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Intermediate Bronze Age subsistence practices in the Negev Highlands, Israel: Macro- and microarchaeological results from the sites of Ein Ziq and Nahal Boqer 66

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ABSTRACT

This study presents new macro- and microarchaeological data on the subsistence economy of Early Bronze (c. 3500–2500 BCE) and Intermediate Bronze Age (c. 2500–1950 BCE) settlements in the arid Negev Highlands in southern Israel. The data originates from two sites: Nahal Boqer 66, a small Early Bronze/Intermediate Bronze site, and Ein Ziq, the largest central Intermediate Bronze Age settlement in the region. At Nahal Boqer 66 we identified ceramic evidence for mainly domestic cooking activities, clear microarchaeological evidence for spatial division of human activity and penning livestock, and no macro- or microarchaeological evidence for cereal agriculture. At Ein Ziq, the ceramic assemblage suggests a strong connection to trade networks and spatial division of activity, while the microarchaeological data shows no indication of direct food production—neither herding nor agriculture—and no trace of copper processing activities, previously considered an important supplemental subsistence strategy at many Negev Intermediate Bronze Age sites. We interpret the small Negev sites, such as Nahal Boqer 66, as representing the indigenous pastoral population, and the central sites as trading posts on the way to the coastal plain and Egypt. We explain the Early Bronze and Intermediate Bronze Age settlement patterns in the Negev Highlands on the background of contemporary geo-political transformations in the Levant and Egypt.

1. Introduction

The last 5000 years in the arid Negev Highlands (southern Israel) are characterized by sharp settlement oscillations; several periods feature strong evidence for human activity, while others lack or have scarce human remains (e.g., Rosen, 1987, 2011a, 2016; Finkelstein, 1995; Shahack-Gross and Finkelstein, 2015). The former include a phase in the Early Bronze Age (hereafter EB, commonly identified as the EB II, c. 3000–2900 BCE, for the dates see Regev et al., 2012), Intermediate Bronze Age (hereafter IBA, also known as EB IV, c. 2500–1950 BCE, Regev et al., 2012), Iron Age IIA (c. 940–780 BCE, Finkelstein, 2014), the Nabatean period (c. 170 BCE–100 CE, Erickson-Gini, 2010) and Byzantine/Early Islamic period (c. 325–900 CE, Magness, 2003). The cause/s for these transformations—climate or human induced—have been discussed by many scholars (e.g., Rosen, 1987; Finkelstein, 1995; Palumbo, 2001); the current paradigm seems to exclude climate as a major factor behind the settlement history of the region (Shahack-Gross and Finkelstein, 2015).

In this study we deal with the settlement history of the Negev Highlands in the third millennium BCE, with special emphasis on the IBA. In the Mediterranean region, the EB/IBA transition is characterized by the decline and abandonment of urban centers and the system of city-states, and a shift to rural subsistence (for possible causes and discussion see e.g., Dever, 1989; Esse, 1991; Rosen, 1995; de Miroschedji, 2009; Greenberg, 2017). However, at the same time the arid Negev Highlands display evidence for prosperity rather than decline. The IBA settlement peak in the Negev Highlands features two main site types: four large 'central' sites (Fig. 1) that are composed of dozens to hundreds of circular stone structures and open spaces between them, and hundreds of small sites composed of several stone built rooms set around open enclosures (e.g., Finkelstein, 1995; Haiman, 1996; Dunseth et al., 2016).

Paradigms concerning subsistence strategies in the Negev Highlands have been based on a combination of circumstantial evidence and archaeological factors. The former includes: 1) location of sites and—specifically—proximity to ancient terraced wadi systems (e.g.,

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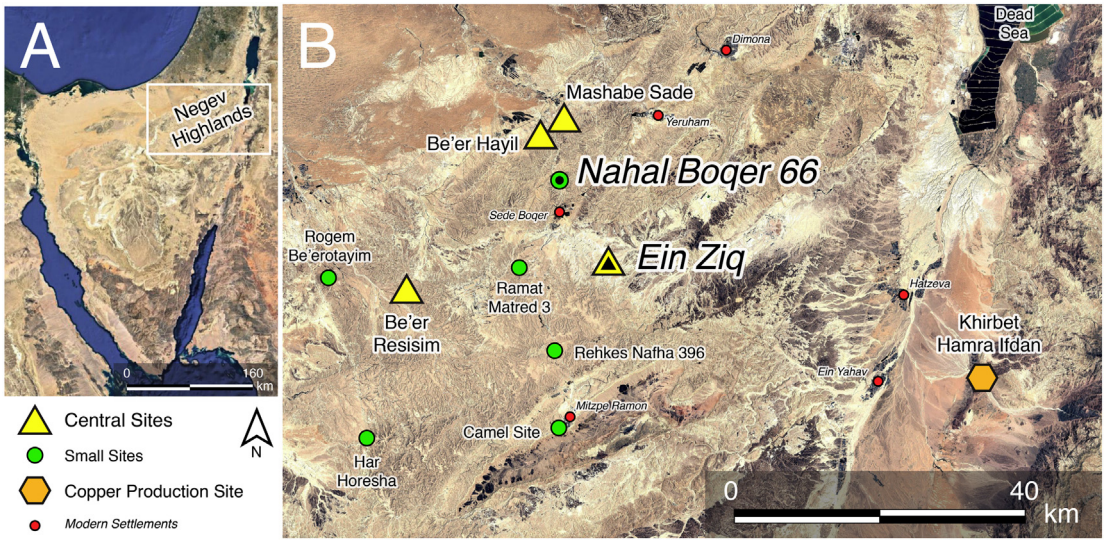

Fig. 1. Aerial photographs showing the study area and selected sites mentioned in the text. (A) Satellite image from Google Earth (Landsat/Copernicus, dated 31.12.2016). (B) Archaeological sites and modern settlements for reference. The sites reported in this study—Nahal Boqer 66 and Ein Ziq—are marked black in the center.

Evenari et al., 1958; Cohen and Dever, 1981; Dever, 2014); and 2) assumptions based on 19th–20th century Bedouin practices (see Dunseth et al., 2016 for summary and considerations). The archaeological evidence is comprised of: 1) architectural similarities to premodern Bedouin tents and semi-permanent structures (Finkelstein, 1995; Haiman, 1996); 2) scarce zooarchaeological remains (Hakker-Orion, 1999; Saidel, 2002a; Saidel et al., 2006); and 3) lithic material, namely the presence of blades with 'sickle gloss' and grinding stones (e.g., Finkelstein, 1989; Cohen, 1992; Haiman, 1996).

Haiman (1996) emphasized the importance of copper trade for the IBA inhabitants of the Negev Highlands, especially in light of ingot hoards found at central Negev sites (e.g., Har Yeruham, Kochavi, 1967; Be'er Resisim, Cohen and Dever, 1980; Ein Ziq, Cohen, 1999: 137–188). Based on spatial and architectural affinities, Haiman (1996) postulated the existence of two complementary socioeconomic phenomena in the Negev, attributing central sites to copper processing/production activities, and the smaller sites to herding-based economy. Subsequent studies have supported Haiman's copper paradigm, based on new large-scale excavations at the copper production site of Hamra Ifdan (Adams, 2000; Levy et al., 2002; Gidding, 2016; Ben-Yosef et al., 2016) as well as lead isotope provenance studies of ingots found at Negev sites (Segal et al., 1996–1997; Hauptmann et al., 2015). However, data on other forms of subsistence practices—i.e., herding and agriculture—-continued to be based on indirect evidence and interpretation of scarce remains (more below).

In this report we present the results of our work at the small EB–IBA site of Nahal Boqer and the central IBA site of Ein Ziq. Integrating macroscopic and microscopic evidence, we discuss the subsistence practices in the Negev Highlands in the third millennium BCE.

1.1. Identifying EB–IBA subsistence strategies in the Negev Highlands

Understanding subsistence strategies in the Negev Highlands has been based on studies of meager zooarchaeological and botanical remains. In general, at central IBA sites the faunal assemblage is dominated by meat-bearing parts of young animals, suggesting a consumer economy (Hakker-Orion, 1999) and mature animals at EB–IBA small sites, suggesting a producer economy (Saidel et al., 2006). Archaeobotanical studies have been limited to wood charcoal from hearth contexts (e.g., Warnock, 1991; Baruch, 1999). Pollen analysis from degraded dung from the Atzmaut rock-shelter highlighted seasonal grazing of caprine herds (Babenko et al., 2007).

Indirect indicators of subsistence strategies such as lithics and ground stone items have also been studied from EB and IBA sites in the region. Sickle blades form a miniscule proportion of IBA lithic assemblages (Vardi et al., 2007; Rosen et al., 2014a; also, Saidel, 2002a; Saidel et al., 2006). Sickle gloss forms from abrasive activities and has been shown experimentally to form through the repeated cutting or reaping of any plant material (e.g., Anderson, 1999; recently Rosen et al., 2014b *contra* Anderson, 1980) thus it is not a valid indicator for the processing of cultivated plants. Assumptions have also been made based on the layout of sites and their parallels to premodern Bedouin settlements; mainly that internal enclosures represent livestock pens. However, the presence of animal dung in these enclosures has not been determined (cf. Rosen, 2011b: 203).

Recent ethno- and geo-ethnoarchaeological studies have demonstrated the importance of animal dung and its constituents to reconstructing human subsistence practices (e.g., Brochier et al., 1992; Reddy, 1999; Shahack-Gross et al., 2003; Valamoti and Charles, 2005). Specifically, durable inorganic remains of animal dung—namely, calcitic dung spherulites and opaline phytoliths—have been found to be effective indicators of herding and grazing practices, as well as foddering strategies (Shahack-Gross, 2011 and references therein).

Earlier work in the Negev Highlands examined micro-remains from Iron Age (Shahack-Gross and Finkelstein, 2008) and late Byzantine-Early Islamic sites (Shahack-Gross et al., 2014), comparing them to data collected in modern and sub-modern Bedouin agro-pastoralist encampments. These studies, as well as works on dung identified in sites from areas with higher biomass and annual precipitation (e.g., the Mediterranean coastal site of Tel Dor, Albert et al., 2008), indicated the possibility to distinguish between the practices of free-grazing (pure pastoralism) and raising animals with the addition of agricultural by-products (agro-pastoralism) using phytolith assemblages in well-dated dung deposits (also Shahack-Gross, 2011, 2017). Animal dung from free-grazing herds in desert areas is typified by low phytolith concentrations and less than 1% presence of dendritic morphotypes, as animals primarily feed on phytolith-poor local shrub vegetation (Shahack-Gross and Finkelstein, 2008). Animal dung related to agro-pastoral activities in the Negev is characterized by higher phytolith concentrations associated with at least 3–4% of dendritic morphotypes, as animals feed on both phytolith-poor local shrub vegetation and the straw and chaff byproducts of domestic cereals (Shahack-Gross et al., 2014). Using this approach, it was asserted that Iron IIA livestock herds in the Negev Highlands were free grazing, with no evidence for the