

# Excavations at Tuleilat Qasr Mousa Hamid

J. A. Verduci

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**Abstract:** Tuleilat Qasr Mousa Hamid, in southern Jordan, is believed to be the Iron Age site of biblical Zoar. This paper reports on an excavation that was undertaken in January 2015. It is clear from finds that there was a significant agricultural and industrial settlement at the site in the Iron Age II period.

In January 2015 the Australian Institute of Archaeology (AIA) in collaboration with the Hellenic Society of Near Eastern Studies (HSNES) launched its inaugural archaeological survey and excavations at the fertile agricultural site of Tuleilat Qasr Mousa Hamid (Mousa Hamid) in southern Jordan. Excavations at Mousa Hamid aim to examine the extent and nature of an Iron Age (IA) IIC site at the south-eastern end of the Dead Sea. These excavations focus on specific questions, such as the identification of cultural material that can be linked to ethnic or cultural groups, and the examination of previously unrecognised trade relationships between the site and its ancient neighbours. Furthermore, it intends to examine what is believed to have been a significant Edomite agricultural and industrial community.

The role of developmental trends in Edom is a debated topic (Bienkowski, 2001; 2002; 2009; Levy 2009; Porter 2004), but it has primarily focused on the technological aspects and the role of metal production, typically at sites located on the high plateau and the region surrounding the important copper production site, Feynan, which had already been abandoned by the IA IIC (Levy 2009; Levy et al. 2014: 986). With copper production no longer an

economic factor in the region at this time, Zoar's location along trade routes between Arabia, the Levant and the Mediterranean might reveal the important role this site played in the economic system of the later IA period.

## Location and Environment

Mousa Hamid, at 392m below sea level, is one of the lowest places on the earth's surface. Commonly believed to be biblical Zoar (MacDonald 2000: 45), the site forms part of the modern town of Safi, and has views of the mountainous highlands to the east and the shores of Israel to the west. The town is situated in the Ghawr es-Safi, a *ghawr* is an alluvial fan at the mouth of a wadi entering the Rift Valley flowing down from the highland mountains to the east. This *ghawr* lies at the mouth of the Wadi al-Hasa on the border of ancient Moab and Edom, Figure 1. The southern extent of Moabite territory to the Wadi Mujib seems explicit enough, while vague references to Moab extending to Zered most likely refer to Wadi al-Hasa (MacDonald 1988: 73; Miller 1989). Both the Wadi Mujib (max. 1.1km deep and 6km wide) and Wadi al-Hasa (max. 1km deep and 7km wide) are dramatic geographic features forming natural topographic divisions.



*Figure 1: View of the Ghawr es-Safi, looking west. Photo: J.A. Verduci.*

During the IA the Dead Sea purportedly served as an international border and its shores and the Wadi Arabah running between it and the Gulf of Aqaba as the boundary between various cultural groups in Cisjordan (west of the Jordan valley) and Transjordan (east of the Jordan valley), particularly between Edom and Judah. However, there is little evidence to substantiate these cultural or ethnic distinctions other than the biblical account.

Owing to its tropical climate and to the waters coming down from the mountains through the wadi, Zoar was a flourishing oasis in an alluvial fan that is said to have been abundant in balsam and date trees and an important centre for indigo and sugar production (Goor 1967; Politis 1999). Climatic conditions in the biblical period are not well-understood, but a recent reconstruction of environmental conditions during the IA by the Edom Lowlands Project suggests that the climate was very similar to today (Levy et al. 2014); the region was arid with a steady intake of water from springs in the Wadi al-Hasa and rains and heavy snow runoff from the highlands.

### Historical record

Sparse settlement patterns in IA I Transjordan give way to marked expansions from the IA IIB period (*ca.* 900–700 BCE) (Younker 2003; Routledge 2004). Nevertheless, while evidence of significant sites linked to both the bible and Jewish history exist to the north of the Dead Sea, such as at Nimrim/Bethnimrah (Numbers 32:36), very little evidence of IA settlement exists at the southern end of the Dead Sea in the lowlands of Transjordan – other than at Mousa Hamid/Zoar (Politis 1999: 543f).

In the Old Testament Book of Genesis (14:2, 8), Zoar was one of the five so-called ‘cities of the plain’, along with Sodom, Gomorrah, Admah, and Zaboim, but was spared destruction by fire and brimstone because it had sheltered Lot and his family (MacDonald 2000: 45). According to this dramatic biblical tradition, Lot and his daughters escaped to Zoar and took refuge in a nearby cave at Deir ‘Ain ‘Abata, which was commemorated with a monastery that flourished from the fourth–seventh centuries. The monastery and Byzantine Zoar (Zoara) are most frequently known by their depiction on the topographically reliable mosaic map at Madaba, Figure 2 (Piccirillo and Alliata 1999). The map represents the site as a substantial settlement with three towers and two red-roofed churches in the midst of a grove of palm trees.<sup>1</sup>

Historians, such as Josephus, Ptolemy, Eusebius and Saint Jerome, position Zoar (Zoara/Seghor/Sughar/Zughar) at the southern end of the Dead Sea (Robinson and Smith 1841: 648–51). The location of a Roman cavalry unit at Zoar was reported in the *Notitiae Dignitatum* (72). Hierocles refers to it in the geographic tract, *Synecdemus* (Burckhardt (ed.) 1893), as does George of Cyprus in the *Descriptio Orbis Romani* (Gelzer (ed.) 1890). Later descriptions of Zoar include those by Fulcher of Chartres and William of Tyre (Fulcher of Chartres 1969; William of Tyre 1976 (1941)). Beautiful descriptions of Zoar



**Figure 2:** Detail of the late 6<sup>th</sup> century mosaic map at Madaba. Note how the site of ‘Zoora’ is surrounded by date palms. Image: after Politis 2012b.

were also left by Arabian geographers, who noted the sweetness of its dates (Ibn Hudadbeh: refer to Le Strange 1890: 289). Al Madisi identified a capital (Sughar) in the district ash-Sharah, south of the Wadi Mujib. He suggested that the site was strategically positioned to control passages through the Rift Valley as roads led from the site to Jerusalem, Nablus, Amman, Petra, and Damascus (Walmsley 2001: 517f); indeed, crusader campaigns in Jordan, as described by Fulcher of Chartres and William of Tyre, undertook routes that passed through Zoar on the way to and from Jerusalem (Fulcher of Chartres 1969: 145–7; William of Tyre 1976 (1941): 427). Routes such as these remained open, albeit with taxes imposed, despite warfare between the Muslims and Crusaders (Ibn Jubayr 1952: 300f; Walmsley 2001: 544).

### Regional interactions

As the IA spans approximately 700 years (*ca.* 1200–500 BCE), it is crucial to understand that this was a dynamic period in which fundamental changes in social organisation and historical circumstances could occur at the century scale (or less). The history of Edom and the southern Dead Sea region extends back to the tenth century BCE, equivalent to the IA IIA period. Although the emergence of the Edomite state occurred during this early phase,<sup>2</sup> it was not until the seventh century that we witness the evolution of a complex society. Perhaps this development was partly due to Edom’s geographic location as the outlet of the Red Sea incense route to Mediterranean ports (Finkelstein 1988), with the control of these routes

leading to the rise of the Edomite kingdom.<sup>3</sup> The focus of research in southern Jordan has been on the development of IA settlement patterns in the highlands at sites such as Buseirah (biblical Bozrah) and Tawilan (possibly biblical Teman). The prosperity of Buseirah, with its monumental buildings and evidence of social stratification and economic administration, is generally attributed to Assyrian influence or even domination (Hart 1986: 54).

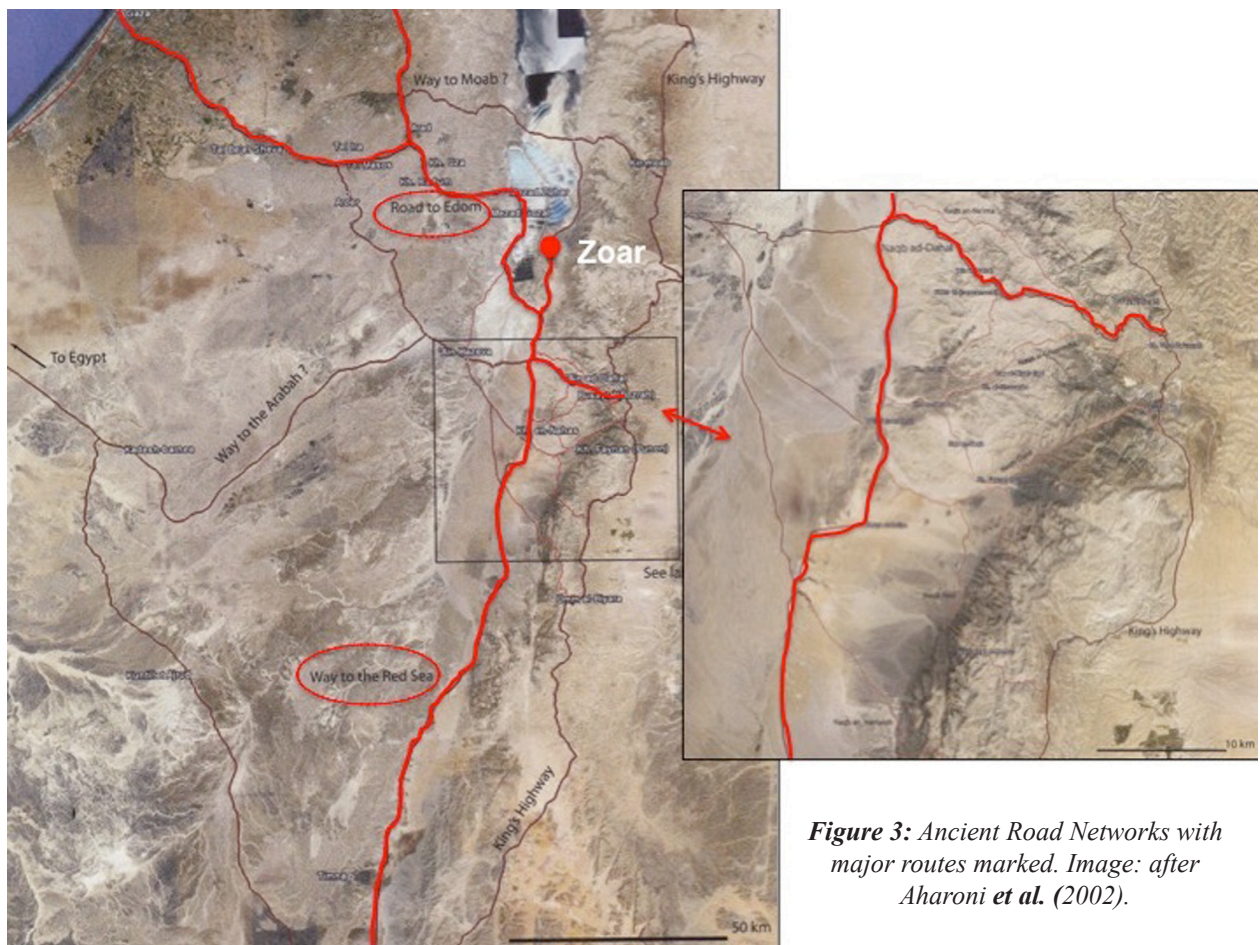
It was not until 640 BCE that the Assyrian Empire withdrew from the west, before which we might safely assume the inclusion of Zoar in an asymmetrical relationship with Assyria. Evidence for an active Assyrian presence along overland trade routes in Cisjordan is seen from the eighth century BCE (Singer-Avitz 1999: 7). It may be that stations located at the heads of passes through the Wadi al-Hasa were also involved in the control of goods between Assyria and Edom (Routledge 2004: 193–200), particularly at Khirbet an-Najjar and at Khirbet al-Akuza (Van der Steen 2009: 126). The significant location of Zoar near this junction between north–south and east–west routes might thus be connected to the flourishing of Edomite trade networks.

IA II encounters between Edom and Assyria are attested to in an inscription from the reign of Tiglath-Pileser III dating to 728 BCE mentioning the tribute obligations of the kings of Edom and Moab (among others), who had

submitted to the Assyrian king (Tadmor 1994: 170f). This relationship would have been manifest in an attempt to divert trade, but the use of fortifications to limit the Assyrian domination is documented (Eph'al 1982). Presumably, a relative independence enabled local leaders to develop power-building strategies and the ability to convert agricultural surplus into forms of wealth. This precarious relationship was implicated in interregional trade and perhaps in the transformative nature of late IA Transjordanian society.<sup>4</sup> As vassals of Assyria, local kings did not have their rule interfered with as long as tribute was paid regularly (Postgate 1992: 251–5), and they were granted the respect of continuing to be referred to as kings (Millard 1992: 37).

### Twentieth-century investigations

The results of an 1883 survey conducted by the Palestine Exploration Fund revealed some of the ancient routes in southern Jordan (Kirchener 1884), although archaeological surveys by W.F. Albright in 1924 failed to locate traces of early occupation, deeming them buried under the waters of the Dead Sea (1924–1925: 58). Evidence of ancient routes was confirmed in several other surveys, such as those by Frank (1935), Glueck (1935), Alt (1935), and in descriptions by T.E. Lawrence in his accounts of 1918.<sup>5</sup> After 1970 Rast and Schaub (1974) and then King added to the available data for the southern lowlands.<sup>6</sup>



**Figure 3:** Ancient Road Networks with major routes marked. Image: after Aharoni *et al.* (2002).



**Figure 4:** Ghawr es-Safi annotated with sites mentioned in the text and wadi locations. Image: Google Earth, dates 11/9/2012 (bottom left) and 20/10/2004.

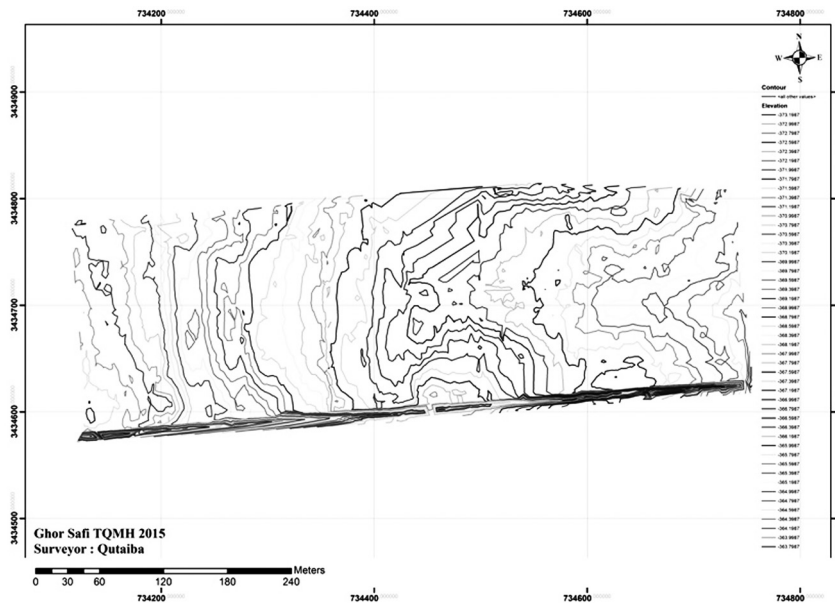
Extensive surveys were conducted by the *Southern Ghors and Northeast 'Araba Archaeological Survey* from 1985–1986 (MacDonald et al. 1988) and more recently, Eretz Ben-Yosef, Mohammad Najjar and Thomas Levy have conducted road surveys from the lowlands to the highlands in the east, identifying more ancient roads (2014). Some of the routes that pass through the wadis are characterised by dense drawings and inscriptions that have accumulated on the rock surfaces over the course of centuries and perhaps millennia. The major easterly route passed through the Wadi al-Dahal to the south of Buseirah, while another crossing was available further to the south through Wadi Fidan, Figure 3. The Ghawr es-Safi Project also mapped a Roman road immediately east of Mousa Hamid along the Wadi Sarmuj leading to the Kerak plateau, Figure 4. Evidence of ancient roads that probably began to flourish during the LBA also exists south through the Arabah Valley. These Arabian trade routes connect Zoar with Elath on the Gulf of Aqaba, known as ‘the way of the Red Sea’ (Deut. 2:1; Num. 21:4) or, ‘the route of the ‘Arabah’ (Bartlett 1989: 39). There was also the so-called ‘road to Edom’, connecting Zoar to the Mediterranean coast; westerly routes from Zoar most likely passed through the Beersheba Valley, which was the most easily traversed valley in the Negev (Singer-Avitz 1999: 7).

Intensive and systematic surveys of the region between Ghawr es-Safi and Wadi Zhaneizir to the south over two seasons between 1985 and 1986 identified early IA sherds in the Wadi al-Hasa region (MacDonald et al. 1988). Around that time, additional archaeological remains were discovered during the installation of underground water canals (Politis 1994: 12–5).

The discovery of the Sanctuary of Lot at Deir ‘Ain ‘Abata and a Nabataean cemetery at Khirbet Qazone south-west of Bab edh-Drah in the late 1980s and 90s spurred archaeological interest in the region. Then, over a period of twelve years beginning in 1997, the *Ghawr es-Safi Project* under the direction of Konstantinos Politis located and mapped dozens of archaeological sites (Politis 1998b; 2012; 2012a; Politis et al. 2005). This surge in interest was compounded by the wealth of artefacts discovered as the result of illicit excavations, particularly at al-Naq, where the Early Bronze Age and Byzantine cemetery is located (Politis 1994). The Ghawr es-Safi Project proceeded to locate the early Byzantine–medieval Islamic urban centre settlement of Zoara 2 km due west of Mousa Hamid at Khirbet esh-Sheikh ‘Isa and its adjacent industrial sugar complex of Masna‘ es-Sukkar (Tawahin es-Sukkar) (Jones et al. 2000). Nonetheless, while Sheikh ‘Isa and Tawahin es-Sukkar are accepted as being the location of this later period of Zoara, little is truly known about IA Zoar.<sup>7</sup>

### The investigation of Zoar

The Mousa Hamid site was first identified in the spring of 1999 during the course of a survey by Politis (Politis 1999). At that time attention was drawn to the abundance of IA pottery scattered over an area of approximately one acre and especially to the large amount of large stone tools, whose abundance was unique for this period in the southern Levant. Approximately 90 stone tools were collected from the surface at this time. The profusion of non-portable querns (some of these c. 400 mm in height x c. 400 mm in length) and large grinding stones is of particular interest; these tools are not typical features of a habitation site and suggest that this was the location



**Figure 5:** Contour map of Mousa Hamid (Map: Qutaiber Dasouqi).

of what might have been an important IA community. That the site is situated near an industrialised sugar zone (Tawāhīn es-Sukkar) indicates that the region was especially fertile, well-watered, and had a history of agricultural processing.

Excavations sponsored by the Hellenic Society of Near Eastern Studies in the spring of 2000 identified architectural remains and IA sherds that were thought to represent two phases of occupation dated to c. 900 BCE. The report in ADAJ also noted that the construction of irrigation pits had exposed Nabataean/Roman sherds (Politis 2001: 189). Despite limited publication, most resources now accept modern es-Safi as the location of biblical Zoar, if not specifically at Mousa Hamid (Politis 2012). Nonetheless, for the most part, the discussion about the

site's identification has been limited to cursory summaries that mainly focus on the medieval Islamic period and the nearby sugar industry.

The commencement of the recent project developed as the result of a rekindled interest in exploring the IA nature of the site. The lack of robust research at the site served to initiate an intensive survey and excavation in the winter of 2015. Initial investigations involved a detailed topographic and archaeological survey to define the site boundaries, to map the site and to locate potential excavation areas. This survey involved taking points at 5m intervals using Leica Total Station; these points were downloaded into a GIS program and subsequently used to create a contour map of the area, Figure 5.



**Figure 6:** View of Tuleilat Qasr Mousa Hamid, looking northwest. Note the location of the adobe farmstead that belonged to Mousa Hamid Hashoush. Photo: K. Politis, 1999.



**Figure 7:** View of stone tools on surface at Mousa Hamid, looking north. Photo: J.A. Verduci.

The determination of the site boundary was hindered by external factors, meaning that the delineation of the area to be surveyed was bounded by roads and private property. As there was a high concentration of surface finds within the boundary, it reaffirmed the assumption that we were focusing on a meaningful area. Surface sherds were especially concentrated in a slightly raised zone of the low-lying tell in the vicinity of the original adobe farmstead, the ‘qasr’, that belonged to Mousa Hamid Hashoush, Figure 6 (Politis 1999: 543). As this was a short exploratory season, the primary objective was to designate an area for immediate excavation, rather than collect these sherds.

In the course of the survey, the profusion of large stone tools scattered over the site reinforced the interpretation of the site as the location of an important agricultural/ industrial settlement, Figure 7. As there were in excess of 200 objects, only the most impressive saddle querns, grinding stones, and rollers were collected and joined to the assemblage of tools that had been collected from the surface in 1999. As a side project, stone tools from both collection programs were processed and stored at the nearby Safi Museum (‘The Museum at the Lowest Place on Earth’).

Mousa Hamid is located in an agricultural community with rotating crops. It was possible to negotiate with the landowner and compensate him for the loss of these crops and for access to his land. Having gained the landowner’s permission, a decision was made to excavate a single 4 x 4 metre trench (Square 1) in the vicinity of the mound mentioned above, Figure 8. The excavation method sought to determine the stratigraphic relationships between architectural features, installations and debris layers in order to interpret the site formation process.

The trench was initially excavated from the surface to a depth of 2.6 metres. At this level, a 1m x 1m sondage in the north of the trench was excavated a further 1.8m in depth to virgin soil, a sterile layer of sand, in order to examine the depth of stratigraphy. The results demonstrate two main phases of occupation below the disturbed modern plough-based agricultural strata (Temporary (T.) Stratum I). The first phase (T. Stratum II) was associated with a surface, architectural features and installations at 370m below sea level, or 2.6m below the surface. While excavating in the 1 x 1m sondage, an earlier phase of occupation was identified at 371m below sea level or 3.13m below the surface (T. Stratum III). Between the two phases was a layer of windswept sand, which possibly indicates a period of abandonment.



**Figure 8:** Surface of Square 1, looking north. Photo: J.A. Verduci.



**Figure 9:** Mudbrick feature. Photo: J.A. Verduci.

### **T. Stratum I**

Square 1 was located in an area covered by tomato crops and was thus impacted by irrigation channels, root systems and mechanical ploughing. Within this brown silt context were areas of degraded adobe and plastic intrusions. The identification of ploughlines in the sediment meant that it was possible to determine that modern disturbance ceased at approximately half a metre in depth.

### **T. Stratum II**

This silt and degraded mudbrick context was associated with the poorly preserved remnants of mudbrick walls. These were located in the NE and SW of the trench, but were mostly degraded and without footings. The alignment of these bricks implies that they might represent the external corner of a building. In the NE this was represented by a 1 x 1.5m area ranging between 2 to 6 courses of mudbrick, roughly oriented N-S, and in the SW by the partial remains of one course in two rows, Figure 9. These mudbricks are in general 54 cm long, the equivalent of one Egyptian royal cubit, which was the standard brick length in the LBA–IA southern Levant.

Installations in this stratum include the remains of a clay-lined tabun; this feature was clearly identifiable despite being badly degraded and only the lower 10 cm remaining, Figure 10. Preliminary analysis of the ashy silt from inside the tabun, which is being conducted by Mohammed al-Qinna at the Hashemite University's Faculty of Natural Resources and Environment, could identify no organic compounds in the sample, possibly due to the extreme salt conditions in the sediment. Nor was it possible to determine at what temperature it had been burnt, Table 1. Despite occasional slag fragments and some technological ceramic fragments (such as basin fragments), no evidence exists that this was a furnace or was involved in metal production.

The removal of the sediment associated with mudbrick collapse revealed evidence of destruction caused by a major burning episode related to the only identifiable surface in the trench. This burning swept across the floor,



**Figure 10:** Tabun locus 017. Photo: J.A. Verduci.

tabun and mudbrick features, as is clearly visible in the baulks. The cause of this destruction is unknown, and testing by Al-Qinna has produced similarly inconclusive results as those for the tabun.

<b>Property</b>	<b>Unit</b>	<b>Value</b>
<b>EC25 (electrical conductivity)</b>	(mS/cm)	20.7
<b>pH</b>		6.74
<b>Water Content (θg)</b>	(%)	3.9
<b>Bulk density</b>	(g/cm <sup>3</sup> )	0.98
<b>Organic Matter</b>	(%)	15.12%
<b>CaCO<sub>3</sub></b>	(%)	22.8
<b>Total Dissolved Salts</b>	(ppm)	13,269.50
<b>Sand</b>	(%)	36.91
<b>Silt</b>	(%)	40.23
<b>Clay</b>	(%)	22.86
<b>Texture</b>		Loam

**Table 1:** Tabun soil analysis results

### **T. Stratum III**

A second phase of occupation was less discernible, but also yielded significant numbers of stone implements (mainly pestles) and pottery. No surface or architectural features could be identified and no significant changes in sediment were noticed other than a soil colour change from greyish brown to yellowish beige. Given the difficulty in distinguishing between strata, the likeliest explanation is that we may have excavated part of an outdoor courtyard with industrial accumulations of large



**Figure 11:** Final stage of excavation with completed sounding . Photo: J.A. Verduci

quantities of debris. The site formation is very interesting; however, it should be noted that at sites such as Nimrin, just 12km north of the Dead Sea, there were three meters of IA II occupation overlying the 10th century stratum (McCreery 1993: 268). Factors such as windswept sands and flooding in the alluvial fan can create deep layers of fill, as can extended periods of accumulated refuse, Figure 11.



**Figure 12:** (a) Ceramic horse head figurine, and (b) engraved ceramic stamp seal. Photos: J.A. Verduci.

### Associated finds

The square yielded a large number of lithics (mainly retouched flint flakes), glass, slag, shells, a red stone scarab seal with faintly incised markings, as well as an 11<sup>th</sup> century AD coin in disturbed Stratum I. There was also an assortment of jewellery items in the manner of a bone hairpin fragment; stone, faience, and shell beads; and copper alloy bangle fragments, a lunate earring fragment, and a triangular fibula bow fragment. This last object was perhaps the most significant item of jewellery, having clear associations with high-status adornment practices (Verduci (forthcoming)). Other finds included ceramic tripod or incense burner legs and potter's marks. In addition, there is a ceramic horse head figurine with parallels at Tawilan (Bienkowski 1995); our figure had raised lines delineating a bridle as is commonly identified on other horse figurines, Figure 12 (Dornemann 1983: fig. 86.9). Amongst the finds is also an oblique impressed plaque a figure in profile that is preserved only from the knees down, but whose sandals, robe, and staff can be identified; this object may have been used to impress pottery, as occurs on examples found at Tell Nimrin and other sites in Cis- and Transjordan (Millard 2005).

Forthcoming analysis on the animal bones by Louise Martin, University College London, should shed light on the dietary practices of the late IA Edomites. This analysis will identify if the predominate remains belong to domesticated sheep and goats, as is common at other southern Levantine sites. In addition, we hope to confirm the tentative identification of donkey bones; the presence of donkey bones at Mousa Hamid might be linked to its importance as a pack animal, perhaps used to transport goods along the trade routes discussed earlier.





**Figure 13:** Iron Age IIC decorated chalice. Note the petal décor. Photo: J.A. Verduci.

One of the most interesting observations regarding the finds from the current excavation concerns the large ceramic assemblage. The recent excavations at Mousa Hamid yielded approximately 400 kg of pottery from the one trench, with about 2,880 indicative sherds consisting of rims, handles, bases, and miscellaneous distinctive vessel sherds, along with a limited repertoire of decorative wares. The most common decorative treatment was grooving on the exterior of vessels that is covered by a pale slip. A small sample of painted wares means Mousa Hamid can now join the few other Edomite sites in southern Jordan that have produced painted pottery, such as ‘Umm el-Biyara and Tell el-Ghrareh, and Tawilan and Buseirah where they were more common.<sup>8</sup>

The finds include a high-proportion of Edomite-type vessels dated to the IA IIC throughout all loci, that is, from the seventh–sixth century BCE and perhaps even as early as the eighth century on comparison to Edomite pottery found in Judah at Beer Sheba and Tel ‘Ira (Tharhani 2010 and Singer-Avitz 2014). The assemblage also contains types found at several sites in Israel’s Negev, such as Horvat Qitmit (Smith and Levy 2008: 42). These traditions are also felt nearby at Ras al-Miyah (Ben-Yosef 2010: 385) and into the eastern Highlands at sites such as Khirbet al-Iraq Shmaliya and Tawilan (Smith 2009). Most forms are characteristic of late IA II in that they are

course cooking and storage vessels of globular and heavy form, often with handles near the rim.

There are extremely few complete vessels, which is comparable to the ceramic assemblage from Khirbet en-Nahas, another industrial lowlands site in Edom, the date of which is the subject of some disagreement (Smith and Levy 2008: 53; Finkelstein and Singer-Avitz 2009). It is unclear if the lack of complete vessels is the result of agricultural/industrial activity as proposed for Khirbet en-Nahas. There were none of the expected whole vessels associated with the floor and destruction layer in Square 1, rather, the sherds appear to be due to accumulated waste and fill deposits.

As noted above, very few whole vessels were discovered within the square other than perhaps what is arguably the most important ceramic object. While excavating below the disturbed upper strata, a relatively intact chalice was uncovered. The chalice’s most outstanding feature is its petal and applied décor with traces of yellow and red paint, Figure 13. The petal is a popular motif used on a wide variety of ancient artefacts, particularly within the IA IIC collection from the Edomite shrine at ‘Ain Hazeva (Cohen and Yisrael 1995a; 1995b). The more triangular denticulated fringe was a characteristic feature of pottery at many Edomite sites in Transjordan and in the Negev, such as Wadi al-Thamad, Horvat Qitmit, ‘Aroer, and Tel Malahata (Beit-Arieh 1995: 253; Tebes 2006). As the Mousa Hamid chalice most likely relates to religious beliefs or ritual activity, using Bienkowski’s model (2009), it suggests the site was a meeting place for groups from various locations.

In addition to the large amount of ceramic sherds, an extensive range of utilitarian stone implements indicates that extensive agricultural and industrial activity occurred at this site. Types include pecking stones, pounders, hand grinders, large flint flakes and cores and large tools in the form of grinding bases, loaf-shaped millstones, rollers, mortars and large saddle querns. Many grinding bases and tops are limestone, while querns are generally made of hard dense basalt, Figure 14.



**Figure 14:** Surface finds from Mousa Hamid at the Safi Museum. Photo: J.A. Verduci.

Large saddle querns, grinding bases and tops are known in domestic settings for the preparation of food, for example in Room 2 at Iraq Shmaliya to the southeast of Mousa Hamid (Smith et al. 2014: 272). However, the scale of production that would have occurred at Mousa Hamid is unprecedented in the region. At other sites, excavators have identified a number of industrial activities; in addition to the well-known copper production at Feynan, are (for example) iron smelting and processing at Beth Shemesh and Tell Hammeh (Veldhuijzen and Rehren 2007), dyeing and tanning at Timnah (Kelm and Mazar 1991), oil pressing at Beth Shemesh and Ekron (Bunimovitz and Lederman 2009: 120; Gitin 1990), wineries at Gibeon (Pritchard 1960; 2012), Ashkelon and Joffa (Stager et al. 2008b: 275, 279; Fantalkin 2005), and weaving at Deir 'Alla (Van der Kooij and Ibrahim 1989). The intensification of agricultural production for export is particularly paralleled in olive oil production and viticulture (Herr 1995; Gitin 1997; McGovern and Harbottle 1997: 145; Routledge 1996; Walsh 2000). It is unclear if the tools at Mousa Hamid were used for agricultural processing on an industrial scale or in other specialised activities, such as the extraction of minerals. The identification of a small-scale perfume industry at En Gedi that utilised the balsam trees that grew in the Dead Sea environs suggests that alternative uses for the stone tools should be considered (Herr 1997: 158). Particularly as Eusebius and Jerome note that other than at En Gedi, the balsam grew at Zoar (*Onomasticon* 42, 86).

Due to the multifunctional nature of tools found at Mousa Hamid, the study of objects in their archaeological context is essential in determining their function. In future, analyses such as petrographic and morphological studies might assess mechanical capabilities, as well as residue analysis and experimentation to assist in determining the function of these stone tools; these kinds of tests have identified mineral extraction in IA Spain. One of the challenges of commencing a new project is the development of a network of resources and contacts. Having laid the groundwork for future excavations at Mousa Hamid, we do hope to implement some of these tests and analyses.

## Conclusions

Many problems remain to be resolved. It is possible that similarities with Horvat Qitmit and 'Ain Hazeva, whose pottery is also placed in the seventh to sixth centuries, are linked to Assyrian trade networks in the late IA II via their Edomite territory along the course of the road to Edom (Finkelstein 1992). To date, there is only definitive evidence of Assyrian influence at highland sites during the IA IIC at Buseirah, Umm al-Biyara, and Tawilan. Whether the scale of industry at Mousa Hamid is somehow linked to this Assyrian influence remains to be seen, although it is reasonable to suppose that for settlements such as Zoar, it would have been an opportunity in long-distance exchange not to be missed.

The dry climatic and environmental conditions of the IA required intensive strategies of farming and processing (Bienkowski 2009). In the successful mobilisation of a community in the environs of the Wadi al-Hasa alluvial fan, we see the outcome of social organisation and structured productivity that can be perceived as expanding well beyond any recognition of a decentralised polity and the identification of *segmentation* or *tribal kingdom* (Routledge 2004: 56 Bienkowski & van der Steen 2001). The segmentation model has been applied to Edom by Benjamin Porter as an alternative to the tribal kingdom framework (Porter 2004: 386). In this, he attempts to demonstrate that Edom was a centralised, hierarchical polity with Buseirah as the imperial capital. Criticisms by Bienkowski of both Routledge's framework, developed for Moab, and Porter's application of this framework for Iron Age Edom, question the ability of elites to organize tribal alliances.<sup>9</sup>

The evidence for production on an industrial scale, the co-concurrence of a ritual chalice with precious commodities commonly reserved for elite use, such as, personal adornments in the manner of fibulae and administrative seals, is particularly conspicuous and demands explanation. It is reasonable to suggest their appearance would warrant some manner of defence from external threats, as is seen for the defence of Gibeon's wine industry. Old satellite images of Mousa Hamid reveal a faint mound and what appears to be a roughly rectangular outer perimeter; it may be that some type of fortification wall partially surrounds the site.

Our research of developments in the IA II Edomite lowlands may shed light on the biblical references to Edom and Philistia on the coastal plain as being partners in trade (Amos 1-2), given the path between the two had to pass between either 'Ain Hazeva or 'Aroer, and also whether there is any stylistic connection to Arabia. The aim is to distinguish between what might simply be the intersection of various IA regional assemblages and any identification as a southern transit route. Moreover, this research might provide exciting evidence of IA food production and supplies for caravanserais passing through southern Jordan that are poorly lacking in the archaeological record.

In summary, the recent investigation and excavation at Tuleilat Qasr Mousa Hamid suggests the site was an important agricultural and industrial settlement in the southern Jordan Valley that dates to the terminal IA II, a period for which limited evidence has been discovered in the region. The extensive material uncovered at the site, and especially the unusual nature of the stone assemblage warrants further study.

J.A. Verduci,  
Australian Institute of Archaeology

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## Endnotes

- 1 Mentioned by both Heirocles (*Syneedemus*) and George of Cyprus (*Description of the Roman World*).
- 2 The term *state* is used without wishing to enter into a debate on the definition of what a *state* might constitute, rather the question of *kingship* or other forms of leadership are irrelevant to an acceptance of the general concept of a loosely organised institution of power. For discussion and references, see Routledge 2004: 14–26, 138–141.
- 3 For a regional overview of IA states between Anatolia and Egypt, refer to Kurht 1995: 385–472. On the Egyptian documentary record, refer to Gaballa 1976: 108–112.
- 4 For a brief critique of the *state* as transformative, refer to Bienkowski 2009: 14.
- 5 Correspondence and works by T. E. Lawrence are available to download at [http://www.telstudies.org/writings/contents\\_lists/years/1917\\_1918.shtml](http://www.telstudies.org/writings/contents_lists/years/1917_1918.shtml).
- 6 See also surveys by Tristram in 1873, Philby in 1925, Abel in 1938: for references, refer to Politis 1998a.
- 7 Scholarly debates on the location of Zoar are all carefully summarised by Le Strange (1890) and MacDonald (1982).
- 8 By the IA II, painted treatment on most vessels had been replaced first by hand-burnishing and later by wheel-burnishing: refer to Whiting 2002: 76, 220.
- 9 Porter's suggestion that the prestige objects found within Edom were redistributed by elites to loyal subjects to foster alliances is questioned by Bienkowski, who notes that the amount of such luxury items was surprisingly small: Bienkowski 2009: 13. Although maintaining the effectiveness of the tribal model, Bienkowski offers a redefinition of the word 'tribe', that focuses on the shifting nature of relationships as opposed to fixed genealogies. Cf. Yunker 2003:153–176.