

ARAM

TRADE ROUTES & SEAFARING
IN THE ANCIENT NEAR EAST

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THE IDUMEANS
AND THE NABATEANS



VOLUME 27, 1 & 2

2015

LIVESTOCK ANIMAL TRENDS IN IDUMAEAN MARESHA:
PRELIMINARY ANALYSIS OF CULTURAL AND ECONOMIC ASPECTS

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Abstract

This paper provides preliminary results of our ongoing analysis of faunal remains from the Idumean site of Maresha, a site located in the Shephelah region of Israel and dated to the 4th-2nd centuries BCE. The Zooarchaeological research in this key site is an efficient tool for portraying the social and cultural character of the site during the Hellenistic period. We sampled animal bones from cave no. 90 in Maresha in order to characterize the subsistence practices of the site's inhabitants. The explored dietary habits provide new lines of evidence regarding the cultural identity of its population. The livestock of Maresha, as displayed by cave no. 90 is dominated by sheep and goats (60%), cattle (18%), domestic fowl (13%) and pigs (9%). We highlight the main characteristics of the faunal assemblage and draw broad conclusions regarding differences and similarities in its dietary habits in the context of contemporaneous sites from the region. The high abundance of fowls and pigs show clear differences between Maresha and nearby chronologically matched sites.

Another interesting characteristic of the Maresha faunal assemblage is the abundance of Domestic Fowl (*Gallus gallus domesticus*) remains. This relatively high percentage of chicken highlights Maresha as a key site for reconstructing the distribution course of chicken in the old world and its establishment as a livestock species in the Mediterranean economy.

INTRODUCTION

The reconstruction of socio-cultural diversity or ethnic identity is a major theme in contemporary archaeology in the Near East. Until recently, the question of socio-cultural diversity had mainly been discussed through the typology of ceramics and architectural styles. In recent years, the role of faunal remains in archaeological studies is increasingly recognized, turning our attention to the more mundane materials frequently used on a daily basis for subsistence needs. As well as this, the dietary practices of every day and ceremonial contexts, express ethnic identity and cultural influences (Crabtree 1990; Marom and Bar-Oz in press; Twiss 2007 and references therein; Van Der Veen 2003 and references therein). In addition to the cultural aspect, the zooarchaeological study can shed new light on questions regarding economic trends, reflected by the inhabitants' food preferences. Similarly, the presence of non-endemic livestock animals in arid zone is a sign of a technologically developed society, which can supply enough water to human and livestock (Horwitz and Studer 2005: 235).

This paper aims to shed light on variation in zooarchaeological patterns during the Hellenistic period in the southern Levant. A relatively small number of zooarchaeological studies have focused on sites of the Hellenistic period in the southern Levant in comparison to earlier, much better studied periods of the Bronze and Iron Ages (recently reviewed in Bar-Oz and Kolska-Horwitz in press). No specific study has examined changes in patterns of consumption of animal products in the Hellenistic period (4th-1st centuries BCE) in the region. This study is a first step to fill this research gap.

A wealth of archaeological and historical research provides evidence on the existence of a diverse mosaic of cultures, involving multiple groups of distinct cultural and possibly ethnic backgrounds within the relatively small region of the southern Levant, during the Hellenistic period (Eshel 2007: 145-156; Kasher 1988:1-11; Kasher 1990:14-26; Kokkinos 1998:72-79). That diversity, which was referred to as an "ethnic conglomerate" (Kasher 1990: 15) was characterized by a clear geographical pattern. The urban centers on the Northern coast (e.g., Tel Dor, Stern 2000) was inhabited mainly by Phoenicians, whereas the southern coast cities (e.g. Gaza and Ashkelon), were populated by local

groups and Arab tribes. The northern part of the Negev Desert and the Judean Shephelah (Judean foothills), that together formed a geographic-ethnic entity called "Idumaea", was populated by a mix of peoples including Idumaeans, Nabataeans (and other Arab tribes), Phoenicians, Greeks, and others. This heterogeneity created a syncretic society and strong cultural influences among neighboring groups (See map of the different ethnic groups in: Kasher 1990: 47).

The Southern Levant in the Hellenistic period reveals a gradual process of Hellenization. This process affected the material culture of local groups, including forms of ceramic vessels and architectural styles (Rossi 2011). We examine the influence of Hellenization on food preferences by assessing regional variation in the frequencies of remains of important livestock species. We focus on the site of Maresha, which has been characterized as especially diverse culturally, with abundant evidence for the persistence of distinctive local cultural traditions, concurrent with external influences of the Hellenistic culture (Kloner 2003: 5-7; Korzakova 2010: 89-147; Eshel 2010: 35-89; Stern 2012: 57-77).

The cultural diversity of Maresha's population is well attested in the names appearing on ostraca and other inscriptions from the site (Eshel 2007: 145-156). Hundreds of ostraca were found at the site. Until the late 4th century or the beginning of the 3rd century BCE, the ostraca from the site were predominantly in Aramaic, after which the Greek language came into prominence and was widely used (Kloner 2003: 5; Kloner 2010: 218-219). Based on the frequency of different names found on site, it appears that the majority belong to Idumaeans and Arab populations. A smaller proportion of the names represent Phoenicians (as shown also by the well-known inscription in the so-called Sidonian tomb, see: Peters and Thiersch 1905: 36-40) and Nabataean populations. Other names are of Egyptian and Greek origin (Eshel 2010: 80-82).

Our study is based on a comparison of an assemblage of animal remains from Maresha (from subterranean complex 90, see: Bar-Oz in press), to assemblages from several other Hellenistic sites representing different parts of the region. We hypothesize that at sites such as Maresha, where other lines of evidence suggest cultural diversity and significant Hellenistic influences, patterns of animal consumption will differ from other cultural contexts in the region.

MARESHAL DURING THE 4TH-2ND CENTURIES BCE

Maresha is located in the heart of the Judean shephelah, (Judean foothills) 35 km east of the Mediterranean coast, and some 40 km southwest of Jerusalem (Fig 1). The majority of the findings from Maresha are dated to the 4th-2nd centuries BCE, which include the Late Persian and the Hellenistic periods (Kloner 2003: 1-2, 5; Erlich and Kloner 2008: 1). During this period, Maresha attained considerable importance as the leading city of Idumea. The site reached its cultural peak during the 3rd-2nd century BCE, when it flourished under the Ptolemaic and later Seleucid rule. By the end of the 2nd century BCE, Maresha was occupied by the Hasmoneans, and later destroyed by the Parthians 40 BCE,

The site of Maresha is composed of three main components: the upper city, the lower city, and the subterranean complexes (caves), located below the lower city dwelling area (Fig 2). These complexes were used for different purposes, such as quarries, columbaria, storage facilities, olive presses and cisterns (Kloner 2010: 205-216). Most of the fill in the subterranean complexes, likely come from houses above the caves dated to the 4th-2nd century BCE, according to coins and amphora handles. Among the subterranean complexes is cave no. 90 that was excavated in 2005 (License 4361-05) by I. Stern and B. Alpert on behalf of the Israel Antiquities Authority and Archaeological Seminars. Cave no. 90 is situated in the southeast part of the lower city (Stern et al. 2007). In the excavated part of Cave 90, an olive press (L107) was uncovered in one chamber. Adjacent to it, an additional chamber (L105) was discovered. Both of the chambers were filled with a homogenous deposit rich in zooarchaeological finds and other debris.

MATERIALS AND METHOD

We compare the faunal data from Cave no. 90 in Maresha (data from Bar-Oz in press) to all published zooarchaeological reports on Hellenistic sites from the region. We examine the composition of four important livestock taxa, consisting of the bones record: sheep/goat, cattle, pig, and domestic fowl (chicken). Sheep and goat remains were grouped into a single category because not all published studies separate the remains of these taxa. Bone assemblages included in our comparisons include only sites which have at least one clear Hellenistic phase that is not mixed with earlier Persian or later Roman period deposits. Furthermore, the sites chosen have a sample size of at least 30 identified skeletal remains ($NISP \geq 30$). By using this criteria we identified the relevant assemblages from different types of sites, including urban, rural, or fortified sites (Table 1). Considering the dominant urban character of Maresha, we decided to narrow down the list further to include only assemblages from sites of a similar nature to Maresha, where faunal remains were collected from domestic contexts (i.e., they represent an urban site or a village with a dwelling area), and they are dated to the period between the 4th and 2nd centuries BCE. These criteria further reduced the list of assemblages to ten (Table 1, for the geographical location of the sites see Fig. 4).

We examined the relationship between the abundance of livestock taxa, and the ecological location of sites. For that, we used information on the latitudinal position of the sites to organize them along a north-south gradient. The region is characterized by a gradual north-south cline of precipitation. Thus, the northern parts of Israel tend to be more humid, while the southern parts are dryer (Danin 1995). Therefore, we expect that in comparison to drier southern sites, northern sites that are located in a more humid environment will include higher proportions of species such as cattle and pigs that require relatively high water intake. Clear relationships between livestock frequencies and precipitation levels were demonstrated, for example, by King (1999: 170, Fig. 1) in different parts of the Roman Empire in Italy. This is also exemplified by Horowitz and Studer (2005) in the Roman and Byzantine periods in the Southern Levant. Nevertheless, unlike the Roman cases, the correlation between livestock composition and geographical region was never taken into account in the discussion of the Hellenistic southern Levant.

RESULTS

The livestock remains in Cave 90 in Maresha include sheep and goats (60%), cattle (18%), domestic fowl (13%) and pigs (9%) (Fig. 3). Figure 4 compares Maresha to other Hellenistic sites in the region. As can be seen, sheep, goat and cattle are the dominant species at each of the Hellenistic period sites. As expected, the sheep and goat percentage is higher in the southern sites than in the northern sites (Figure 5a). If we look at the percentage of cattle across different sites (Figure 5b), we see an opposite pattern where the northern sites tend to have greater cattle frequencies than southern sites. The correlation between site latitudinal location and cattle frequency is positive and significant ($R = 0.72$; $P = 0.01$). A similar trend is also evident for pigs (Figure 5c). However, the observed trend in pigs is somewhat more complex and shows more dispersion of the data points around the regression line while the correlation remains insignificant ($R = 0.18$; $\text{Sig} = 0.21$, Figure 5c). If we look at Maresha, a relatively southern site, the frequency of pigs (ca. 10%) is greater than in any of the other southern sites. In sites like Ramle, Tel Michal, Tel Bethsaida and Beth Shean, pigs are relatively underrepresented and occur below the regression line. Another site that does not match the general geographic pattern is Tel Dor, a northern site, which is characterized by an especially high percent of pigs, in comparison to other northern sites.

Additional variation among sites is evident from the frequency of chicken bones (Fig. 6). It is evident that cave no. 90 in Maresha is respectively rich in domestic chicken that comprise 13% of the total livestock remains. This ratio outnumbers most of other Hellenistic sites from the region where chicken remains occur in lower proportions.

DISCUSSION

We studied variation in the composition of livestock taxa among faunal assemblages from the Hellenistic period in the southern Levant. The data from ten different sites and ecological zones shows that cattle abundance increases in northern sites where precipitation is greater in comparison to the southern part of this region. The variation in pig abundance does not reflect this environmental gradient as clearly. Pigs, like cattle, require relatively humid conditions with constant access to water (Horwitz and Studer 2005: 226-235). Therefore, one would expect that the frequency of pig remains would correlate with the north-south precipitation gradient, as we saw in the case of cattle. We therefore suggest that variation in pig abundance in the Hellenistic period reflects at least in part, the influence of cultural preferences rather than environmental factors.

Another site where pig frequency is greater than expected given its geographic location is Tel Dor. Both Tel Dor and Maresha were important Hellenistic towns with extensive trade connections. Maresha due to its role in linking the inland, coast, and trade routes to Egypt as attested in the Zenon Papyri (Tscherikower 1937), and Tel Dor due to its role as a port town with access to international trade. While both of these settlements were also associated with Phoenician populations, Tel Dor essentially represented a Phoenician town (Stern 2000). It is not impossible that pigs, due to their high economic value (Hesse 1990), were brought with the Phoenicians from their homelands in the Aegean Sea when they first occupied Tel Dor during the Iron Age. Nonetheless, during the Iron Age with the Phoenician occupation of Tel Dor, pigs comprise only 2% of the livestock faunal remains (Sapir-Hen 2010). Other Iron Age sites in the southern Levant are also relatively poor in pig remains, in comparison to earlier periods (Hesse 1990: 211-216, Table 2-3). At Maresha, we lack zooarchaeological data on pre-Hellenistic periods that would allow us to examine earlier pig frequencies. The low frequency of pig remains in clear Phoenician contexts during the Iron Age suggests that we cannot relate the high consumption of pigs during the Hellenistic period, to the Phoenician culture. In addition, the abundant fish remains at Tel Dor (Sapir-Hen 2010: 47, Table G1A; Zidani, Personal communication 2013) suggest a Phoenician sea-based economy that can be expected in the case of a coastal oriented cultural group. Realizing those evidences, we suggest that the high abundance of pigs at Maresha and Tel Dor does not reflect an aspect of the Phoenician culture, but an aspect of the Hellenization process within two of the important centers of the Hellenistic administration of the region.

Another interesting zooarchaeological characteristic that emerges from the faunal assemblage of Maresha is the exceptionally high abundance of chicken remains. This taxon of fowl (*Gallus gallus*) is known as a native of East Asia, where it was also firstly domesticated around 6,000 BCE. On the Indian subcontinent which also constitutes a part of the natural dispersion of the jungle fowl, chicken was domesticated around the 2nd Millenium BCE. By the 2nd and 3rd Millennia chicken was gradually spread to west Asia and Mesopotamia. In the European continent, the first remains of chicken are dated to the 8th century BCE and the introduction of chickens to this region usually is attributed to the Phoenicians who brought chickens from their homeland to their colonies in the West (West and Zhou 1988, Sykes 2012). By the Iron age, chicken remains are rarely performed in European sites (Hernandez-Carrasquilla 1992; Benecke 1993) as well as in the southern Levant sites (Perry Gal et al. 2015) these data reflect the limited economic significance of chicken during that period, and its more probable involvement in ritual activities and cockfighting. (Groot 2008; Sykes 2012). The zooarchaeological record from Europe suggests that chickens gradually became a part of the European livestock assemblage only by the beginning of the 1st Millenium BCE.(Maltby 1997).

The Hellenistic period in the southern Levant is the first time we incur evidence for a relatively high amount of chicken remains, which can indicate the rise of economic significance of chicken. The high abundance of chicken in Hellenistic Maresha (>13% of the remains in cave no. 90) is remarkable especially in light of the lower ratios in most other Hellenistic sites from the region. Tel Anafa, a Hellenistic site in north Hula valley (>8% of the remains), contains a relatively high percent of

chicken as well as the Hellenistic fortress of Shaa'r Haa'makim, (>5% of the remains) and Tel Dor (>4% of the remains).

Considering the high amount of chicken in Maresha, and the scarcity of chicken remains in the sites during the pre-Hellenistic periods, we argue that chicken in Maresha were utilized not only for sacrifices or in cockfighting, but that they were raised mainly for economic purposes, in order to take advantage of the protein-rich meat, and as a source of eggs. This new food preference likely reflects the strong Hellenistic influences that characterized Maresha, Tel Anafa, Shaa'r Haa'makim and Tel Dor.

To conclude, Maresha shows important deviations from most other Hellenistic sites in the region in the composition of livestock taxa. Whereas the abundance of cattle fits its geographic location and associated lower precipitation in the southern sites, pig and chicken remains show exceptionally high abundances that cannot be accounted for by the ecological circumstances of the site. These patterns may be due in part to local cultural preferences of various specific groups such as the Idumaeans, Arabs and Phoenicians. However, the high abundance of pigs in Maresha and Tel Dor and the high percents of chicken in Maresha, as well as few other sites with well-documented influences of the Hellenistic culture, suggests that a more likely explanation is the impact of local Hellenization processes during this time.

Further research is required in order to fully reconstruct the economic and cultural characteristics of Maresha during the Hellenistic period. This could be accomplished by examining additional zooarchaeological variables, including butchery and bone discard patterns, exploitation of marine resources and of game and exported foods. Additional zooarchaeological data is needed in order to draw a full picture of the cultural influences on food choice during the Hellenistic period at Maresha.

ACKNOWLEDGMENTS

We thank Dr. Shafiq Abouzayd for organizing the Aram conference and giving us the opportunity to present our talk as part of the conference. We would like to thank Ian Stern and Bernie Alpert, directors of the Maresha excavations on behalf of the Israel Antiquities Authority and Archaeological Seminars for inviting us to work on the faunal material from Maresha and for their assistance and interest in our research. The research was carried out when LPG was a Rotenstreich doctoral Fellow. The study was supported in part by the Israel Science Foundation grant (Grant 52/10) for GB-O.

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Site	Ref	Period	Type	Sheep-Goat	Cattle	Pig	D. Fowl	NISP
Tel Anafa	Redding 1994	2 BCE	Greek fortress	199	172	57	37	432
Tel Bethsaida	Fisher 2005	4-2 BCE	Urban	128	145	9	0	282
Tel Nov	Horwitz 2000	1 BCE	Urban	71	70	19	0	160
Sha'ar Haa'makim	Bar-Oz 2008	3-2 BCE	Fortress	405	246	42	35	728
Tel Bet Yerah	Cope 2006	4-2 BCE	Small urban site	56	10	11	0	77
Yoqne'am	Horwitz et al. 2005	2-1 BCE	Tower	25	51	15	0	91
Tel Horshan	Marder in press	4-1 BCE	?	21	30	1	0	52
Tel Dor	Sapir-Hen et al. in press	4-2 BCE	Fortified city	1037	556	349	72	2014
Beth Shean area P5	Horwitz 2006	3-2 BCE	Ptolemaic fort	27	25	2	0	54
Tel Michal XIV-XII	Hellwing & Feig 1989	4-2 BCE	Fortified city	327	144	0	0	471
Ramat Aviv Gimmel	Sade in press	4-1 BCE	?	17	26	0	3	46
Tell Qasil	Sade 2006	4-1 BCE	Urban(?)	172	6	23	0	201
Shilo	Hellwing et al. 1993	4-1 BCE	Urban	62	32	1	0	95
Ramle Nesher North	Raban-Gerstel & Bar-Oz In press	4-2 BCE	Columbaria	131	19	0	2	152
Pisgat Zeev-Areas A+B	Horwitz et al. in press	1 BCE	Villa quarter	5	0	0	11	16
Jerusalem ADHK-city of David	Horwitz & Tchernov 1996	1 BCE	Urban	28	10	0	0	38
Maresha-Chanel 90	Bar-Oz G. In press	4-2 BCE	Urban	83	25	13	18	139
Tel Jemmeh	Wapnish & Hesse, B. 1988	4-2 BCE	Grain storage	1965	681	21	0	2667
Machteshim	Sade in press	4-1 BCE	Rural(?)	228	35	0	0	263
Tel 'Ira	Dayan 1999	4-2 BCE	Urban	35	2	1	0	38

Table 1: Composition of livestock taxa in 20 selected Hellenistic sites. The numbers represent the identified bones for each species. The marked sites are the 10 major Hellenistic sites (**Bold**), with similar nature to Maresha, dated to the period between.

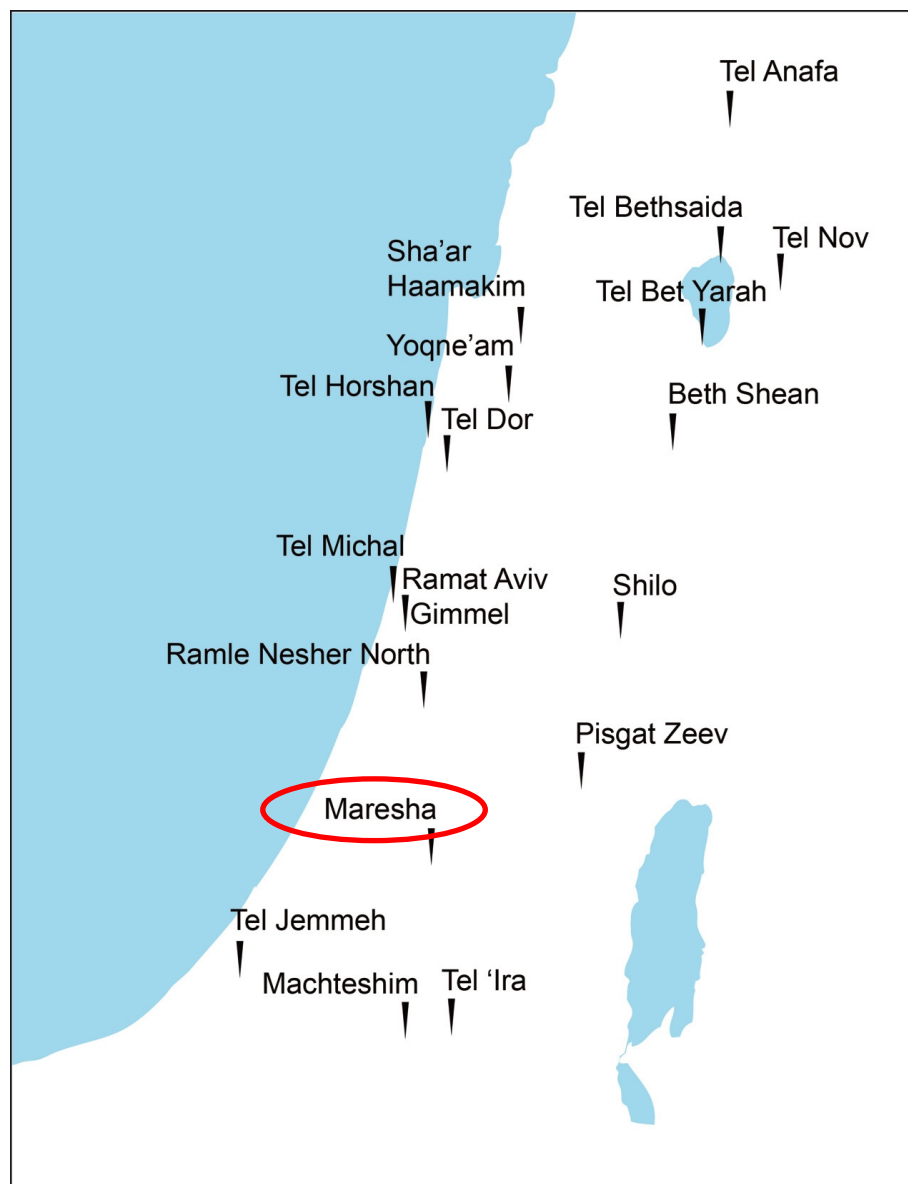


Fig 1: The location of Maresha relative to the other Hellenistic sites from the region

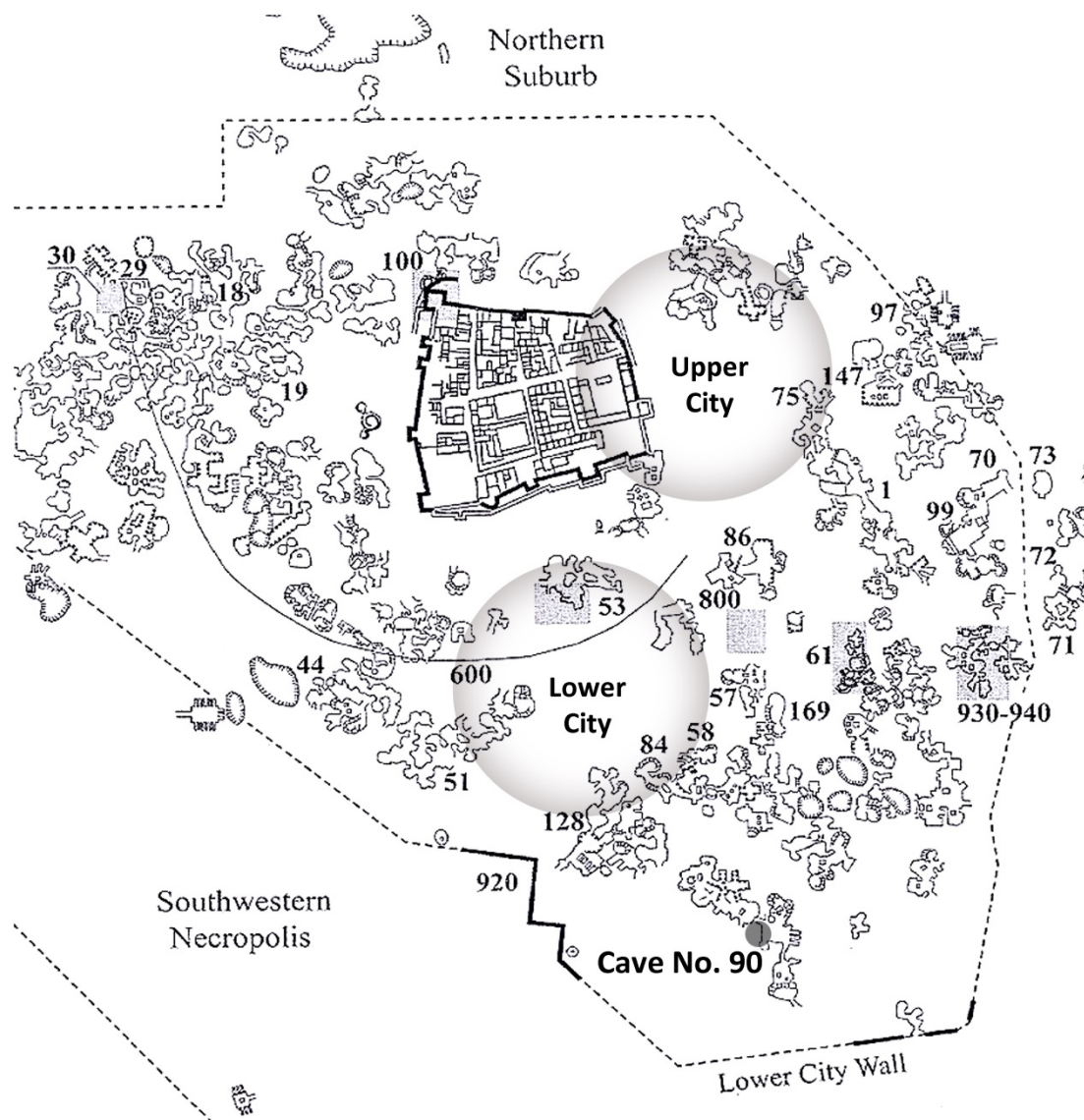


Fig. 2: The different excavation areas in Maresha. The sampled zooarchaeological record discussed here (cave no. 90) was unearthed from the subterranean complexes, located under the lower city.

Maresha: cave No. 90

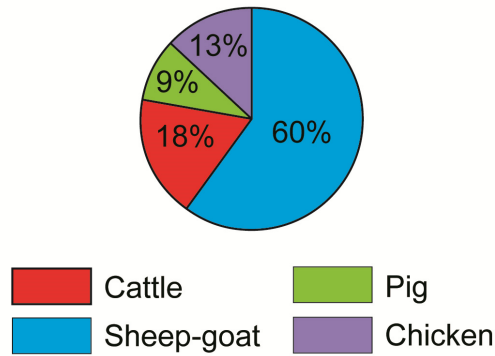


Fig. 3: Species distribution in Maresha, cave No. 90

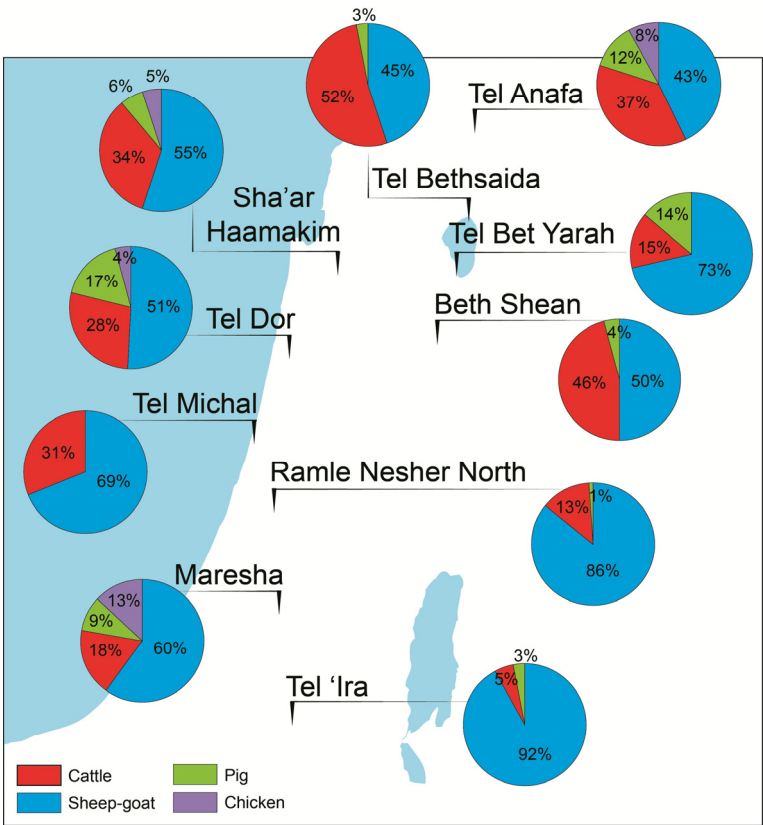


Fig. 4: Composition of livestock taxa in 10 major Hellenistic sites, with similar nature to Maresha

