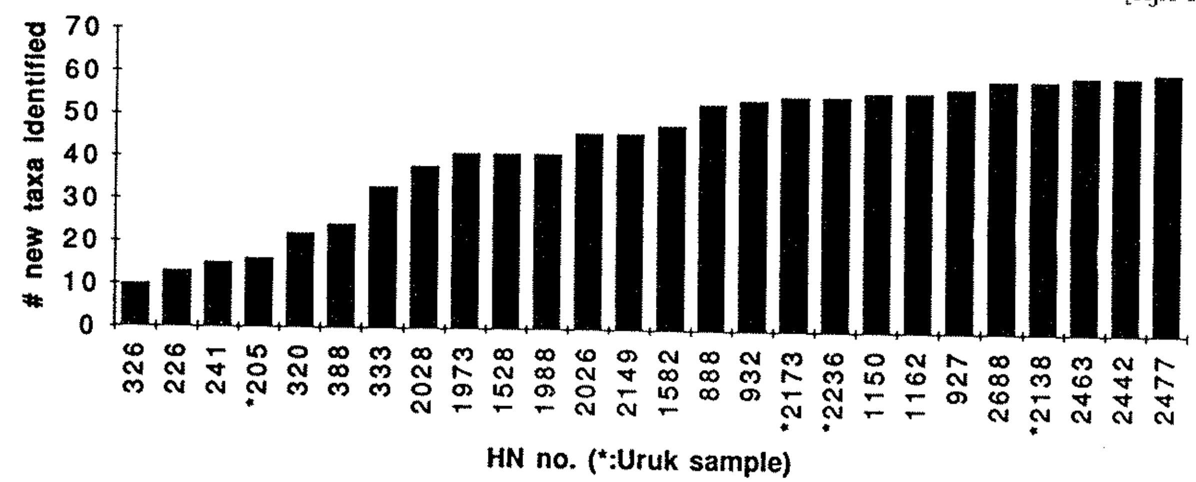

Fig. 33. Addition of new identified taxa with increasing numbers of analyzed archaeobotanical samples

Table 11. Presence/Absence of Common Types, by Late Chalcolithic (LC) Phase

		Phase			
	Ubiquitous	LC	LC A	LC B	Uruk
No. samples per phase		6	5	11	4
Analyzed soil sample vol. (l)		43	43	91	40
Charcoal (total, g)		7.06	4.28	20.80	3.22
Seed (total, g)		0.87	2.34	1.90	0.16
Rachis (total, g)		0.05	0.11	0.02	0.00
Hordeum vulgare	23	x	x	x	x
Lolium cf. *remotum*	23		x	x	x
Gramineae 1	16		x	x	
Trifolium/Melilotus	16		x	x	x
Triticum dicoccum	10		x	x	
Lens	9		x	x	x
Trigonella astroites-type	9		x	x	
Galium	9		x	x	
Triticum monococcum	8		x	x	
Gramineae 2	8		x	x	x
Aegilops	7	x	x	x	
Trigonella	7	x	x	x	
cf. *Echinaria*	6	x	x	x	x
Lolium (long)	6		x	x	
Triticum aestivum/durum	5	x	x		x
Lathyrus	5	x	x		
Vaccaria	5		x	x	x
Hordeum murinum-type	5		x		x
Gramineae 4	5	x	x	x	
Compositae 1	4		x	x	
Teucrium	4	x		x	
Astragalus	4		x	x	
Coronilla	4		x	x	

amounts of seeds and charcoal, or taxa recovered. Differences between trenches, and between early and late deposits are not pronounced enough to be seen in just 26 samples.[87] It is therefore not yet possible to discuss functional differences or chronological developments.

COMPARISONS WITH OTHER SITES ON THE EUPHRATES RIVER

The Hacınebi assemblage is quite similar to that of Late Chalcolithic Kurban Höyük, which lies about 100 km upstream.[88] This is not surprising, as the climate and natural vegetation of the two sites are similar. The small differences between the two assemblages during the Late Chalcolithic are attributable to the fact that Kurban Höyük enjoys slightly higher rainfall than Hacınebi.[89] In particular, at both sites barley is by far the most important crop, although wheat also occurs with some frequency. Hacınebi and Kurban share other crop and food plants as well (lentil, grasspea, flax, grape, and nuts). Overlap in the wild seed assemblage is substantial, which probably reflects similarities in field weeds and steppe vegetation around the two sites.

[87] Hacınebi is typical of many sites of the ancient Near East, where variability within samples is so high that in order to see patterning between samples large numbers of samples must be analyzed.

[88] N.F. Miller, "Vegetation and Land Use," in G. Algaze et al., "The Chicago Euphrates Archaeological Project 1980–1984: An Interim Report," *Anatolica* 13 (1986) 85–89, 119–20.

[89] N.F. Miller, "Environmental Constraints and Cultural Choices along the Euphrates between the Fourth and Second Millennia B.C.," paper presented at the 59th Annual Meeting of the Society for American Archaeology, Anaheim, Calif. 1994.

The later third-millennium sites of Tell es-Sweyhat and Selenkahiye in Syria provide some interesting contrasts.[90] Located at the southern edge of the dry-farming zone, about 100 km downstream from Hacınebi, Selenkahiye and Sweyhat have cereal remains that are nearly all two-row barley; einkorn, emmer, and bread wheat/durum are very uncommon. Two-row barley needs less moisture than both the six-row type and the wheats. As at Kurban Höyük, there is a fairly large overlap in the wild seed assemblage at the level of genus. Some of the differences probably reflect differences in the native vegetation; for example, wild einkorn, absent from the Syrian sites, is at the southern edge of its range near Hacınebi.

AVENUES FOR FUTURE RESEARCH

Hacınebi Tepe has two contemporary, but physically separate, cultural components, an indigenous Late Chalcolithic one and an intrusive Uruk one (with Mesopotamian affinities). Archaeobotanical research on local Late Chalcolithic deposits has established the characteristics of the agricultural economy, and shown it to be similar to that of contemporary Kurban Höyük. As environmental constraints on agriculture were necessarily shared by the incoming and local populations at Hacınebi, identification of differences between the archaeobotanical assemblages of the newcomers and the indigenous people would suggest how strongly cultural traditions influenced agriculture and land use practices. More Uruk samples must be collected and analyzed before this aspect of life on the Euphrates will be explicated.

It would also be useful to analyze more of the local Late Chalcolithic samples, both pre- and post-contact. Even if they yield similar information, we could be more confident that the results already reached are reliable (i.e., that analyzing a few more samples will not radically change the characterization).

Charcoal analysis will also enhance the picture of environment and land use at Hacınebi Tepe. After the detailed stratigraphy is worked out, it may be possible to detect change in the arboreal vegetation. In contrast to crop choice, over which people exercise great control by virtue of what they sow, wood use in the Chalcolithic reflects what is already growing in the area, and is therefore a more sensitive indicator of vegetation change at Hacınebi.

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LATE CHALCOLITHIC FAUNAL REMAINS FROM HACINEBI

Gil J. Stein and Jeffrey Nicola

INTRODUCTION

The collection of zooarchaeological data from Hacınebi is a long-term project geared toward studying synchronic variation and diachronic change in patterns of animal use at Hacınebi. In the 1992–1993 seasons, 854 lots of animal bone (an estimated 36,000 fragments) were recovered; most of this material derives from Late Chalcolithic contexts. Bone was recovered in two ways: collection in the course of excavation, and dry-sieving of the excavated sediments in a 0.5-cm mesh. Generally, primary (in situ) and secondary (e.g., midden) deposits were dry-sieved, while tertiary (redeposited materials, wash, or mudbrick collapse) deposits were not. Material recovered in the course of excavation was bagged separately from material recovered from dry-sieving; this permits the controlled comparison of recovery rates between the different methods of data collection. All bone fragments were saved, washed, and brought back to the U.S. for analysis in the Northwestern University Zooarchaeology Laboratory.

Given the small size of the sample processed to date, the following discussion is limited to a comparison of the two phases over the site as a whole. Once a larger sample of fauna has been analyzed, intrasite comparisons among the northern, southern, and western areas will be possible. The faunal data are presented as numbers of identified specimens (NISP, often called "fragment counts") rather than as minimum numbers of individuals (MNI), be-

[90] W. van Zeist and J.A.H. Bakker-Heeres, "Archaeobotanical Studies in the Levant 4: Bronze Age Sites on the North Syrian Euphrates," *Palaeohistoria* 27 (1988) 247–316; C. Hide, "Archaeobotanical Remains from Tell es-Sweyhat, Northwest Syria," *MASCA Ethnobotanical Laboratory Report* 7 (Philadelphia 1990).