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Publication Date

2014

The Busayra Cultural Heritage Project's 2013 Site Assessment Season

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Author's Note:

This manuscript was submitted for publication to the *Annual of the Department of Antiquities of Jordan* in 2014. For whatever reason, it never appeared in print. While not the most exciting piece of scholarship, the manuscript nonetheless contains valuable updated information about the site's condition in 2013 prior to site development activities that occurred between 2015 and 2020. The manuscript also contains updated information about the size of the site that was gained through a comprehensive topographic survey. Please contact Benjamin W. Porter at bwporter@berkeley.edu with any questions.

Please cite this open-access publication as:

Porter, Benjamin W., Stephanie Brown, Andrew T. Wilson, Alan Farahani, & Christopher D. Bravo. 2014. The Busayra Cultural Heritage Project's 2013 Site Assessment Season. Open access publication available on eScholarship at www.escholarship.org/uc/item/5zx8d9x7.

Introduction

Between 2 and 22 June, 2013, the Busayra Cultural Heritage Project (BCHP hereafter) conducted a site assessment project at Busayra, located in southwest Jordan 10 km south of Tafilah and 45 km north of Petra (UTM: 36R 749433 E 3404278N; 1,127 mamsl). The ancient settlement resided on a long spur of land bounded by the Wadi Janin on the east and the Wadi Qarqur on the west. Busayra is widely believed to be the ancient settlement of Bozrah, the capital of the Iron Age polity of Edom (Figure 1). Although reluctant at first (Glueck 1934: 14), Nelson Glueck eventually identified Busayra as ancient Bozrah, using what he described as “Edomite painted ware” and passages in the Hebrew Bible (e.g., Numbers 20: 14-21) to date the settlement to the Early Iron Age (Glueck 1935: 83). This interpretation prevailed until Crystal M. Bennett began her excavations in southwest Jordan, starting at Umm al-Biyara and Tawilan, and eventually moving to Busayra, where she conducted five seasons between 1971 and 1974 and 1980 (Bienkowski 2002). Her work determined that Busayra was an important regional Iron Age administrative center. Bennett’s team focused on five major areas of excavation (Areas A, B, C, D, and H). Excavations in Areas A and C yielded an elite building program whose remains conspicuously exhibit Mesopotamian influences such as the use of artificial built podiums to elevate buildings and multiple diagnostic architectural elements. Further evidence of Busayra’s political importance was identified in Areas B and H where portions of a massive stone fortification system and gate were identified. Bennett’s team also excavated domestic buildings to the east and west of the Area A building, in Areas B and D.

Despite this impressive amount of research, there are several outstanding questions that call out for further investigation at Busayra. Recent research in southwest Jordan and southern Israel have called into question the timing of the emergence and decline of an Edomite polity (Levy 2009) and the nature and scope of Assyrian, Babylonian, and Achaemenid imperialism in the region (Bennett 1982; Bennett and Bienkowski 1995; Bienkowski 2000; Bienkowski and van der Steen 2001; Crowell 2004; Porter 2004; Whiting 2007). Furthermore, scholars lack an understanding of the different agricultural, pastoralist, and craft industries that developed during the Iron Age II period in southwest Jordan. How did households subsist in the region’s semi-arid environment, for instance? What was the relationship between such households and an administrative center like Busayra? What kinds of markets did producers participate in and what was the nature of that participation? Additional research at Busayra can answer these questions using new archaeological methods and techniques that were unavailable to Bennett’s team.

At the same time, Busayra remains an important and non-renewable historical resource for Jordan. Busayra is one of few archaeological sites in southwest Jordan where domestic and international tourists can visit an Iron Age settlement. The site is ideally positioned on the King’s Highway between Tafilah to the north, and the Wadi Dana Nature Reserve, Shawbak Castle, and Petra to the south. The site faces a number of threats from environmental and human encroachments. To that end, the BCHP’s principal goals during the 2013 season was to assess

the overall condition of the site, document surface features using non-invasive techniques, and develop an integrated plan that combines scientific research and site management that will guarantee Busayra's preservation for future generations.



Figure 1. Map of southwest Jordan with an emphasis on Busayra (Image: A. Wilson).

Settlement Design

Discerning the extent and nature of ancient Busayra faces a number of challenges. First and foremost, building activities in the modern town of Busayra over the past century has destroyed or obscured architectural evidence from earlier settlements. Indeed, it was possible to observe preserved walls and architectural spolia during casual walks around the modern town with the project's department representative. Another complicating factor is that the undeveloped areas that were available to Bennett's project in the 1970s are now unavailable for investigation because they do not fall on property owned by the Department of Antiquities. Survey and excavation of these areas in the future will only be available with the agreement of local landowners.

These caveats aside, observations about Busayra's settlement layout are possible using satellite imagery and elevation data. The settlement's northern end is arranged on a series of variously sized terraces that descend downward into the Wadi Busayra. Dry-laid unfaced stone walls bound each terrace. The upper-most terraces, Terraces 1 and 2, are the best preserved of the series. The lower terraces, Terraces 3 and 4, are more obscured due to slope wash and wall collapse. Casual walks with the department representative on these lower terraces identified several collapsed walls, sherd scatters, and distinct topographic features. Additional research on these lower terraces could document their size and nature in more detail.

In order to gain a more precise measurement of Terraces 1 and 2, the BCHP collected elevation data to create a digital site map in a Geographic Information Systems environment. The creation of this new map was necessary because the site map made by the previous team during the 1970s (Bienkowski 2002: Fig. 1.2) was 1) limited in its topographical resolution; 2) not available in a digital environment; and 3) in need of updating due to the various changes in landscape that had occurred since the creation of the original map. Secure benchmarks from the earlier project are still located around the site and were therefore used to as a starting point. A Leica TCP705 total station was used to collect 6,027 elevation points. In areas that resided outside of the Department of Antiquities property line, but were still part of the ancient settlement, elevation points were collected using a reflectorless total station from positions that were publicly available to the team (e.g., roads). These data were then processed using ArcGIS software. The digital elevation model was interpolated from the elevation point data utilizing the Topo to raster data interpolation calculation. Several new maps were generated from these data (Figure 2).

The BCHP's data indicates that the overall size of Terraces 1 and 2 is 55,165 m² or 5.5 hectares.¹ If the neighboring school is included, the size grows to 65,143 m² or 6.5 ha. The size of Terrace 1, which is also the limits of the Department of Antiquities' property, is 26,465 m² or 2.6 ha; if the school is included, Terrace 1's size grows to 37,988 m². Terrace 1 can be further divided based on topographic observations into three roughly north-south rectangular sections,

¹ Bennett's project reported an overall site size of 81,602 m² (Bienkowski 2002: 39), although the parameters that were used to determine this size are unknown.

Zones 1, 2 and 3. Conspicuous architectural elements visible on the surface indicate that Zone 2, the middle section, was artificially elevated above neighboring Zones 1 and 3. The total area of Terrace 2 between the fortification walls visible on the surface is 28,827 m² or 2.88 ha. Encircling the exterior of Terraces 1 and 2 is slope collapse running down to a road that travels around these terraces. Several of Busayra's modern inhabitants have built houses to the west of the ancient settlement; however, the area east of the site is largely undeveloped.

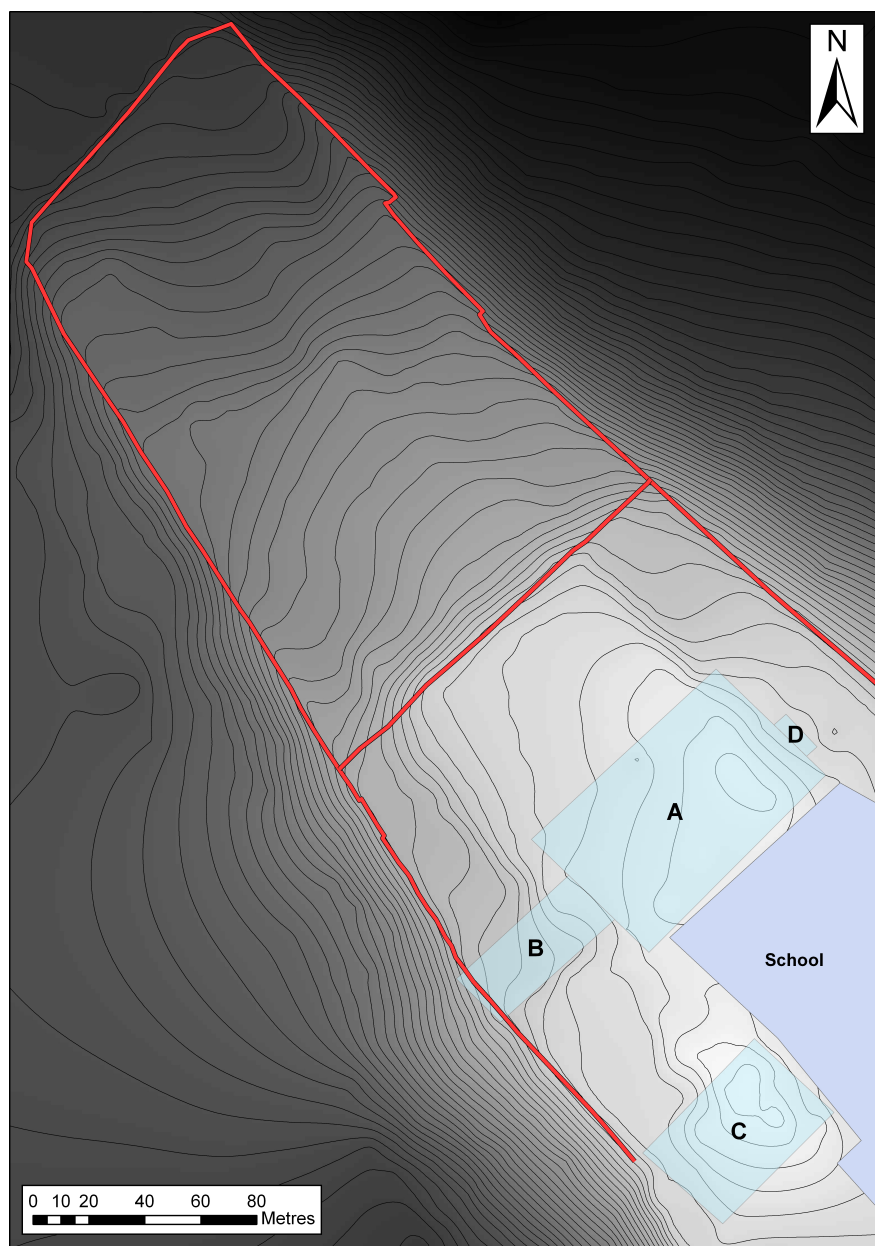


Figure 2. Topographic map of Busayra with 1 m contour lines. The red line denotes the fortification system visible on the site's surface (Image: A. Wilson).

Documenting and Assessing Architectural Preservation

The BCHP inspected architectural elements visible on the surface, documenting them using a combination of non-invasive techniques including total station technology, digital photography, and photogrammetry. Some architectural elements are visible on the surface due to erosional processes. This is especially true for the large architectural elements that border Terraces 1 and 2. Most other architectural elements have been exposed through recent human interventions. These interventions, in order of decreasing intensity, include 1) excavation from Bennett's project; 2) road and school construction; 3) light agricultural activity; and 4) looting. Despite these interventions, the exposed architectural elements range in quality from average to excellent condition. These conditions were a welcome surprise for the BCHP, who expected exposed architecture to be in a more damaged state.

Most visible architectural elements were exposed during Bennett's archaeological excavations during the 1970s. Bienkowski helpfully published the plans of this work in his 2002 final publication of Bennett's project. The BCHP used the plans and descriptions of this architecture in their assessment of the current state of exposed architecture.² From these plans, the BCHP determined that no trenches were intentionally back-filled after excavation, save one trench in Area B (10.4) and one trench in Area D (D2).³ Therefore, almost all architecture excavated in the previous project remains exposed in their trenches. Despite this exposure, the BCHP determined that the overall condition of these walls ranges from average (i.e., some evidence of collapse) to excellent (found completely intact when compared with the original excavation photo). Likewise, most trench sections have remained exposed to the elements since the Bennett excavations. The preservation quality of sections ranges from below average (i.e., currently collapsed and eroding further) to above average (i.e., soil intact, but in danger of collapse).

Upon closer inspection, however, each of the six previously excavated areas (A, B, C, D, H, M) has specific preservation issues. In summary, they are:

Area A: Bennett excavated a 2,325 m² monumental building on Terrace 1 that she interpreted as an Iron Age IIB-C palace (Bienkowski 2002: 57-109). The current condition of the architecture and sections here ranged between average and excellent. Not all areas have been excavated and at least four zones of intact cultural deposits remain on the northeast and southwest sides of the building. Most trenches only documented the last three phases of the building's use, leaving Phases 1 and 2 unexplored. Four large spoil heaps sit on the building's perimeter, three of which sit above unexcavated areas of the building.

² All architecture appears to be dry laid using local limestone stones of various sizes. Some stones, especially the larger ones used in the fortification system have evidence of cutting and shaping, while others appear to be unworked. No evidence of mortar was observed, although Bennett's team did find occasional evidence of plaster lining in building interiors.

³ It is possible these two trenches were filled in through wind-blown erosion and slope wash from Building A.

Area B: Bennett excavated an approximately 55 m long trench running northeast-southwest on the west side of on Terrace 1 between the fortification wall and the Area A building (Bienkowski 2002: 111-147). The BCHP assigned three sub-areas to Area B in order to make sense of the evidence. The first area is a small gate, fortification wall, and courtyard on the southwest. Moving up the slope is a series of narrow buildings that were likely domestic buildings. The last section consists of well-built architecture, likely the residents of wealthier households. Area B's current condition is the worst of all areas on Terrace 1 (Figure 3). Many walls have collapsed and sections are eroding and/or are being undercut by winter rains. A medium size spoil and stone heap sits to the northwest of the upper trenches.



Figure 3. Collapse and erosion of west section in Area B near the postern gate (Image: B.W. Porter).

Area C: Bennett excavated another large architectural complex on Terrace 1 that she interpreted as an Iron Age II palace built on a raised platform (Bienkowski 2002: 149-206). The current condition of the architecture and sections here ranged between above average and excellent. The Department of Antiquities performed some conservation work on a select number of walls and features (e.g., the toilet and drain) in 2000-2001 (Jihad Darwish, personal communication). Less than fifty percent of the building has been excavated. Intact cultural deposits can be found on the

building's north, west and southwest portions. Most trenches have not been excavated to bedrock, leaving the building's construction phase (and any earlier phases) uninvestigated. There are small and large soil heaps and rocks piles on and next to the building.

Area D: Bennett also excavated two small trenches on Terrace 1, both of which contained buildings interpreted as domestic residences (Bienkowski 2002: 207-223). Area D is located to the northeast of Area A. Area D2 appears to have been backfilled and the trench is difficult to identify on the surface. Area D3 was still visible on the surface. The preservation of the architecture in D3 was average to above average, while the sections, which were not very high, were preserved in above average conditions. These buildings were only partially excavated by Bennett's team.

Area H: Bennett excavated trenches here at the extreme north corner of Terrace 2 in order to investigate the fortification walls (Bienkowski 2002: 225-232). All remains of these trenches were destroyed by erosion and road construction (see below). The current quality of the walls ranges between average and excellent. The face of these walls has been exposed due to the construction of a road in between Bennett's research and the BCHP's assessment. Consequently, this architectural evidence is undocumented and in danger of collapsing into the road.

Area M: Bennett reported a brief investigation in the center of the modern town near the old cemetery where her team reported a large khan and mosque, all dating to the Ottoman period (Bienkowski 2002: 42). The BCHP located the khan and old cemetery southwest of Terrace 1, but not the mosque. The BCHP did not investigate the khan and cemetery in any detail due to the fact that they are located on private property. A visual inspection from the road indicated that the khan is in below average condition and is quickly deteriorating.

Aside from these area specific conditions, the BCHP identified additional human and natural impacts on the site's condition. As already mentioned, a road was constructed around the northern, eastern, and western perimeter of Terraces 1 and 2 at some point following the end of the Bennett excavations. This road exposed the northern face of Terrace 2's boundary wall in a substantial road cut. Additionally, the construction of a school resulted in the removal of a substantial amount of the area south of Area A and east of Area C on Terrace 1. By comparing elevation levels in preserved areas with those within the schoolyard, the BCHP determined that most ancient architecture was removed during construction. A perimeter wall that was built around the school after the Bennett project finished their research has resulted in some damages to ancient architecture. Granted, this perimeter wall has also contributed to the site's protection, reducing foot traffic from the schoolyard. Still, there is reason to believe that additional investigation around or in the school would contribute to site documentation. For instance, geophysical survey techniques such as ground penetrating radar and resistivity instruments could document any remaining architecture under the schoolyard. Likewise, a preserved section of

cultural deposits associated with large walls was observed on the far side of the school's eastern wall.⁴

Light agricultural activity has also affected the site's preservation on Terraces 2, 3 and 4 where there is evidence of plowing and field clearing. These fields appear to have been under cultivation for several growing seasons. Photographs in Bennett's reports from the 1970s show little evidence for agricultural activity (e.g., Bienkowski 2002: Plate 1.6a), indicating that this agricultural activity must have begun after their project ended (e.g., after 1980). Today, the fields are thoroughly cleared of large rocks and the ridges and furrows are well defined. Very few architectural elements are visible on the surface, apart from the boundary walls on the terraces' edges. BCHP members observed women harvesting wheat/barley by hand on Terrace 2. Pastoralists brought their flocks to graze on the stubble in the days following this harvesting.

Looter trenches were limited throughout Busayra. Two relatively shallow trenches were observed on the extreme northwestern corner of Terrace 2 in what appears to have been a large tower. There are a few explanations for this overall lack of looting activity. One is the barbed wire fence that encircles Terrace 1 that was constructed in 1996 by the Department of Antiquities (Jihad Darwish, personal communication). Granted, this fence is broken in places and it may make sense to repair it to maintain the role it plays in protecting the site. Another explanation is the presence of a dedicated site guard, Sheik Sallah Abu Tama'ah, who lives near the site and closely monitored conditions until his retirement in 2013. Finally, the site's position at the end of the modern Busayra settlement means that foot traffic is limited. BCHP team members did observe occasional foot traffic by residents passing through the site on their way to town, but their numbers were minimal.

Based on this assessment of site impacts and conditions, the BCHP recommends the following limited inexpensive interventions that will contribute to Busayra's preservation:

1. The repairing and continued maintenance of the perimeter fence surrounding the Department of Antiquities' property.
2. The backfilling of select trenches in all areas where architecture is beyond conservation and sections are eroding.
3. The removal of spoil heaps and rock piles from previous excavations. In some instances, spoil heaps can be stabilized and then repurposed as elevated viewing platforms for visitors.
4. The documentation of architectural elements on adjacent private property that are under threat of collapse. This work will require coordination with landowners and local public officials.

⁴ The authors also observed the construction of a new building designed for animal penning on Terrace 2 during their 2014 field project.

Non-Invasive Site Sampling

Large portions of Busayra remain uninvestigated, including much of the northern half of Terrace 1 adjacent to the monumental buildings in Areas A and C. In order to gain a better understanding of these areas, the BCHP performed a random square survey, determining this method to be the best and least invasive way to determine the contents of cultural levels beneath the surface. The BCHP confined their work to Zone 3 on Terrace 1. Twenty-four 5-by 5 m units were selected (Figure 4). Ten units were selected using a random number generator while the remaining 14 units were selected for coverage issues. One staff member surveyed each unit for 20 minutes. A total of 5,876 artifacts were collected. At least 100 ceramic vessel sherds were found in each unit; no restorable ceramic vessels were recovered. The highest yielding units were conspicuously located along the edge of Zone 3, adjacent to the fortification wall. One explanation for this pattern may be that Iron Age architecture is closer to the surface in this unit. Alternatively, this density may be explained by the possibility that cultural materials were moved to the site's edge through water action.

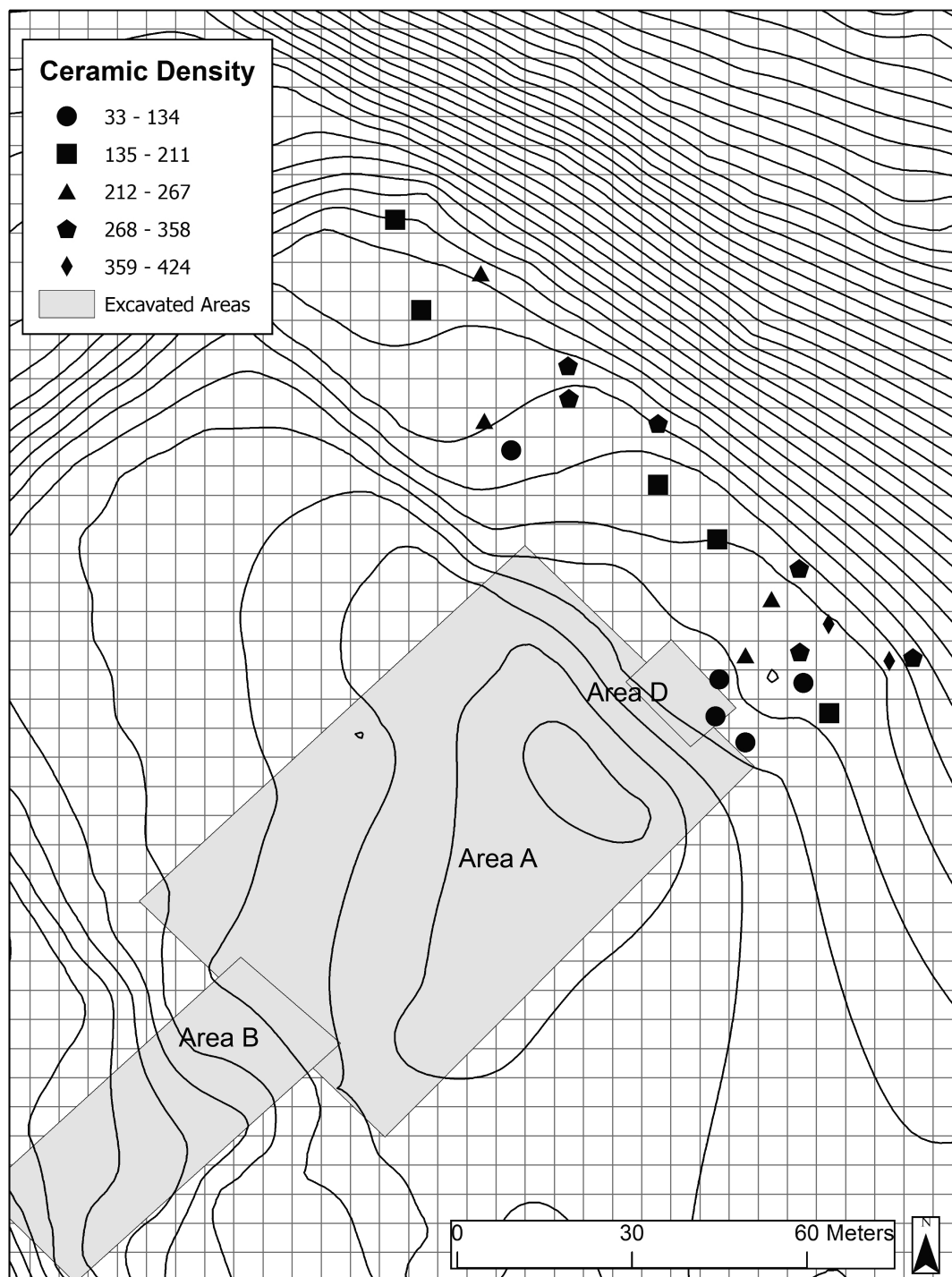


Figure 4. Map displaying ceramic vessel sherd density from randomly selected units (Image: S. Brown).

Artifacts were cleaned, counted, and weighed. Based on form and fabric type, 5,666 dated to the Iron Age (96.45%), 180 (0.03%) dated to Classical Periods, and 30 (0.01%) dated to the Middle Islamic Period. A total of 412 diagnostic rims were recovered. Iron Age ceramic vessel forms were similar to those recovered in the earlier project (Figure 5; Table 1). Approximately 60% of the forms were bowls; 20% were small jars and jugs; 15% were cooking pots; and approximately 5% were storage jars.⁵

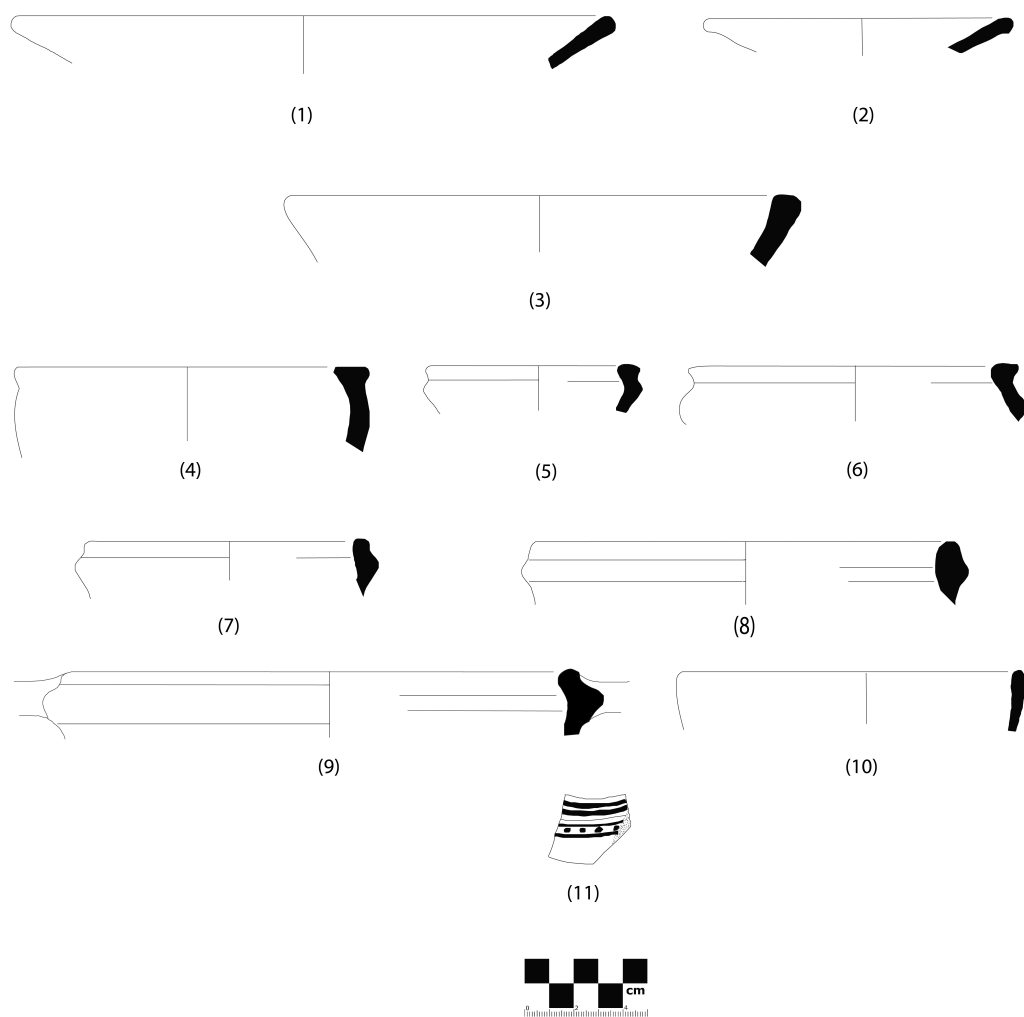


Figure 5. Selection of Iron IIB-C ceramic vessels recovered during the random unit survey (Image: P. Mazzaroni).

⁵ Non-diagnostic artifacts (e.g., ceramic vessel body sherds) were returned to the site and placed between Area C and the site's entrance.

No.	Form	Form Type	Dm (cm)
1	Bowl	A	23
2	Bowl	A	12
3	Bowl	C	19
4	Bowl	D3b	14
5	Bowl	E2a	7
6	Bowl	?	11
7	Cooking Pot	B	10
8	Cooking Pot	A	17
9	Cooking Pot	B	20
10	Bowl	C1b	13
11	Body	none	none

Table 1. List of ceramic vessels illustrated in Fig. 5 with form, form type (based on Oakeshott's vessel typology 1978), and vessel diameter.

The BCHP also took ten archaeological sediment samples from the exposed sections in previously excavated trenches. This work was performed in order to determine if such deposits contained sufficient amounts of carbonized evidence for paleobotanical analysis. No paleobotanical analysis was performed in the previous excavations and today very little is known about Iron IIB and IIC agricultural and pastoralist economies in southwest Jordan. Each sample measured five liters in volume. The results of preliminary analyses of these samples yield insight into past site-use as well as agricultural production. First, the samples yielded limited carbonized botanical remains. Three out of the ten samples did not contain any carbonized botanical material. This is probably due to the nature of activities occurring in this area, i.e., that it was intentionally kept free of debris. Of the seven samples that do contain remains, the median number of seeds is 1, the mean is 3.8, and one sample (F0061-BCHP) contained 11 seeds as an absolute count. Almost all of the recovered seeds are domesticates (i.e., agricultural crops), with four of the seven samples composed of crop seeds alone. Of the recovered crop seeds, the most ubiquitous specimens are grape seeds. Three samples yielded a total of 13 *Vitis vinifera* ssp. (grape) pips, two samples yielded a total of two *Hordeum vulgare* (barley) caryopses, and three samples yielded three *Ficus carica* (fig) seeds.

In contrast, very few remains of carbonized agricultural weeds or crop-processing debris were recovered. Wood charcoal was likewise sparse. Three out of the ten samples contained no wood charcoal, and the median number of pieces was 11, and the mean 13. The total number of wood charcoal pieces recovered greater than 2mm in size in the seven samples that contained

wood charcoal was 92, and the total weight was .61g. In comparison, the total number of all seed remains recovered was 27, and the total number of domesticates was 18.

Although limited in number, these data appear to indicate that the origins of these samples were from cleaned crops that were accidentally deposited (i.e., spilling), especially of grape (*Vitis vinifera* ssp.). The fact that there are little to no remains of crop processing debris or of agricultural weeds implies that crop-cleaning occurred elsewhere on the site, or perhaps at an off-site location. The predominance of grape might imply that it was processed further as wine or dried for storage as raisins, although further research will be necessary to verify these hypotheses. Finally, continued sample collection at the site will determine whether the low densities of remains are due to post-depositional factors, or intentional human activities (e.g. sweeping).

Objects

Two complete objects were found on the surface of the site during the course of the BCHP's routine site survey. The first object (2013.915.1035.0001) (Figure 6) is a limestone spindle whorl that dates to the Iron Age II period. The whorl was found in Unit 915.1035 located between Field C and the fortification wall. The whorl is 14 mm thick with a 20 mm diameter. Its internal perforation has a 6 mm diameter on one side and a 5 mm diameter on the other side. The whorl is a buff-pink color. Two horizontal lines run at the top and bottom of the whorl; diagonal lines run between these lines in sets of two. Several similar spindle whorls were excavated at Busayra by the Bennett project (e.g., Bienkowski 2002: 408-413).



Fig. 6. Iron Age stone spindle whorl (Image: C. Morse).

The second object (2013.915.1035.0002) (Figure 7) was a bronze coin that was found near the same location.⁶ The obverse side of the coin depicts a male head in profile, facing right; the reverse side depicts two crossed cornucopiae. The male head depicted on the coin's obverse is almost certainly that of the Nabataean king, Aretas IV (9 BCE – 40 CE). Though the coin is too worn to identify any inscriptions, the coin's designs on both the obverse and the reverse sides most closely parallel a group of small bronze coins that were minted between 5 BCE – 18 CE (Meshorer 1975: 49; 98-100; pl. 5).



Fig. 7. Nabataean Coin, obverse and reverse (Image: B.W. Porter)

Conclusion

Overall, then, the BHP determined that renewed research at Busayra can substantially add to the site's interpretation, solving substantial research questions in Edomite history and Levantine archaeology while taking steps to insure that Busayra remains a resource for future archaeological teams and visitors.

Acknowledgements

The BHP would like to thank the former acting Director of Antiquities, Mr. Fares al-Hmoud and staff members Khalil Hamdan and Jihad Haron. The project would also like to thank the director of the Tafilah Regional Archaeology Office, 'Amad al-Thrus. Our 2013 representative, Sammi al-Rafua'a, was excellent and we learned so much from him. The Busayra guard, Sheik Sallah Abu Tama'ah was a gracious host and offered us much assistance with logistics. Former

⁶ The authors wish to thank ACOR and Naif Zaban for cleaning this coin.

Director of Antiquities representative and Busayra resident Jihad Darwish answered several important questions about the site's management during the past two decades. The BCHP would also like to thank the American Center of Oriental Research for its support including Dr. Barbara Porter, ACOR Director, and Dr. Christopher Tuttle, former ACOR associate director. Thanks to Paula Mazzarino (University of California, Berkeley) and Charles Morse (University of California, Berkeley) for their technical assistance with ceramic vessel and object illustration. Funds for this research were made available from the University of California, Berkeley's Stahl Foundation and the Committee on Research. Thanks to the University of Liverpool and the University of California, Berkeley for the use of their total station equipment. The five authors participated equally in the research documented in this publication. Porter and Brown managed the writing of this report.

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