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Author(s): Lidar Sapir-Hen, Guy Bar-Oz, Yuval Gadot and Israel Finkelstein

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# Pig Husbandry in Iron Age Israel and Judah

## New Insights Regarding the Origin of the “Taboo”

By Lidar Sapir-Hen, Guy Bar-Oz, Yuval Gadot, and Israel Finkelstein

### 1. Introduction

The biblical prohibition against the consumption of pork (Lev 11:7; Deut 14:8), observed in Judaism for over two millennia, is the reason for the special attention paid to the appearance of pig bones in Iron Age strata in the southern Levant<sup>1</sup>. Scholars have assumed that archaeology can shed light on the date of the emergence of this taboo, its role in the shaping of Israelite identity and its function in forming cultural boundaries with neighboring cultures. HESSE reviewed the zooarchaeological data and demonstrated that pig frequencies at sites from the Iron Age are very low, except for Philistine sites, which showed a dramatic increase in pig bones in the Iron Age I<sup>2</sup>. Yet HESSE and WAPNISH concluded that, due to the diverse factors influencing pig frequencies, the absence/presence of this species is insufficient to distinguish between groups of different ethnic origins<sup>3</sup>.

The absence of pig bones at Iron Age I sites in the highlands and their exceptional abundance at contemporaneous Philistine sites had an enormous impact and scholars assumed that all early Israelites did not consume pork throughout the Iron Age<sup>4</sup>. FINKELSTEIN argued that the absence/presence of pigs may be the only way to shed light on ethnic boundaries in the Iron Age I<sup>5</sup>. However, the accumulation of new data in the 20 years following these influential articles has revealed new and intriguing patterns regarding pig husbandry in the Iron Age, placing the older assumptions regarding pig consumption in the Iron Age in question.

By reviewing the new data, we wish to question the notion that pork consumption is a way to distinguish Israelites/Canaanites from Philistines. In this essay, we demonstrate that pigs do not appear (or appear in small number) in Iron Age I Canaanite centers in the lowlands as well as in non-urban settlements within the presumed territory of the Philistine city-states. Yet, the data collected demonstrate that dichotomy in pig consumption did occur – between sites located in the kingdoms of Israel and Judah during the Iron Age IIB. The data, presented here for the first time, call for a reevaluation of the origin of the biblical taboo on the consumption of pork.

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<sup>1</sup> HÜBNER 1989; HESSE 1990; ZEDER 1996; FINKELSTEIN 1996; HESSE/WAPNISH 1997; FAUST/LEV-TOV 2011.

<sup>2</sup> HESSE 1990.

<sup>3</sup> HESSE/WAPNISH 1997.

<sup>4</sup> FAUST 2006, 37–38 with further references; GARFINKEL/GANOR/HASEL 2010, 46.

<sup>5</sup> FINKELSTEIN 1996.

Two recent developments enable the reexamination of pig evidence in the southern Levant in the Iron Age: 1) A large number of new zooarchaeological reports containing data on pig frequencies (Table 1); 2) The development of high-resolution, pottery-based relative chronology for the region, which allows an accurate division of the time-span between ca. 1130–600 B.C.E. into six sub-phases: early and late Iron Age I, early and late Iron Age IIA, Iron Age IIB and Iron Age IIC<sup>6</sup>. Using a high resolution faunal database, with good control over details of chronology, enables detecting significant temporal changes in animal husbandry, while dealing with long periods such as the entire Iron Age leads to inaccurate results<sup>7</sup>. In the following considerations we concentrate mainly on the Iron Age IIB. Data from earlier (Late Bronze Age III, Iron Age I and Iron Age IIA) and later (Iron Age IIC) periods will also be introduced, to enable a contextual discussion and a fuller understanding of long-term attitudes toward pig husbandry.

### 1. 1. Background Information on Pig Husbandry

The wild boar was quite common in many terminal Pleistocene and early Holocene prehistoric sites<sup>8</sup>. In the 5<sup>th</sup> – 4<sup>th</sup> mill., almost all sites in the non-arid zones of the Fertile Crescent show an occurrence of (domesticated) pigs higher than 7%, with a close correlation between environmental conditions and pig frequencies<sup>9</sup>. The abundance of pigs depended on rainfall, with 300mm isohyet as the limit. Starting in the 3<sup>rd</sup> mill., the appearance of pigs was affected by a combination of environmental, economic and social factors<sup>10</sup>. In studies on the Middle Bronze Age, pig frequency is considered a reference for sedentism<sup>11</sup>, as they cannot be driven far and are not part of nomadic animal husbandry<sup>12</sup>.

The pig is one of the livestock animals raised in the southern Levant, but its relative frequency is usually significantly low compared to that of caprines or cattle (both dominating the zooarchaeological assemblages from the Bronze Age onward)<sup>13</sup>. Pigs breed fast, and do not need to be driven to pasture when there is enough available food, such as vegetables and animal waste. They are usually exploited for their meat, considering the lack of secondary products that can be extracted from them. They cannot be driven far and hence domestic pigs are not suitable for nomadic life<sup>14</sup>.

Considering the presence of pig remains at a specific site, one needs to first check whether they were an actual part of the site's economy (*i. e.*, were raised as part of its livestock), or if their presence represents occasional wild boar hunting. The determination of

<sup>6</sup> HERZOG/SINGER-AVITZ 2004; 2006; MAZAR *et al.* 2005; FINKELSTEIN/PIASETZKY 2006; ARIE 2006; in press; for absolute, radiocarbon-based chronology of these ceramic phases see FINKELSTEIN/PIASETZKY 2010.

<sup>7</sup> SAPIR-HEN/GADOT/FINKELSTEIN *forthc.*

<sup>8</sup> *E. g.* VON DEN DRIESCH/WODTKE 1997; HORWITZ/GALILI/SHARVIT/LERNAU 2002; BAR-OZ 2004; SAPIR-HEN *et al.* 2009.

<sup>9</sup> GRIGSON 2007.

<sup>10</sup> GRIGSON 2007.

<sup>11</sup> HORWITZ 1989; HESSE 1990.

<sup>12</sup> GRIGSON 1982; 1995.

<sup>13</sup> SASSON 2010.

<sup>14</sup> HARRIS 1985; REDDING 1991; ZEDER 1990; GRIGSON 2007.

the pigs' status – *i. e.*, domesticated or wild – relies on two criteria: 1) a biometrical difference – the domesticated pig is significantly smaller than the wild one<sup>15</sup>; 2) the mortality profile – dominance of juveniles points to a controlled exploitation for meat and hence for a domestic status<sup>16</sup>. Another question is whether pigs were treated like the rest of the consumed fauna or discarded in a specific manner reflecting a different cultural attitude. Several taphonomical factors, such as fragmentation of bones and evidence of food preparation (butchery marks), as well as investigation of the location where pig bones are found at a given site, can testify to the attitude toward pig consumption in relation to other species<sup>17</sup>.

## 1.2. Method

Data for the current research were collected by reviewing 78 zooarchaeological assemblages from 35 sites in Israel, in published and unpublished reports (all collected data appear in Table 1). The collected data include total livestock NISP (cattle, caprines, pigs, equids and camels) and the relative frequency of pigs, domestication status or measurements when available, and information regarding context, butchery marks, mortality profiles and fragmentation. The reports included in the current study have to: 1) enable the attribution of the raw data to one of the six sub-phases of the Iron Age referred to above; 2) present a given livestock assemblage with a Number of Identified Specimens (NISP) larger than 70, which minimizes the risk of coincidental results.

Frequencies of pigs from total livestock (%NISP) were divided into three categories, according to GRIGSON<sup>18</sup>: less than 2%, 2–7% and higher than 7%.

The pigs' status – domesticated or wild – was recorded based on the definition given by the authors of the various reports, which relied on size differences or mortality profiles. In cases where such a definition was not offered, we determined the status based on the comparison of measurements provided in the reports to measurements of wild boar according to HONGO and MEADOW (Table 2)<sup>19</sup>.

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<sup>15</sup> *E.g.* PAYNE/BULL 1998; HABER/DAYAN 2004; ALBARELLA *et al.* 2006; ALBARELLA/DOBNEY/ROWLEY-CONWY 2006.

<sup>16</sup> *E.g.* CROFT 2004.

<sup>17</sup> O'DAY/VAN NEER/ERVYNCK (*ed.*) 2004; DEFANCE 2009.

<sup>18</sup> GRIGSON 2007.

<sup>19</sup> HONGO/MEADOW 1998.

Table 1. Pig frequencies and status in faunal assemblages (2–7%: light grey, 7%+: dark grey; \*: status defined by us based on measurements [see Table 2]).

Period (approx. date B.C.E.)	Site and Stratum	% pig (livestock NISP)	Status based on			Reference
			High % juveniles	Body size	Domestic/ wild	
LB IIB (1300 – 1200)	<i>Tēl Yoqnaʿām</i> XIX	0 (82)				HORWITZ <i>et al.</i> 2005
	Beth-Shean Q/3-2	11.77 (153)				HORWITZ 2006
	<i>Tell Dōtān</i> Tomb 1	087 (231)				LEV-TOV/MAHER 2001
	Dor G/12-11	0.29 (2400)	v	small	domestic	BARTOSIEWICZ/LISK in press
	Aphek XII	2.41 (956)		large*	wild	HORWITZ 2009
	Ekron IX–VIII	2.70 (2219)				LEV-TOV 2010
	<i>Tell eṣ-Ṣāfi</i>	0 (168)				LEV-TOV 2012b
	Lachish S/3-2-1	1.7 (11275)	v		domestic	CROFT 2004
	<i>Tēl Hālīf</i> VIII	2.96 (3268)				ZEDER 1990
Shiloh Debris 407	0.17 (2890)				HELLWING <i>et al.</i> 1993	
LB III (1200 – 1130)	<i>Tēl Rehōv</i> D/7-6	1.43 (140)		large*	wild	TAMAR/MAROM/ RABAN-GERSTEL forthc.
	Megiddo H-12	2.43 (245)				SAPIR-HEN n.d.
	Aphek XI	2.29 (393)				HORWITZ 2009
	Beth-Shemesh 7	0.33 (2405)	v	small	domestic	TAMAR <i>et al.</i> in press
	Lachish VI	0.82 (2566)	v		domestic	CROFT 2004
	Timna Temple	0 (3146)				LERNAU 1988
Early IA I (1130 – 1050)	Dan VI	0 (not provided)				ILAN 1999
	Megiddo K-5	2 (406)		small*	domestic	SASSON in press
	Dor G/10-9	1.62 (1601)				BARTOSIEWICZ/LISK in press
	Ekron VI–V	19.46 (6577)				LEV-TOV 2000
	Ashdod XII, XI	10.86 (179)				MAHER 2005
	Beth-Shemesh 6–5	0.13 (4774)				TAMAR <i>et al.</i> in press
	<i>Izbet Ṣarṭa</i> III	1.02 (338)				ZUKERMAN n.d.
	Mount Ebal	0 (663)				HORWITZ 1986–87
	Shiloh V	0.08 (1323)				HELLWING/SADE/ KISHON 1993
<i>Tēl Māšōš</i> III	0 (78)				TCHERNOV/DRORI 1983	

Period (approx. date B.C.E.)	Site and Stratum	% pig (livestock NISP)	Status based on			Reference
			High % juveniles	Body size	Domestic/ wild	
Late IA I  (1150– 950)	Dan VI–V	0 (not provided)				WAPNISH 1993
	<i>Tēl Kinrōt</i> VI–IV	1.13 (2020)				THOMSON 2011
	Megiddo F-5, H-9, K-4, L-5, M-4	1.39 (2560)		small*	domestic	SASSON in press; SAPIR-HEN n.d.
	<i>Tēl Yoqnaʿām</i> XVIII–XVII	1.56 (356)				HORWITZ <i>et al.</i> 2005
	Dor D2/11-9	1.07 (654)				RABAN-GERSTEL <i>et al.</i> 2008
	<i>Tēl Rehōv</i> C-3, G-4	0.84 (238)				TAMAR/MAROM/ RABAN-GERSTEL forthc.
	Aphek X10-9	0.37 (1076)				HORWITZ 2009
	Ekron IV	6.83 (615)				LEV-TOV 2010
	Beth-Shemesh 4	0 (114)				TAMAR <i>et al.</i> in press
	Ai ( <i>Ḥirbet et-Tell</i> )	0 (165)				HESSE 1999
	<i>Ḥirbet Raddāna</i>	0.19 (517)				HESSE 1999
	<i>Ḥirbet Qēyafa</i>	0 (88)				KEHATI 2009
	<i>Tēl es-Sebaʿ</i> IX–VIII	0 (343)				HELLWING 1984
Early IA IIA  (950– 870)	<i>Horbat Rōš Zayit</i> III	0 (281)				HORWITZ 2000
	<i>Tēl Yoqnaʿām</i> XVI–XV	2.33 (258)		small*	domestic	HORWITZ <i>et al.</i> 2005
	Megiddo H-8, H-7, K-3	1.17 (659)				SASSON in press
	<i>Tēl Māsōs</i> II–I	0.62 (323)				TCHERNOV/DRORI 1983
	<i>Tell eš-Šāfī</i>	13.38 (284)				LEV-TOV 2012b
	<i>ʿIzbet Šarṭa</i> II–I	1.92 (472)				ZUKERMAN n.d.
	<i>Tell es-Sebaʿ</i> VII	0.82 (365)				HELLWING 1984
	Lachish V	0 (106)				CROFT 2004
	Negev forts	0 (2235)				HAKKER-ORION 2004

Period (approx. date B.C.E.)	Site and Stratum	% pig (livestock NISP)	Status based on			Reference
			High % juveniles	Body size	Domestic/ wild	
Late IA IIA  (870– 780)	Hazor A2, A4	2.64 (2193)				LEV-TOV 2012a
	<i>Tēl Yoqnaʿām</i> XIV	0.95 (105)		small*	domestic	HORWITZ <i>et al.</i> 2005
	<i>Tēl Rehōv</i> B, C, D, J; IV–VI	2.21 (8059)		1 large and 1 small*	wild, domestic	MAROM <i>et al.</i> 2009; TAMAR/MAROM/ RABAN-GERSTEL forthc.
	Megiddo H-6, 5, K-2, L-3	0.9 (940)				SASSON in press
	Aphek X8	2.96 (169)		small*	domestic	HORWITZ 2009
	<i>Tēl Hamīd</i>	5.18 (906)				HESSE/GRIFFITH forthc.
	<i>Tell eṣ-Ṣāfī</i>	13.47 (490)				LEV-TOV 2012b
	<i>Tell es-Seba</i> <sup>c</sup> VI	0 (493)				HELLWING 1984
	Lachish IV	0.37 (1350)				CROFT 2004
IA IIB  (780– 680)	<i>Horbat Rōš Zayit</i> Areas A, B, C	0 (322)				HORWITZ 2000
	<i>Tēl Kinrōt</i> I–II	2.25 (2934)		small	domestic	ZIEGLER/BOESSNECK 1990
	Beth-Shean P-7	7.69 (78)				HORWITZ 2006
	<i>Tēl Rehōv</i> B-2, J-4, 3	1.19 (84)				TAMAR/MAROM/ RABAN-GERSTEL forthc.
	Hazor A2, A4	3.23 (124)		small	domestic	LEV-TOV 2012b
	<i>Tēl Yoqnaʿām</i> XIII–XII	5.26 (114)		small	domestic	HORWITZ <i>et al.</i> 2005
	Megiddo H-4, H-3, L-2, Q-2	7.8 (381)		small*	domestic	SASSON in press; SAPIR-HEN n.d.
	<i>Tēl Hamīd</i>	8.6 (255)				HESSE/GRIFFITH forthc.
	<i>Tell eṣ-Ṣāfī</i>	15.78 (526)				LEV-TOV 2012b
	<i>Mōṣā</i> V	0.49 (1035)				SADE 2009
	Jerusalem Western Wall	0.17 (3000)				SAPIR-HEN forthc.
	<i>Tell es-Seba</i> <sup>c</sup> II	0.15 (4104)				SASSON 2004
	Aroer IV, III, IIA	3.07 (1042)		small	domestic	MOTRO 2011
	<i>Tēl Hālīf</i> VIB	0 (309)				SAPIR-HEN 2011
Lachish III	0.77 (1173)				CROFT 2004	

Period (approx. date B.C.E.)	Site and Stratum	% pig (livestock NISP)	Status based on			Reference
			High % juveniles	Body size	Domestic/ wild	
IA IIC (680– 586)	Ashkelon Grid 38, 50	0.69 (4210)				HESSE/FULTON/ WAPNISH 2011
	<i>Horbat Qitmit</i> Complex A, B	0 (320)				HORWITZ/RAPHAEL 1995
	Ekron Ic/Ib	1.83 (1036)				LEV-TOV 2000
	Aroer Ib	2 (601)		small	domestic	MOTRO 2011
	Lachish II	1.65 (243)				CROFT 2004
	<i>Qubūr el-Walēyide</i>	0 (70)				MAHER 2010

**Table 2.** Pig status definition, based on measurements (taken by reports' authors) compared by us to wild boar measurements (HONGO/MEADOW 1998; for mandibular M<sub>3</sub> HABER 2011); wild: light grey, domestic: dark grey.

Element	Standard (mm)	<i>Tēl Rehōv/ Tell eṣ-Ṣārem</i>	Aphek	<i>Tēl Yoqna'ām/ Tell Qēmūn</i>	Megiddo
Astragal-GLI	47.5	52.44 (IA IIA late)		49.5 (IA I late)	40.57 (IA I early)
Astragal-GLM	43.6				38.07 (IA I early)
Humerus-BT	34.6		35 (LB II)		
			20.1 (IA IIA)		
Radius-Bp	34.2	36.99 (LB III)		24.1 (IA IIA early)	
Scapula-GLP	39.4	47.47 (IA IIA late)			
Scapula-SLC	26.5				
Tibia-Bd	33.5	31.08 (IA IIA late)		26 (IA IIA late)	30.75 (IA I late)
mandibular M <sub>3</sub>	b = 1.6+, l = 3.7+				b = 1.3, l = 3.1 (IA IIB)



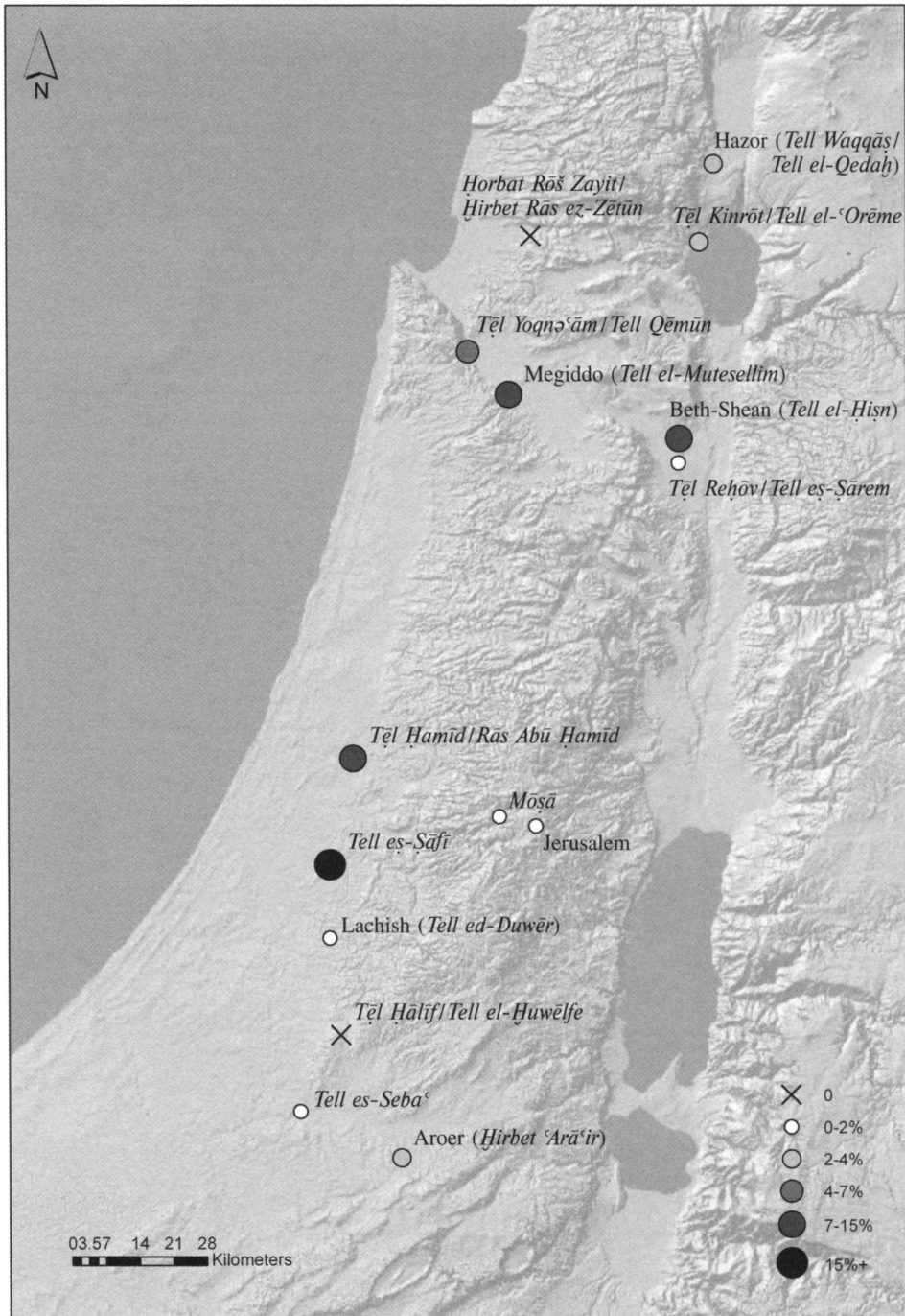


Fig. 1. Pig frequencies in the Iron Age IIB.

## 2. Results

### 2.1. Pigs in the Iron Age IIB

As the map in Fig. 1 (data and references in Table 1) shows vividly, at all Iron Age IIB sites in the lowlands territory of the Northern Kingdom (Israel) – such as Hazor (*Tell Waqqās/Tell el-Qedah*), Megiddo (*Tell el-Mutesellim*), *Tēl Yoqnaʿām/Tell Qēmūn* and Beth-Shean (*Tell el-Hiṣn*) – pig remains reach high values of 3.2–7.8% (unfortunately, no data from sites in the highlands sector of the Northern Kingdom are available). These sites were destroyed by Tiglath-Pileser III in 732 B.C.E. and hence their bone assemblages represent the first half of the 8<sup>th</sup> cent. B.C.E. – a period of peak prosperity in the Northern Kingdom, especially in the days of Jeroboam II<sup>20</sup>. Neighboring sites, which may have been located in bordering territorial kingdoms, such as *Horbat Rōš Zayit/Hirbet Rās ez-Zētūn* (Phoenician material culture)<sup>21</sup> and *Tēl Rehōv/Tell eš-Šārem* (Aramean features in the material culture)<sup>22</sup> display no interest in pig husbandry, or lower values of pig remains (Table 1).

But the most drastic difference is the one between Israel and Judah. Pig remains are nearly absent from Iron Age IIB sites located in the territory of the Kingdom of Judah (Table 1). Lachish (*Tell ed-Duwēr*) and *Tēl Hālīf/Tell el-Huwēlfe* in the Shephelah and *Tell es-Sebaʿ* in the Beer-Sheba Valley, show a low frequency of pigs. The same holds true for *Mōšāʿ* in the highlands west of Jerusalem and for an Iron Age IIB assemblage from the recent ‘Wailing Wall excavations’ in Jerusalem. The site of Aroer (*Hirbet ʿArāʿir*), located southeast of *Tell es-Sebaʿ* (the semi-arid area; current annual precipitation is 200 mm) is the only one to stand out, with more than 3% pigs. Aroer, as a way-station on the ancient road which connected south Arabia with the Mediterranean littoral, had a unique identity and hence the faunal assemblage of this site may represent food habits of many different people who traveled along the road<sup>23</sup>. This assumption is further supported by the fact that most of the cooking-pots found at the site were not manufactured locally<sup>24</sup>.

As mentioned above, we checked whether the pigs were an actual part of a given site’s economy and were raised (as domestic pigs) as part of its livestock (to be distinguished from occasional hunting). In all Iron Age IIB sites, the status of pigs was defined as domesticated (by the report’s author or by us using the measurements provided by the author; see Table 1 for status definition and Table 2 for measurements used for definition).

### 2.2. Pig Husbandry in Other Phases of the Iron Age

In order to better understand the striking differences between Israel and Judah in the Iron Age IIB it is necessary to view the long-term patterns of pig consumption during preceding as well as later periods (Table 1).

In the Late Bronze Age II–III, the decision regarding pig raising was made locally: pigs were raised in certain Canaanite centers such as Megiddo, *Tēl Hālīf/Tell el-Huwēlfe*, Lachish and Ekron (*Tēl Miqnē/Hirbet el-Muqannaʿ*), while they were not exploited at neighboring sites – *Tēl Yoqnaʿām/Tell Qēmūn* near Megiddo and Beth-Shemesh (*ʿEn Šems*) and *Tell*

<sup>20</sup> 788–747 B.C.E.; GRABBE 2007.

<sup>21</sup> GAL/ALEXANDRE 2000, 199.

<sup>22</sup> MAZAR 2008.

<sup>23</sup> THAREANI 2011, 304–305; MOTRO 2011.

<sup>24</sup> ISERLIS/THAREANI 2011, 185.

*eš-Šāfi* near Ekron. Pigs were also absent in the highland sites of Shiloh (*Hirbet Sēlūn*) and *Tell Dōtān*; however, in Shiloh they do appear in much greater numbers in the Middle Bronze Age (3.5%<sup>25</sup>). Pigs are present at two sites that are associated with Egyptian rule: Aphek (*Rās el-‘Ēn*) (2.4%) and Beth-Shean (11.75%)<sup>26</sup>. In the latter site their numbers are larger than at any other Late Bronze Age site in the southern Levant. Possibly, pig-preference at Beth-Shean reflects the culinary habits of Egyptian soldiers and administrators deployed at the site<sup>27</sup>.

In the Iron Age I the most significant phenomenon is the dramatic growth in pig consumption in urban Philistine sites, already noticed by HESSE<sup>28</sup> and LEV-TOV<sup>29</sup>: 10.8% at Ashdod (*Esdūd*), 19.5% and 6.8% at Ekron (early and late Iron Age I respectively; with only 2.7% in the Late Bronze Age II strata). At the same time, pigs do not appear at the “proto-Israelite” sites in the highlands. This dichotomy has been acknowledged previously and attributed to differentiation between the two groups<sup>30</sup>. Yet, this picture becomes less clear when one considers the smaller, rural sites within the territory of the Philistine city-states, which did not reveal large number of pig bones either: only 0.4% at Aphek, and 1.2% at *Tell Qasīle*<sup>31</sup> in northern Philistia, and no pigs in *Qubūr el-Walēyide* in southern Philistia, near Gaza<sup>32</sup>. Moreover, pigs do not appear (or appear in small numbers) in lowland sites that cannot be identified with the highland population or with highland rule (no pig bones at Dan [*Tell el-Qādī*], and ca. 1% at *Tēl Kinrōt/Tell el-‘Orēme* on the shore of the Sea of Galilee and at Dor [*Hirbet el-Burğ*]<sup>33</sup> on the coast [Table 1]). The Shephelah sites of Beth-Shemesh and *Hirbet Qēyafa* did not reveal pig bones either (Table 1). The excavators of Beth-Shemesh emphasized the marked continuity in material culture at the site during the transition between the Late Bronze Age and Iron Age I and therefore interpreted the avoidance of pig consumption as Canaanite resistance<sup>34</sup>. Similar traits may account for the absence of pig bones at *Hirbet Qēyafa*<sup>35</sup>, although the site’s inhabitants may possibly be linked to highland related groups<sup>36</sup>. It is also noteworthy that late Iron Age I lowland sites that became part of the north Israelite kingdom in the next phase of the Iron Age (early Iron Age IIA) – Megiddo VI and *Tēl Yoqna‘ām/Tell Qēmūn* – have low frequencies of pig bones (~1.5% in both).

A change in the north of the country can be detected in the Iron Age IIA, at sites such as *Tēl Yoqna‘ām/Tell Qēmūn*, *Tēl Rehōv/Tell eš-Šārem* and Hazor, which show increasing frequencies of pig bones. Early Iron Age IIA *Tēl Yoqna‘ām/Tell Qēmūn* and late Iron Age IIA Hazor were located in the territory of the Northern Kingdom of Israel; the affiliation of *Tēl Rehōv/Tell eš-Šārem* is less evident<sup>37</sup>. In the contemporary Philistine site of *Tell eš-Šāfi*, pig consumption remains high (13.5%), while at the nearby Judahite site of Lachish the popu-

<sup>25</sup> HELLWING/SADE/KISHON 1993.

<sup>26</sup> For Aphek in the Late Bronze Age II–III see GADOT 2010, for Beth-Shean see MAZAR 2009.

<sup>27</sup> See HECKER 1982; REDDING 1991 for pig consumption in Egypt.

<sup>28</sup> HESSE 1990.

<sup>29</sup> LEV-TOV 2000.

<sup>30</sup> FINKELSTEIN 1996; LEV-TOV 2000; BUNIMOVITZ/LEDERMAN 2008; FAUST/LEV-TOV 2011.

<sup>31</sup> DAVIS 1985; not appearing in Table 1, because the data could not be treated according to sub-periods.

<sup>32</sup> G. LEHMANN, personal communication 2012.

<sup>33</sup> For no pigs at the entire Iron Age at Dor see also SAPIR-HEN *et al.* 2012, undivided to sub-periods.

<sup>34</sup> BUNIMOVITZ/LEDERMAN 2011; TAMAR *et al.* forthc.

<sup>35</sup> For the identification of the inhabitants as local to the Shephelah see NA’AMAN 2012; KOCH 2012.

<sup>36</sup> GARFINKEL/GANOR 2009; FINKELSTEIN/FANTALKIN 2012.

<sup>37</sup> MAZAR 2008.

lation avoided pigs, similar to the situation in the highlands in the Iron Age I. The Iron Age IIA pattern further developed during the Iron Age IIB (above). For the Iron Age IIC, the trend of pig absence continues in Judah; unfortunately, there is no data regarding the northern sites for that period.

### 3. Discussion

In the past, considerations about pork consumption assumed that the dichotomy between Israelites and Philistines prevailed throughout the Iron Age, and related to the Israelite population – northern and southern – as to a uniform group. Most discussions focused on the emergence of ancient Israel and on the creation of ethnic boundaries in the Iron Age I on the one hand, and on the decline in pig frequency at Philistine sites at the end of the Iron Age II on the other hand. Our work shows that the situation in both, Iron Age I and Iron Age II is more complex than has been suggested previously.

In Iron Age I Philistia the exceptionally strong appearance of pigs characterizes the main urban sites, while the situation in smaller settlements and in the rural sector (*Qubūr el-Walēyide*, Aphek and *Tell el-Qasīle*) seems to be different. This dichotomy between the urban and rural sectors cannot stem from better economic conditions in the cities, as larger numbers of pigs are correlated with lower economic status<sup>38</sup>. Alternatively, it may be related to different background of the inhabitants – higher percentage of Aegean-origin population in the urban centers versus higher percentage of local population in the rural sites<sup>39</sup>, although pork consumption never served as a marker of ethnic behavior in the Aegean<sup>40</sup>. In the highlands there is indeed clear avoidance of pig husbandry, but this is similar (or almost similar) to the general pattern documented at lowlands sites. All this makes it difficult to use the presence or absence of pigs as an indicator of ethnic identity<sup>41</sup>. Therefore, correlating pork consumption and avoidance with cultural differentiation processes between the Philistines and the “others”, be they Israelite or Canaanite<sup>42</sup>, is somewhat insecure. The drastic decrease in the appearance of pigs at some of the Philistine centers in the Iron Age IIC seems to mark an acculturation process, in which cultural boundaries became less pronounced<sup>43</sup>; this is evident at Ekron and Ashkelon (*Tell el-Ḥaḍra*)<sup>44</sup>.

The most intriguing pattern discovered at sites from the Iron Age IIA–B is the dichotomy between Israel and Judah<sup>45</sup>. In the lowlands, pigs do not appear in the Judahite Shephelah, while they do appear in large numbers in the Jezreel Valley sites of the Northern Kingdom, especially in the Iron Age IIB. It seems that the larger frequencies at those sites derive from domesticated pigs, raised as part of the livestock, and not from the occasional hunting of wild boar. No special attitude towards pigs (*i. e.*, their appearance in some unique context, in articulation, fragmented or butchered differently), can be observed in the reviewed reports. On the contrary, all authors define them as part of the eaten fauna. This seems to indicate that

<sup>38</sup> ZEDER 1996.

<sup>39</sup> UZIEL 2007; GADOT 2008.

<sup>40</sup> LEV-TOV 2006, 212.

<sup>41</sup> And see also already HESSE/WAPNISH 1997.

<sup>42</sup> FAUST/LEV-TOV 2011; BUNIMOVITZ/LEDERMAN 2008.

<sup>43</sup> FAUST/LEV-TOV 2011.

<sup>44</sup> For Ashkelon previous to Iron Age IIC see HESSE 1990, not appearing in Table 1.

<sup>45</sup> For relative location of Israel/Judah see MITTMANN/SCHMITT (*ed.*) 2001, Map B IV 6.

pigs were treated just like the rest of the eaten fauna and were not discarded in a specific manner reflecting a different cultural attitude.

The newly discerned pattern may be used in order to shed light on the territorial and cultural affiliation of certain Iron Age II sites. An interesting example is *Tēl Hamīd/Rās Abū Hamīd*, located on the coastal plain north of Gezer (*Tell el-Ġazarī*)<sup>46</sup>. Until the Assyrian takeover in 732 B.C.E., Gezer was the southwestern administrative center of the Northern Kingdom close to its border with Judah and the Philistine city-states<sup>47</sup> (Fig. 1). We have no faunal report for Gezer; yet the significantly high percentages of pig bones found at Iron Age IIB *Tēl Hamīd* (8.6%), similar to other northern sites (*i. e.*, Megiddo and Beth-Shean), may be used as an indicator for the site's affiliation with the kingdom of Israel.

What did cause the rapid increase in the frequency of pigs in north Israelite sites in the Iron Age IIB? HESSE and WAPNISH suggested a few "pig rules" that may have influenced the decision of whether to raise pigs at a given site or not<sup>48</sup>. The rules would have been composed of three main factors: environmental conditions, site function and political and social status. Considering the environmental factor, the northern valleys would be suitable for pig-raising even in less favorable conditions than the ones prevailing today. In any event, isotopic records and the reconstruction of the Dead Sea lake levels show that there were no major climatic changes during the Iron Age in the southern Levant<sup>49</sup>. Furthermore, although better environmental conditions for pigs include higher rainfall and humidity, a new palynological record from the Dead Sea demonstrates that higher precipitation was prevalent during the Iron Age I than during the Iron Age II<sup>50</sup>, in addition to a significant reduction in forest size that occurred during the Iron Age II, probably as a result of major population growth<sup>51</sup> and slightly drier climatic conditions<sup>52</sup>. All of these circumstances made the area less suitable for pig husbandry. Regarding the sites' function and the political and social status, it seems that these factors did not change considerably at any of the sites in the transition to the Iron Age IIB: The northern valley sites functioned as administrative and agricultural centers of the Northern Kingdom in both the Iron Age IIA and IIB. Moreover, other material culture traits, such as evidence for trade with Phoenicia, show that the Iron Age IIB was a time of prosperity in the Northern Kingdom, while higher status sites are correlated with lower frequency of pigs<sup>53</sup>. It seems, therefore, that none of the factors listed above changed during the Iron Age IIB in a way that would encourage raising pigs.

The answer to this riddle can be found in the settlement and demographic processes that took place in the territory of the Northern Kingdom. In both the northern valleys and the Samarian highlands the number of settlements and their size, and thus the population, grew significantly and steadily throughout the Iron Age I–IIA and reached a peak in the Iron Age IIB. For example, in the western Jezreel Valley the number of settlements grew from 46 in the Iron Age I to 66 in the Iron Age IIB and the total built-up area grew from 57 to 72 hectares<sup>54</sup>.

<sup>46</sup> WOLFF/SHAVIT 2008; SHAVIT 2008.

<sup>47</sup> FINKELSTEIN/NA'AMAN 2005.

<sup>48</sup> HESSE/WAPNISH 1997; 1998; HESSE 1990.

<sup>49</sup> BAR-MATTHEWS *et al.* 2003; MIGOWSKI *et al.* 2006.

<sup>50</sup> LANGUTT *et al.* *forthc.*

<sup>51</sup> BROSHI/FINKELSTEIN 1992; TSAHAR *et al.* 2009.

<sup>52</sup> LANGUTT *et al.* *forthc.*

<sup>53</sup> ZEDER 1996.

<sup>54</sup> FINKELSTEIN *et al.* 2006, 760.

In northern Samaria the growth was even more dramatic: 80 sites in the Iron Age I flourished into ca. 240 in the Iron Age IIB<sup>55</sup>. This process brought about shrinkage of the open areas that are important for sheep/goat husbandry, and could have forced the Iron Age IIB population to a shift in meat production, breeding smaller herds of sheep and goats and concentrating more on pigs, which could supply large and immediate sources of meat. Judah too features dramatic population growth in the Iron Age IIB<sup>56</sup>; still, in the Iron Age IIB, as in earlier periods, the population of Judah was much smaller than that of Israel<sup>57</sup> and hence there could have been enough open-spaces, especially in the Shephelah.

This brings us back to where we started – the biblical prohibition of pork consumption. The origin of taboos on pigs is debated. Reasons for its avoidance include the animal's nature and behavior<sup>58</sup>, ecological requirements<sup>59</sup>, political-economic decisions<sup>60</sup> and the pastoral-nomadic background of the societies in question<sup>61</sup>. The biblical decree (Lev 11:7; Deut 14:8) comes from the world of Judah in late monarchic and early post-exilic times. Our work demonstrates that pork avoidance fits the reality in Judah in the Iron Age IIB–C (no data for the Persian period exist for now), but does not reflect daily life in the Northern Kingdom, at least in its lowland sites, in the Iron Age IIB. One may wonder why the biblical author promoted the obvious – pig avoidance – which was the reality in the highlands in the Iron Age I and in the Judahite lowlands and highlands throughout the Iron Age II. Pig taboo could have emerged in the highlands – in the north and in the south – as a result of the pastoral background of many of the Iron Age I settlers<sup>62</sup> and the need to create a “we”-and-“they”-boundary with the Philistines in the southern lowlands.

Equally important, in the time of the biblical authors, when pig frequencies in Philistia already diminished considerably, promotion of pig avoidance could have been directed toward Israelites who moved to Judah after the collapse of the Northern Kingdom in 720 B.C.E.<sup>63</sup>. In other words, it was the growing pork consumption habits in Israel in the Iron Age IIB that provoked the Judahite authors (one may assume that pig exploitation continued to be prevalent in the territory of the ex-Northern Kingdom in the 7<sup>th</sup> cent. B.C.E.). Judahite aspirations regarding these territories after the withdrawal of Assyria from the region could have been the reason for the continuing concern regarding pigs at that time. The biblical authors insisted that all Hebrews who dwelt in the territories of both, Israel and Judah, must acknowledge the rule of the Davidic Dynasty and worship in a sole Temple – in Jerusalem. The pig taboo could have been another Judahite cultural trait that was opposed to the situation in the north, and which the authors wished to impose on the entire Israelite population.

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<sup>55</sup> ZERTAL 1993.

<sup>56</sup> FINKELSTEIN/SILBERMAN 2006.

<sup>57</sup> BROSHI/FINKELSTEIN 1992.

<sup>58</sup> HARRIS 1985.

<sup>59</sup> GRIGSON 1987.

<sup>60</sup> ZEDER 1996; 1998.

<sup>61</sup> HARRIS 1985.

<sup>62</sup> FINKELSTEIN 1996.

<sup>63</sup> For Israelite refugees in Judah after 720 B.C.E. and their impact on the rise of Judahite ideology and theology see SCHNIEDEWIND 2004; FINKELSTEIN/SILBERMAN 2006; FLEMING 2012.

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