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The Settlements and Population of Palestine during the Early Bronze Age II-III

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The Settlements and Population of Palestine During the Early Bronze Age II–III

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The Early Bronze Age II–III is the first urban period in the history of Palestine. It is also the first period for which the size of the settlements and their population can be estimated with a fair degree of precision.

Unlike the Early Bronze Age I, during which many settlements were small, unwalled, and mostly short-lived, EB II–III settlements expanded and enjoyed a longer lifespan, with fortifications appearing for the first time. The area of these settlements, larger and better defined by their walls, can be computed more readily than those of the periods before and after.

The area encompassed in our discussion is western Palestine of the British Mandate (Israel and the occupied territories), excluding the Negev south of Beersheba and the Arad plains. For this area (14,000 of the 26,000 km² of the land area of Mandatory Palestine), reliable archaeological data are available; the area also represents a definite geopolitical unit concerning which data from various periods can be compared.

Three of the four flanks of this unit are natural borders: the Mediterranean Sea on the west, the River Jordan on the east, and the Negev Desert on the south. The fourth flank, at the Israel–Lebanon border, is not a natural line but one that artificially cuts the upper Galilee in two. The natural line here would, of course, be the Litani River, and regrettably our information on the Lebanese Galilee is quite meager.¹

We have not included the Negev Plateau of the Arabah. The available data are insufficient; and, in particular, the nature of the settlements there does

not lend itself to statistical study. The Early Bronze Age settlements of the Negev belonged to a semi-nomadic population, and the numerous sites discovered in recent years apparently belong to various subphases of the period. In any event, we do not regard the Negev of this period (or later) as a significant factor in the overall population figures for the country as a whole.

Our chronological datum point falls several generations after the beginning of the Early Bronze Age III, ca. 2600 B.C. In our opinion, by this time most of the Early Bronze Age II–III settlements were in existence—both those that had survived from the Early Bronze Age II and had not yet been deserted, and those newly established in the Early Bronze Age III. It is our estimate that some 80 percent of the settlements of these two periods were flourishing. Assuming that the inventory of settlements presented below also covers about 80 percent of the total area of the settlements (that is, about 20 percent of the total settlement area has yet to be discovered),² the total area in the inventory actually represents the total figure for the settlement area at that time.

ESTIMATING POPULATION SIZE

A correlation between population and size of settlement in antiquity can, in our opinion, be found. In similar societies where similar methods of building and dwelling are employed, a fixed coefficient of population density can be determined. From modern parallels one can learn that such fixed coefficients do indeed exist. The density

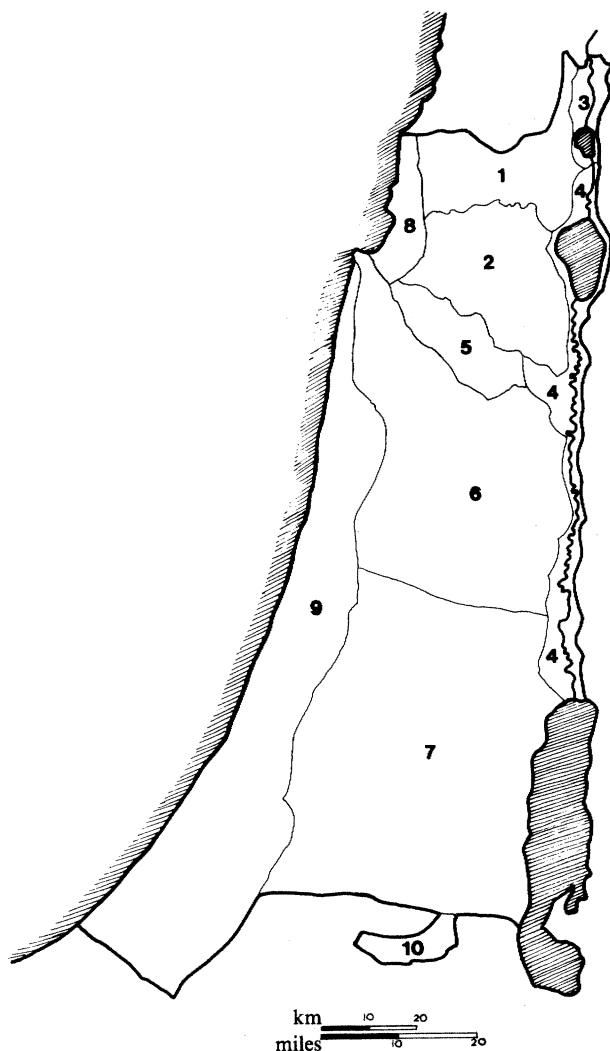


Fig. 1. The ten geographical regions: 1-Upper Galilee; 2-Lower Galilee; 3-Huleh Valley; 4-Jordan Valley; 5-Jezreel Valley; 6-Samaria including Gilboa and Carmel; 7-Judea including the foothills; 8-Northern Coastal Plain; 9-Coastal Plain south of Carmel; 10-Plains of Arad and Beersheba.

of "old" cities in the contemporary Levant is quite constant: in Jerusalem, Acre, Damascus, Aleppo, Tripoli, and Irbil, it is 400–500 persons per hectare.³ The first scholar to propose such a method of determining the size of population in ancient Palestine (and apparently elsewhere in the ancient Near East as well) was John Garstang (1931: 167), who suggested a factor of 250 per acre, i.e., 625 per hectare. For cities in Mesopotamia, Henri Frankfort (1950: 103–4) assumed a density of 120–200

per acre, or, 300–500 per hectare (see also Hassan 1981: 66–67).

Two recent studies are based on meticulous analyses of ancient settlements in Palestine. Leon Marfoe, who examined the Early Bronze Age II dwellings at Arad, carefully determined the dwelling units, and subsequently the number of inhabitants, on the basis of living space. In his opinion, population density at Arad in this period was 200–250 persons per hectare (Marfoe 1980: 320). In a study of population density in Iron Age cities in Palestine, Yigal Shiloh (1980) sought to determine the total population of the country at that time. An interesting conclusion can be drawn from his study. In three Israelite cities the density of dwellings was similar. At Tell Beit Mirsim, Stratum A, there were 36 units within an area of 0.68 hectare, i.e., a mean of 52 units per hectare. At Tell el-Far'ah (N), Stratum III, there were nine units in an area of 0.16 hectare, a mean of 56 units per hectare; and on the same site, in a later phase of the same stratum, there were six units in an area of 0.12 hectare, a mean of 50 units per hectare. At Tel Masos, Stratum II, there were eight units in an area of 0.137 hectare, a mean of 58 per hectare. Thus the range is apparently quite limited—50–58 dwelling units per hectare, with an overall mean for the four samples of 54 per hectare. This uniformity seems to confirm our contention that in similar societies, similar population densities prevail. If we assume that the average Israelite dwelling housed a family of five, the mean density would reach 270 persons per hectare.⁴ This conclusion is quite close to that reached by Marfoe. Colin Renfrew (1972: 251) has estimated the population density of settlements in the Aegean islands during the Bronze Age at 300 persons per hectare.

Thus we can safely assume a coefficient of 250 persons per hectare for the population density of Palestine in the Early Bronze Age.

INVENTORY OF SITES

The sites are listed under ten geographical regions (Tables 1–10; fig. 1). In determining the areas of each region, the study of Brawer (1946) was used as a basis. On each table, the sites for which data about exact size were insufficient fall into one of five categories: A) 0.1–0.3 hectares, mean 0.2 hectares; B) 0.4–1.0 hectares, mean 0.7 hectares; C) 1.1–4.9 hectares, mean 3 hectares; D) 5.0–9.9 hectares, mean 7 hectares; and E) 10 hectares or

TABLE 1. Upper Galilee Sites

Site, Map Reference	Size*	Reference or Surveyor
Adamit, H. 16902760	B	Aharoni 1957: 16
°Avot, H. 19332763	A	<i>Hadashot</i> 74–75 (1980): 4
Beersheba (Galilean) 189259	2	Z. Gal
°Ein Hor, Kh. (Tel °Eder) 16742765	A	Aharoni 1957: 16
Fassutah (northern hill)	B	R. Frankel
Ga°aton, site to NW 19602691	B	<i>Hadashot</i> 67–68 (1978): 19
Gush Ḥalav (including the lower synagogue site) 191270	B	Aharoni 1957: 14; <i>Hadashot</i> 63–64 (1977): 9
Irōn (Ṣalḥa) 192275	A	R. Frankel
Jatt 17232643	ca. 3	Aharoni 1957: 15–16; R. Frankel
Karkara, Kh. 17082755	A	R. Frankel
Nahf 179260	B	F. Vitto (1981)
Neryah, H. 18642683	A	
Nevoraya, H. (Nabratein) 197267	A	<i>Hadashot</i> 74–75 (1980): 6
Qadesh, Tel 199279	10	Aharoni 1957: 10–13
Rosh, Tel (Kh. er-Ruweisah) 181271	2.5	R. Amiran 1953: 117–26
Rosh ha-Niqra 161276	B	<i>EAE</i> IV: 1023–24; R. Frankel
Sharaf 16892747	A	R. Frankel
Yokrat (Iqrit) 176275	B	Aharoni 1957: 15

*Listed by category, or in hectares.

TABLE 2. Lower Galilee Sites

Site, Map Reference	Size*	Reference or Surveyor
Birah 197223		Z. Gal
Damin, H. (Kh. ed-Damiya) 194239	B	R. de Vaux 1945
°En ha-Yadid 199222	A	Z. Gal
Ḥanaton (Tell el-Badawiyah) 174234		
Jebel el-°Ein 17562373	C	Y. Dubi
Kefar Tavor 189232	A	<i>Hadashot</i> 65–66 (1967): 5
Meshed 180238	6	Z. Gal
Mirgam, T. 181252	1	
Mizpe Elot (Sheikh Muzeighit) 19982308	A	Zori 1977: 143–45
Mizpe Zevulun 16962389	C	A. Raban
Naṣr ed-Din, Kh. 199242	A	<i>Site List</i> , 1392
Qarnei Ḥitin 193245	0.9	Z. Gal (1981)
Qastel Kh. 17652375	1.5–2	A. Raban
Qishyon T. 187229	5	K. Cohen-Arnon and R. Amiran 1981: 205–12; Z. Gal 1981: 220; 1980: 69, 71
Ras °Ali 164242	7	
Rekhesht, T. 194228	4	Z. Gal 1981
Ṣafṣafot, H. 18692276	A	Zori 1977: 113–14
Ṣalmon, T. 185254	B	
Shabana, T. 16642401	1.5–2	A. Raban
Shaḥal, compound 19762258/62	4.5	Gal 1980: 24–27
Yamma, H. 197233	A	<i>Site List</i> , 1395
Yin°am, T. 198235	A	<i>IEJ</i> 27 (1977): 53

TABLE 3. Huleh Valley Sites

Site, Map Reference	Size*	Reference or Surveyor
Anafa, T. 21052869	B	<i>Hadashot</i> 67–68 (1978): 8
Avel (Abel) Bet Ma ^c akha 204296	C	Dayan 1963: 22
Bet Aḥu, T. 20612923	A	Dayan 1963: 21
Da ^c a, Kh. 21062934	A	<i>Ibid.</i> , 22
Dan, T. 211294	20	<i>EAE</i> I: 314–21
Ein Zagha, Kh. 21172882	A	Dayan 1963:26
Ḥazor 204269	10	Yadin 1972:119
Ḥṣaṣ 20612923	A	Dayan 1963: 21
Na ^c amah, T. 20592868	C	Albright 1926: 18; Dayan 1963: 24
Quṣab, T. 20262642	B	Dayan 1963: 26
Reémim, T. (Ruman) 20482774	A	<i>Ibid.</i> , 26
Ron, T. 20802876	B	<i>Hadashot</i> 22–23 (1967): 7
Saman, Kh. es- 21232869	A	Dayan 1963: 25
Shahaf 20692743	B	Dayan 1963: 27
Shamir 21173862	A	<i>Ibid.</i> 24; Bahat 1973: 58–63
Sheikh Muḥamad 21242843	A	Dayan 1963: 25

*Listed by category or in hectares.

TABLE 4. Jordan Valley Sites (including Beth-shan Valley)

Site, Map Reference	Size*	Reference or Surveyor
Abu Ṣuṣ 20301948	ca. 2	Zori 1977: 38; de Contenson 1964: 41
Arṭal T. 20302076	A	Zori 1977: 156–57
Beth Shean 197212	D	<i>EAE</i> I: 207–29
Beth Yerah 203–204/235–236	20	<i>EAE</i> I: 253–62
Diyabeh, T. el- (west of) 20322111	A	Zori 1962:155
Ein Beidha 19781986	B	Zori 1977: 38; Mellaart, 1962: 154–55
Ḥamma T. el- 19771973	B	de Contenson 1964: 40–41; Kochavi 1972: 214
Ḥilu, T. el- 19771926	A	Kochavi 1972:218
Ḥuga, T. 20062136	B	Zori 1962: 142
Issachar, T. 20042174	A	Zori 1962: 150–51
Jama ^c in, T. el- 20252017	A	Zori 1962: 162
Jericho 196141	ca. 4	<i>EAE</i> II: 554
Karpas, T. 20282079	A	Zori 1962: 155–56
Kinrot, T. (Tell el Ureimeh) 200252	1.2	<i>Hadashot</i> 11 (1964): 11; <i>EAE</i> III: 766–68
Maḥruq, Kh. el- 198171	25	<i>EAE</i> III:766–68
Nimrod, T. (a) 20232101	A	Zori 1962: 169
Raqat, T. 19952457	ca. 5	Alon 5–6 (1957): 35–36
Rehov, T. 19702070	ca. 4	Zori 1962: 176–78
Roeh, T. 19912049	A	Zori 1962: 167
Qaṭaf, T. (a) 20262076	B	<i>Ibid.</i> , 158
Sheikh Dhiab, T. es- 19101610	A	Glueck 1951: 316; Kochavi 1972: 105
Ṣemed, T. 19952093	A	Zori 1962: 172
Zahra, T. 19292131	A	<i>Ibid.</i> , 184
Zan, T. 20232238	B	Zori 1962: 138
Ziwan, Ḥ. 20082223	ca. 0.5	<i>Ibid.</i> , 149–50

*Listed by category or in hectares.

TABLE 5. Jezreel Valley Sites

Site, Map Reference	Size*	Reference or Surveyor
Abu Zureik, T. 16222267	B	A. Raban
ʿAfula 177223	2	<i>EAE</i> I: 32–36
Beer Tivʿon 16372354	B	A. Raban
Communal Orange Grove, the 16842213	10	<i>Idem</i>
ʿEn ʿArʿar 17132242	A	<i>Idem</i>
ʿEn Livneh 16102295	A	<i>Idem</i>
ʿEn Roz 18252259	A	<i>Idem</i>
Ghabeh et-Taḥtah 16382237	A	<i>Idem</i>
Givʿat ha-Mosad 16362245	A	<i>Idem</i>
Givʿat Yonathan 18472164	B	Gal 1980: 8–10
Jenin 17832074	3	Y. Porat 1969; <i>Hadashot</i> 45 (1973): 16
Megiddo 167221	ca. 6	<i>EAE</i> III: 830–56
Megiddo (east, a 'suburb') 16782215	C	A. Raban
Midrakh ʿOz 16532225	A	<i>Idem</i>
Qashish, T. 16052323	1.2	<i>Hadashot</i> 73 (1980): 14–15
Qiri, T. 16112278	A	Ben-Tor 1979: 109
Risim, T. 16502339	B	A. Raban
Saifan, T. 16882316	ca. 0.4–0.5	<i>Idem</i>
Sarid, T. 172229	ca. 5	<i>Idem</i>
Sham, T. 16482306	B	<i>Idem</i>
Sheikh, Ḥasan 16482306	A	A. Raban
Shimron, T. 170234	10	<i>Idem</i>
Taʿanach, T. 171214	C	<i>EAE</i> IV: 1143–47
Yizreʿel, ʿEin 18192182	A	Zori 1977: 19–23
Yizreʿel, T. 18122181	A	<i>Ibid.</i> , 19
Yoqneʿam 160230	D	
Zebubah (near-) 169217	1	Zori 1977: 51

*Listed by category or in hectares.

more. Wherever bibliographical references are lacking, the name of the surveyor is given. Numbers following site names are map coordinates.

Summarizing the data (Table 11; fig. 2), at the beginning of the Early Bronze Age III, ca. 2600 B.C., the total area of known settlements in western Palestine was 600 hectares. On the basis of the coefficient proposed, i.e., 250 persons per hectare, the settled population at that time in Palestine reached 150,000. This, of course, is a maximal figure, based on the assumption that the settlements were occupied to their full extent.

Quantification of data also allows interesting conclusions on the geography of settlement in this period, concerning both the distribution of the settlements by size, and their spatial distribution. As for distribution by size, it seems that the 260 settlements, with a total area of 600 hectares, should be characterized by an average settlement

of 2.3 hectares; in actuality, however, such a mean is not at all characteristic.⁶ The pattern of settlements is typified on the one hand by large settlements, and on the other hand by small and very small settlements. Medium sized settlements, however, are quite rare. The 20 settlements whose area exceeds 10 hectares (type E) comprise a total area of some 300 hectares, i.e., almost half the total. The total size of the 36 settlements larger than 5 hectares comprises two-thirds of the total area. Even at the peak of prosperity in Palestine, in the Roman–Byzantine period 3000 years later than our period, the number of settlements exceeding 10 hectares was no larger than that prevailing in the Early Bronze Age (Broshi 1979: 3–5). In contrast, the number of Early Bronze Age settlements of less than a hectare (types A and B) is large—more than 160 settlements. Actually, the number of these small settlements was probably much greater, for

TABLE 6. Samaria Sites (including the Gilboa and Carmel)

Site, Map Reference	Size*	Reference or Surveyor
Abu Shuqair, Kh. 15542201	A	Olami 1981: 96
Abu Zarad, T. 17191679	ca. 1.2–1.5	Kochavi 1972: 169
°Anabta 16131909	2	Porat 1969
°Arah, T. 157212	C	R. Gophna
Bazariah, T. (nearby)	1.5	Kochavi 1972: 218
Beit Hasan, Kh. 18831826	A	Porat 1969
Buweidha Kh. el- 15672254	A	Olami 46
Dothan, T. 172202	ca. 6	EAE I; 337–39; Zertal 1981: 42–43
°Eran, T. (Khallet el-Masri) 15282129	A	<i>Hadashot</i> 3 (1962): 16; <i>Manasseh Territory</i> (1970): 1–4
Fahmeh (north of village) 16681992	3.5	Kochavi 1972: 212
Far°ah (Jiftlik) 197172	A	Kochavi 1972: 102
Far°ah, T. el- 182188	5	EAE II: 395–404
Give°at Mish°ol 16042226	1.5–2	A. Raban
Give°at Noah (Jo°arah) 16062227	B	<i>Idem</i>
Jeziret Daud 15292217	A	Olami 1981: 87–88
Har ha-Haruvim 160226	C	Meirhoff 1960: 23–26
Har Qirah 16042276	ca. 0.5–0.6	A. Raban
Hawarah, el- 170195	2.5	<i>Hadashot</i> 69–71: 47
Ible°am (Kh. Balame) 17772058	9	Kochavi 1972: 210
Jaresh, Kh. 18541711	ca. 0.5	Porat 1969
Kasr Mahrnun 17432021	A	Kochavi 1972: 211; Zertal 1981: 44
Kharjeh, Bir el- 17081972	0.3	Zertal 1981: 67
Mahfar, T. el- 17072054	10	Kochavi 1972: 209; Zertal 1981: 27–28
Mahnah el-Foqa, Kh.- 17541759	0.5	Kochavi 1972: 167
Marjamah, Kh. 18161554	ca. 3	<i>IEJ</i> 30 (1980): 219–20
Mazar, Kh. es-Sheikh 18401648	1	Porat 1969
Meghara, Kh. el- 17121982	A	Zertal 1981: 64–65
Miske, T. 18731825	2.5	Porat 1969; Kochavi 1972: 164
Nebi Yarub	B	<i>Hadashot</i> 69–71 (1979): 47
Najjar Kh. 17822056	2.5	Kochavi 1972: 210
Nuheil, Kh.	1.1	Porat 1969; Zertal 1981: 65
Parur, T. 15992266	1	Olami 1981: 39
Qarqaf 16431859	2	Kochavi 1972: 222–23
Qabr el-Faras (Qibbutz Galed) 15762177	A	<i>Site List</i> , 1405
Qutt Kh. el- 17301634	A	Kochavi 1972: 169
Rafid Kh. er- 17671618	0.7	Kochavi 1972: 169
Raqefet Cave 15752288		Olami 1981: 18
Salim 18131795	A	Campbell 1968: 25–26
Shiloh 17751626	A	Buhl 1969: pl. 33: 276
Sitt Leilah Kh. es- 15042155	B	Aharoni 1959: 112–16
Sur 17231787	B	Campbell 1968: 37
Şuş, T. 16032225	0.5	A. Raban
Tell, Kh. et- 17491587	A	Kochavi 1972: 170
Terashim, Kh. 17051708	2.5	Porat 1969
Umm el-Hawa 17181985	7	Zertal 1981: 63–64
Unnamed Site 15432213	1	Olami 1981: 89–90
Unnamed Site 15612251	A	<i>Ibid.</i> , 46
Unnamed Site 15092226	A	<i>Ibid.</i> , 72
Unnamed Site 15592220	A	<i>Ibid.</i> , 81
Wadi el-Bir	ca. 10	<i>Hadashot</i> 69–71 (1979): 47
Wadi Far°ah, Kh. (b) 15911802	1	Porat 1969
Zawiyeh 17211980	A	Zertal 1981: 68

TABLE 7. Judean Sites (including the foothills)

Site, Map Reference	Size*	Reference or Surveyor
Abu Gosh 160134	A	Neuville 1951
Abu Masrah 17731373	A	Kochavi 1972: 186
ʿAdulam, T. (Bir Madhkur) 150117	B	R. Gophna
Agrah, T. 13801011	9	<i>Hadashot</i> 72 (1979): 31
ʿAi 174147	ca. 11	Callaway 1972: 1980
ʿArav, H. 14281236	ca. 1.5	Y. Dagan
Avimor, Kh. 14741356	A	Gophna 1974: 160
Ayalon, T. (Yalu) 15241386	B	Kochavi 1972: 236
ʿAzekah, T. 141–143	ca. 5	
Beer Navah 14581124	A	A. Mazar
Beit ʿAlam, Kh. 14511098	ca. 1.5	Y. Dagan
Beit Mirsim, T. 141096	B	Dever and Richard 1977: 1–14
Beit Sahur (tombs) 171123		Hennesy 1966: 19–40
Beth Šur 158110	A	Funk 1968: 37
Betesh, Tluliot- 142131	A	<i>EAE</i> IV: 1204–5
Burnei, T. (Tell Burnat) 137116	B	Y. Dagan
Deir Bir el-ʿAsal 14440977	A	Kochavi 1972: 69
Deir ed-Dumah 14870932	A	<i>Ibid.</i> , 74
ʿEin el-Farʿah, Kh.- 17961380	ca. 1	<i>Ibid.</i> , 185
Gezer 142140	ca. 12	Dever <i>et al.</i> 1970: 1; Dever 1974: 19–28
Goded T.- (T. Judeideh) 141115	C	Bliss and Macalister 1902: 44–51; 71–82
Ḥadab, el- 15510985	B	Kochavi 1972: 68
Ḥalif, T.- 137087/8	C	Seeger and Borowski 1977: 156–66
Ḥeisham Kh. 14571264	C	<i>Hadashot</i> 72 (1979): 31
Kom, Kh. el- 14641044	A	<i>IEJ</i> 21 (1971): 175–77; Kochavi 1972: 60
Kurum, el- 16791365	A	Kochavi 1972: 187
Lachish 135108	15	<i>EAE</i> III: 735–53
Maahaz, T. 13131028	B	Amiran 1977: 63–64
Maʿayan, Kh.- 16270909	1	Kochavi 1972: 77–78
Malul, Kh.- 15091617	A	D. Eytam
Mareshah (T. Sandahana) 140111	B	Bliss and Macalister 1902: 52–61, 71–82
Mizpeh Shalem 18751104	A	Blake 1966: 564–65 (<i>pace</i> Kochavi 1972: 133–34, site 153)
Modiʿin, T.- (er Ras) 15071489	ca. 3	Kochavi 1972: 235
Radanah, Kh. 16931466	0.5	<i>Ibid.</i> , 178
Ras, Kh. er- 16871541	A	<i>Ibid.</i> , 173
Ras et-Taḥunah 17021462	A	<i>Ibid.</i> , 178
Šafit, T.- (Tell es-Safi) 13561233	ca. 15	Bliss and Macalister 1902: 28–43; <i>EAE</i> IV: 1024–27
Shovav, H. 14871338	ca. 4	Gophna 1974: 160
Titorah, H. 152145	B	Kochavi 1972: 235
Yarmuth, T. 14751240	ca. 15	Ben-Tor 1975: 55; <i>Hadashot</i> 74–75 (1980): 28–29
Yathir 151084	A	Z. Meshel

*Listed by category, or in hectares.

TABLE 8. Northern Coastal Plain Sites

Site, Map Reference	Size*	Reference or Surveyor
Abu Dhahab 16402712	ca. 1.2	R. Frankel
Apheq, T. (Tell Kurdaneh) 160249	A	
Bet Ha ^c emeq 16572639	ca. 6	R. Frankel
Isasbest 15942707	A	R. Frankel
Jalil, Kh. 17322732	C	
Kabri, T. 16342680	ca. 30	R. Frankel
Karkara, Kh. 17082755	ca. 2	<i>Idem</i>
Kefar Ata (nearby) 16052446	A	<i>Hadashot</i> 16 (1965): 22
Keison, T. (Tell Keisan) 164253	ca. 5	Briend and Humbert 1980: 388 <i>et passim</i>
Regev, T. (Tell Harbaj) 158240	ca. 2.5	Garstang 1931: 297–98
^c Uşa, H. 16452576	A	Y. Ben Yosef
Yavor, Give ^c at 16712561	ca. 3	R. Frankel
Yinon, H. 17112555	ca. 4	<i>Idem</i>

*Listed by category, or in hectares.

TABLE 9. Coastal Plain Sites (south of Carmel)

Site, Map Reference	Size*	Reference or Surveyor
Apheq, T. 14361678	10	Kochavi 1957: 17
Ashdod, T. (cemetery of Bet ^c Uziah) 11891302	A	Gophna 1974: 54
Ashqelon (Majdal) 11051199	A	<i>Ibid.</i> , 57
Bareqet 14651576	2	Gophna 1974: 40–42
Bet Nehemiah (east of-) 14671525	ca. 0.1	<i>Ibid.</i>
Bir Qamleh 10170747	A	<i>Ibid.</i>
Dalit, T. 14271538	ca. 4	Gophna 1981: 22–25
Dor Spring 14342226	A	<i>Ibid.</i> , 23–24
^c En Habsor 10130795	0.15	<i>Hadashot</i> 69–71 (1979): 84
^c Erani, T. (^c Areini) 12981134	25	<i>EAE</i> I: 89–97
Gerisah, T. (Tell Jerisheh) 13201665	ca. 5	Z. Herzog
Gimzu 14521486	4	Gophna 1974: 43
Hasi, T. (Tell el-Hesi) 12441063	ca. 10	O'Connell and Rose 1980
Jaljulyah 14551734	A	Gophna 1974: 34
Jatt 15402005	D	<i>Ibid.</i> , 28; <i>EAE</i> II: 575–78
Magal 15401992	A	Gophna 1974: 28–29
Megadim, T. 14542367	A	<i>Ibid.</i> , 20–21
Miqneh, T. (Muqannà) 13601320	A	Naveh 1957: 186
Mughar, el- 12941385	ca. 3	Gophna 1974: 51–53
Nagilah, T. (Tell Nagileh) 12701012	ca. 4	<i>EAE</i> III: 894–98
Niṣanim (west of youth village) 11361277	A	<i>Hadashot</i> 69–71 (1979): 84
Poran, T. 11371242	10–12	Gophna 1977: 87–90
Raf ^c a, Kh. (West of) 14291152	A	
Revadim (quarry) 13301327	A	Y. Dagan
Rujum, Kh. er- 15381983	A	Kochavi 1972: 213; Gophna 1974:29
Şafit, T. (Tell es-Safi) 13591237		Bliss and Macalister 1902: 28–43; <i>EAE</i> IV: 1024–27
Şufin, Kh. (Qilqilya) 14841777	A	Gophna 1974: 34
Tel Aviv (Ha-Bashan St.) 13031666	A	<i>EAE</i> IV: 1161
Tel Aviv (The Fair Grounds) 13161677	A	Kaplan 1972: 165–67
Tul Karm 15311911	A	<i>Hadashot</i> 39 (1971): 20; <i>Ibid.</i> 40 (1971): 23; Yeivin 1973: 153
Turmus, T. el- 12851259	A	Gophna 1974: 55

TABLE 10. Plains of Arad and Beersheba

Site, Map Reference	Size*	Reference or Surveyor
Arad 162075	9	Amiran 1978
Bir el-Juheidem 12470769	A	Gophna 1974: 67
Buyudh, Kh. 16250823	A	Amiran 1980: 26
Deragot, H. 15740790	A	<i>Ibid.</i> , 25-26
Ira, H. 148071	3	<i>Hadashot</i> 69-71 (1979): 3
Malhata, T. (the small) 15230697	1	<i>Hadashot</i> 69-71 (1979): 9-10
Masos, T. 146069	A	R. Cohen
Mizbeah, H. 144065	A	<i>Idem</i>
Samar, H. 16350714	A	Amiran 1980: 26
Tov, H. 16390817	4	<i>Ibid.</i> , 26

*Listed by category, or in hectares.

most of the settlements still undiscovered are surely of these types.

Size and location of the settlements were apparently dictated primarily by security considerations. This is indicated by the strong lines of defense as well as by the large concentrations of population. The fortifications of this period were among the mightiest ever built in this country. Good examples can be seen in the stout brick walls at Megiddo and Beth-yerah, the thickness of which reaches 8 m, and in such constructions as the massive stone walls at Tel Yarmuth, which are unparalleled even in later times. The concentration of population in large settlements can also be explained by security reasons. The location of many of the settlements at sites that topographically lent themselves to defense—on hillocks or spurs—was obviously from similar motivation. The relationship between the large and small settlements is still unclear, but it is plausible that in times of emergency the fortified cities were relied upon as places of refuge by the inhabitants of the surrounding villages and hamlets.

The spatial distribution of the settlements is also enlightening. The Early Bronze Age is the first period in local history in which a sizable portion of the population was settled in the hilly regions. About half the total of settlements are to be found in the Galilee, Samaria, and Judea; their total area reaches some 45 percent of the total for the entire country.

This intensification of settlement in the hill regions stands in sharp contrast to the situation in the preceding and following periods. The settlements of the Chalcolithic period were located

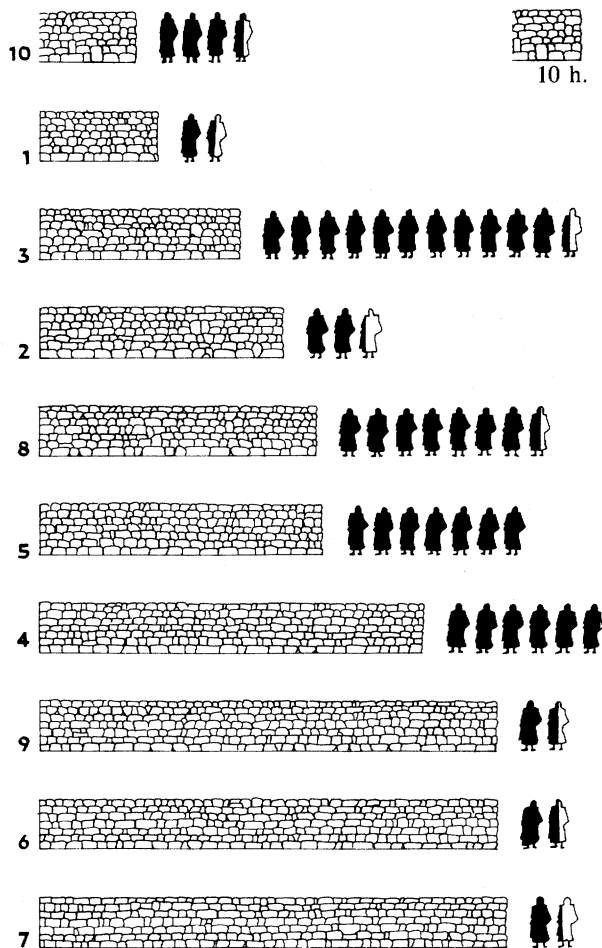


Fig. 2. The ten geographical regions and their specific density. Each unit of "wall" represents 10 hectares; each figure represents 0.02 hectares/km².

TABLE 11. Summary of Tables 1–10: Density of the Regions

	<i>Number of Sites</i>	<i>Size*</i>	<i>Occupied Area†</i>	<i>Density‡</i>
1. Upper Galilee	18	854	23,8	0.27
2. Lower Galilee	22	1174	49,1	0.41
3. Huleh Valley	16	177	40,4	2.28
4. Jordan Valley	25	648	77,7	1.19
5. Jezreel Valley	28	405	57,1	1.40
6. Samaria (including Gilboa and Carmel)	54	3065	92,9	0.30
7. Judea (including the foothills)	41	4462	94,5	0.21
8. Northern Coastal Plain	15	375	56,1	1.49
9. Coastal Plain (south of Carmel)	30	2655	92,6	0.34
10. Plains of Arad and Beersheba	11	250	18,4	0.73
<i>Totals</i>	<i>260</i>	<i>14064</i>	<i>602,6</i>	

* km²

† h

‡ m² to km²

mainly in the valleys and in the zone bordering the Negev on the north. In the thousand years separating the Early Bronze Age from the Iron Age—that is, during the Middle and Late Bronze Ages—the relative weight of settlement in the hill regions declined considerably. Only in the Iron Age would the hill region again be settled this densely or more so. The Early Bronze Age population lacked the technological capabilities of the Iron Age (such as plastered cisterns and iron implements that would permit extensive clearing of forest lands and plowing of stony ground) and the knowledge of terracing. They did, however, succeed in settling wherever sufficient water was available, whether running or stored (as in cretaceous limestone regions).⁷

Settlements beyond the choicer parts of the country, in harsher regions such as the hill country,

the Arad plain, and even the Negev plateau, testify to the increase in population and the growing need for land. This increase, probably both natural and through immigration, is clearly evident. But, in our opinion, this situation need not be described as a “population crisis” or “explosion”—terms that carry negative connotations of distress (Amiran 1970: 83). The population seems to have been able to overcome the problems of demographic increase.

Further studies of the present type—both synchronous (especially treating the areas to the north and east)⁸ and diachronous (treating other historical periods)—should undoubtedly facilitate our understanding of the past. Summary of the data and its quantification afford a clearer picture of the settlements of the country and of its population, although new problems also emerge, calling for solutions.

NOTES

¹Part of the gap in our knowledge has been filled by a recent survey in the area north of the Israel-Lebanese border, conducted by I. Finkelstein and R. Frankel.

²In our opinion this is a maximal estimate of the area of the sites that have not yet been discovered. As most (some two-thirds) of the area belongs to sites larger than

sites of this size. The unknown sites can be assumed to be small and thus of little impact on the total area.

³See references in Broshi 1975: 6 and nn. 8–10; on Acre, cf. Shiloh 1980: 26. On four other cities with similar density, cf. Adams 1981: 350. It is noteworthy that in small towns listed in Adams the density is

⁴An average of five persons sharing a single house is frequently used by anthropologists and historical demographers; cf. Hassan 1981: 73. In 1931 the average in Palestine was 4.79 per house and this average is consistent throughout the various regions (cf. Mills 1932, *passim*).

Shiloh's estimate (following Frankfort) that an Israelite house was inhabited by an average of eight seems too high (Shiloh 1980: 29).

⁵We wish to thank our colleagues who aided us so kindly by providing data on many of the sites: D. Alon, R. Amiran, Y. Dagan, Y. Dubi, D. Eitam, Z. Gal, R. Frankel, Z. Meshel, Y. Porat, Y. Portugali, A. Raban, A. Zertal.

⁶The state of research in Palestinian archaeology and the preservation of Palestinian sites is brought into sharp focus by the fact that we know some 260 sites from the

Early Bronze Age II-III. In comparison, in Upper Egypt, the Fayum, and the first nome of Lower Egypt, only 217 sites are known from the entire Dynastic period (almost 3000 years!), 43 percent of which (93 sites) are known only from literary sources (cf. Butzer 1976: 59).

⁷Cf. R. Gophna (1983).

⁸N. Glueck's extensive pioneer survey in Transjordan (i.e., Eastern Palestine), which has been continued competently by younger archaeologists, has given us a fair picture of the Early Bronze Age culture in that area. Unlike in Western Palestine, few sites have been excavated there (particularly Bâb edh-Dhrâ^c and Numeirah). On the other hand, the Early Bronze Age sites in Transjordan, not overlaid by Middle and Late Bronze strata, are more readily identified than those in western Palestine. For a survey in southern Syria, see Marfoe 1979; in Mesopotamia, see Adams 1981.

BIBLIOGRAPHY

- Adams, R. McC.
1981 *The Heartland of Cities*. Chicago: University of Chicago Press.
- Aharoni, Y.
1957 *The Settlement of the Israelite Tribes in Upper Galilee*. Jerusalem (Hebrew).
1959 Zephath of Thutmose. *Israel Exploration Journal* 9: 110-22.
- Albright, W. F.
1926 The Jordan Valley in the Bronze Age. Pp. 13-74 in *Annual of the American Schools of Oriental Research* 6: 13-74. New Haven: American Schools of Oriental Research.
- Amiran, R.
1953 Khirbet Tell er-Ruweisa in Upper Galilee. *Eretz-Israel* 2: 117-26.
1970 The Beginnings of Urbanization in Canaan. Pp. 83-100 in J. A. Sanders, ed., *Near Eastern Archaeology in the Twentieth Century*. Garden City, NY: Doubleday.
1977 Excavations at Tell Ma³ahaz, 1975, 1976. *Israel Museum News* 12: 63-64.
1978 *Ancient Arad I*. Jerusalem: Israel Exploration Society.
1980 The Arad Countryside. *Levant* 12: 22-29.
- Bahat, D.
1973 The Date of the Dolmens near Kibbutz Shamir. *Eretz-Israel* 11: 58-63.
- Ben-Tor, A.
1975 The First Season of Excavations at Tell Yarmuth. *Qedem* 1: 55-86.
1979 Tell Qiri: a Look at Village Life. *Biblical Archaeology* 1: 1-12.
- Blake, I.
1966 Rivage occidentale de la Mer Morte. *Revue biblique* 73: 564-66.
- Bliss, F. J., and Macalister, R. A. S.
1902 Excavations in Palestine during the years 1898-1900. London: John Murray.
- Brawer, A. I.
1946 Palestine and its Inhabitants in Measures and Numbers at the End of 1944. *Bulletin of the Israel Exploration Society* 12: 103-15 (Hebrew).
- Briend, J., and Humbert, J. P.
1980 *Tell Keisan (1971-1976), une cité phénicienne en Galilee*. Paris: Gabalda.
- Broshi, M.
1975 La population de l'Ancienne Jérusalem. *Revue biblique* 82: 5-14.
1979 The Population of Western Palestine in the Roman-Byzantine Period. *Bulletin of the American Schools of Oriental Research* 236: 1-10.
- Buhl, M. L., et al.
1969 *Shiloh*. Copenhagen: National Museum of Denmark.
- Butzer, K. W.
1976 *Early Hydraulic Civilization in Egypt*. Chicago: University of Chicago Press.
- Callaway, J. A.
1972 *The Early Bronze Age Sanctuary at Ai*. London: Bernard Quaritch.
1980 *The Early Bronze Citadel and Lower City at Ai*. Cambridge, MA: American Schools of Oriental Research.

- Campbell, E. F.
1968 The Shechem Area Survey. *Bulletin of the American Schools of Oriental Research* 190: 19–41.
- Cohen-Arnon, K., and Amiran, R.
1981 Excavations at Tel-Qishon—Preliminary Report on the 1977–1978 Seasons. *Eretz-Israel* 15: 205–12 (Hebrew).
- de Contenson, H.
1964 The 1953 Survey in the Yarmuk and Jordan Valley. *Annual of the Department of Antiquities in Jordan* 8–9: 30–46.
- Dayan (Nevo), Y.
1963 *Archaeological Survey in the Huleh Valley*. Kibbutz Dan (mimeographed, Hebrew).
- Dever, W. G.; Lance, H. D.; and Wright, G. E.
1970 Gezer I. *Preliminary Report of the 1964–66 Seasons*. Annual of the Hebrew Union College Biblical and Archaeological School in Jerusalem. Jerusalem: Hebrew Union College.
- Dever, W. G., et al.
1974 Gezer II. *Report of the 1967–70 Seasons in Fields I and II*. Annual of the Hebrew Union College/Nelson Glueck School of Biblical Archaeology in Jerusalem. Jerusalem: Hebrew Union College.
- Dever, W. G., and Richard S.
1977 A Reevaluation of Tell Beit Mirsim Stratum J. *Bulletin of the American Schools of Oriental Research* 226: 1–14.
- Frankfort, H.
1950 Town Planning in Ancient Mesopotamia. *Town Planning Review* 21: 98–115.
- Funk, R. W.
1968 P. 37 in O. R. Sellers, *The 1957 Excavation at Beth-Zur*. Annual of the American Schools of Oriental Research 38: 35–53. New Haven: American Schools of Oriental Research.
- Gal, Z.
1980 Ramat Issachar, Ancient Settlements in a Peripheral Region. Tel Aviv (Hebrew).
1981 Tel Rekhes and Tel Qarney Hittin. *Eretz-Israel* 15: 213–21 (Hebrew).
- Garstang, J.
1931 *Joshua-Judges*. London: Constable.
- Glueck, N.
1951 *Explorations in Eastern Palestine IV*. Annual of the American Schools of Oriental Research 25–28. New Haven: American Schools of Oriental Research.
- Gophna, R.
1974 *The Settlement of the Coastal Plain of Eretz-Israel During the Early Bronze Age*. Unpublished doctoral dissertation, Tel Aviv University.
- 1977 Fortified Settlements from the Early Bronze and Middle Bronze II at Tel Poran. *Eretz-Israel* 13: 87–90 (Hebrew).
- 1981 An Early Bronze Town at Tel Dalit. *Qadmoniot* 14: 22–25 (Hebrew).
- 1983 Observations on the Landscape of Palestine During the EB II–III and MB II. *Eretz-Israel* 17: 162–67 (Hebrew and English abstract).
- Hassan, F. A.
1981 *Demographic Archaeology*. New York: Academic Press.
- Hennessy, J. B.
1966 An Early Bronze Age Tomb Group from Beit Sahur. *Annual of the Department of Antiquities in Jordan* 11: 19–40.
- Kaplan, H.
1972 Excavations at the Fair Grounds. *Haaretz Museum* 14: 165–67 (Hebrew).
- Kochavi, M.
1957 The First Two Seasons of Excavations at Aphek-Antipatris. *Tel Aviv* 2: 1–42.
1972 *Judaea, Samaria and the Golan, Archaeological Survey 1967–1968*. Jerusalem: Carta, for the Archaeological Survey of Israel.
- Manasseh Territory
Occasional Papers of the Palestinographical Society. Manasseh Local Council (Hebrew).
- Marfoe, L.
1979 The Integrative Transformation: Patterns of Sociopolitical Organization in Southern Syria. *Bulletin of the American Schools of Oriental Research* 234: 1–42.
- 1980 Book Review of R. Amiran, *Early Arad*, I. *Journal of Near Eastern Studies* 31: 315–22.
- Mellaart, J.
1962 Preliminary Report of the Archaeological Survey in the Yarmuk and Jordan Valley for the Point Four Irrigation Scheme. *Annual of the Department of Antiquities in Jordan* 6–7: 126–57.
- Meyerhoff, E.
1960 Flint Cores from Har ha-Haruvim. *Mitqufat Haeven* 1: 23–25 (Hebrew).
- Mills, E.
1932 *Census of Palestine 1931*. Jerusalem: Greek Convent and Goldberg Presses.
- Naveh, J.
1957 Khirbet el Muqann'a-^cEqrone. *Bulletin of the Israel Exploration Society* 21: 178–98 (Hebrew).
- Neuville, R.
1931 'Quartiers d'Orange' de Palestine. *Bulletin, Société préhistorique Française* 27: 264–65.
1951 *La Paléolithique et le Mésolithique du désert de Judée*. Paris: Masson.

- O'Connell, K. G., and Rose, D. G.
 1980 Tell El-Hesi, 1979. *Palestine Exploration Quarterly* 112: 73–91.
- Olami, Y.
 1981 Daliya Map. Archaeological Survey of Israel, Map 31. Jerusalem: Archaeological Survey of Israel (Hebrew and English summary).
- Porat, Y.
 1969 *Samaria Survey* (unpublished report).
- Renfrew, C.
 1972 *The Emergence of Civilization*. London: Methuen.
- Seger, J. D., and Borowski, O.
 1977 The First Two Seasons at Tell Halif. *Biblical Archaeologist* 40: 156–66.
- Shiloh, Y.
 1980 The Population of Iron Age Palestine in the Light of a Sample Analysis of Urban Plans, Areas, and Population Density. *Bulletin of the American Schools of Oriental Research* 239: 25–35.
- de Vaux, R.
 1945 Adami Hanneqeb. *Bulletin of the Israel Exploration Society* 11: 33–34 (Hebrew).
- Vitto, F.
 1981 A Pottery Workshop at Nahf in Galilee. *Qadmoniot* 14: 61–62 (Hebrew).
- Yadin, Y.
 1972 *Hazor, Head of All Those Kingdoms*. London: British Academy.
- Yeivin, Z.
 1973 Archaeological Activities in Samaria. Pp. 147–62 in *Eretz Shomron*, ed. J. Aviram. Jerusalem: Israel Exploration Society (Hebrew).
- Zertal, A.
 1981 *Arubboth, Hefer and the Third Solomonic District*. Unpublished master's thesis, Tel Aviv University (Hebrew).
- Zori, N.
 1962 *Archaeological Survey in the Beth-Shean Valley, the 17th Archaeological Convention*. Jerusalem: Israel Exploration Society (Hebrew).
- 1977 *The Land of Issachar, Archaeological Survey*. Jerusalem: Israel Exploration Society (Hebrew).