NORTHERN JORDAN PROJECT 2010: THE AṬ-ṬURRA SURVEY

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Introduction[1]

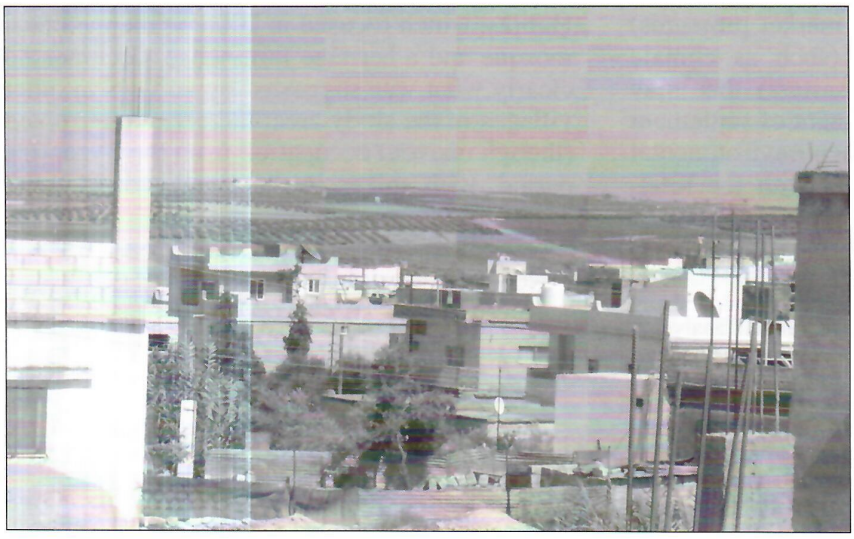
The Northern Jordan Project (hereafter NJP) was launched in 2003 in order to investigate potential fluctuations of settlement during the later historical periods in the region between Irbid and the Yarmouk River and to compare these patterns to central and southern Jordan, where surveys have suggested pronounced settlement decline from the late Mamluk period. Each season a different village and its hinterland are the focus of archaeological fieldwork, which is combined with archival, ethnographic, architectural, and environmental analysis. Villages are selected for study, in part, on the basis of textual sources and include both inhabited and abandoned settlements. The parallel studies are designed to help differentiate human factors (such as land use and political and market pressures) from environmental factors (such as climate change or environmental disasters) that may have contributed to the abatement of settlement in the Islamic era. This archaeo-environmental project is, in short, concerned with the totality of human behavior that has transformed the environment, with a particular emphasis on the Middle and Late Islamic periods.

Since its inception the Project has conducted surveys in Malkā (2003 - Walker 2005), Ḥubrāṣ (2003 - Walker 2005), Saḥam (2006 - Walker *et al.* 2007; Walker 2007c), and most recently aṭ-Ṭurra (2010), as well as excavation in Ḥubrāṣ (2006 - Walker *et al.* 2007; Walker 2007c; Walker and Kenney 2006)[2]. These together represent three different topographical/ecological zones: the deeply dissected hills below the lower Galilee and Golan in the west, a highland plateau in the central zone, and the plateau of the lower Hawran leading to steppe lands in the east. Each season has contributed to Project objectives in different ways. The excavations at Ḥubrāṣ, which focused in 2006 on the medieval mosque and a heritage farmhouse, documented clearly what was suggested by surveys in other villages in the study area: largely uninterrupted (though uneven) occupation from the Byzantine period, with spikes in the Umayyad, Mamluk

1. The Northern Jordan Project (hereafter NJP) is directed by Prof. Bethany J. Walker of Missouri State University. The staff for the 2010 season included Bethany Walker (archaeology, ceramic and textual analysis); co-director for ethnography, Prof. Mohammed Shunnaq (Yarmouk University); archaeologist Prof. David Byers (Missouri State University); architect and surveyor Mr. Muwafaq al-Bataineh (Yarmouk University); phytolith specialist Ms Sophia Laparidou (University College London); geomorphologist Prof. Bernhard Lucke (Erlangen University); and Prof. Atef Shiyyab, who helped co-ordinate Yarmouk University staff this season. We also wish to acknowledge the contributions of Mr Hussein Debajeh (photographer for the architectural study, Yarmouk University); archaeologists Mr Ali al-Rahabaneh and Mr. Hussein Sababha of Yarmouk University; and thirteen students from Missouri State University and Yarmouk University. Post-season laboratory work on soils was done at the phytolith labs of University College London. The pottery profile drawings for this report were produced by Ms Stephenie Walker of Missouri State University and floor plans and computerized architectural drawings by Mr Muwafaq al-Bataineh of Yarmouk University. We want to thank, as well, the continuing support of Dr Ziad al-Saad and his staff at the Department of Antiquities of Jordan; the former Director of the DoA, the late Dr Fawwaz al-Khraysheh; our representative from the DoA, Mr Khaled Janaydeh; the Municipality of aṭ-Ṭurra; the Department of Lands and Surveys in Amman; and the American Center of Oriental Research. We gratefully acknowledge the financial support of Missouri State University, Yarmouk University and University College London for fieldwork and laboratory analysis this season.
2. For historical studies generated by the Project, see Walker 2007a, 2007b, 2007c, and 2009b.

and Late Ottoman periods. In each season, the ceramic and architectural records attested to the wide-ranging contacts of northern Jordanian villages with the market centers and ports of wider Bilād ash-Shām and the Mediterranean over the course of the Middle Islamic (Ayyubid - Mamluk) and Late Islamic (Ottoman) eras, when villages grew and more land was 'under the plow'. The concurrent environmental studies conducted during those field seasons indicated a complex interplay of factors behind this settlement history. Preliminary pollen analysis during the 2003 season suggested that cycles of settlement abatement (such as during the late Mamluk to early Ottoman periods) may have coincided with years of limited rainfall, when some fields were abandoned and cultivation shifted from cash crops to a more diversified, subsistence (or limited, local market) system (Cordova in Walker 2005: 29-34). The results of continuing soil genesis analysis, on the other hand, have indicated that field systems have not significantly changed here during the historic periods, and land use has had limited impact on landscape development (see also Lucke *et al.* 2008). Rather, analysis of soil profiles at Ḥubrāṣ and architectural damage in that village and in Saḥam point to the role of violent rainfall events in both landscape change and contraction of settlement (Lucke in Walker *et al.* 2007: 464-467; see also Schumacher 1913a). The 2010 season further developed these avenues of inquiry into land use and settlement and environmental history through investigation of a village in the eastern sector of the study area and expansion of data collection techniques.

The village of aṭ-Ṭurra is located on an undulating plateau of the southern Hawran, eight kilometers north of ar-Ramthā, to the east of ash-Shajarah and Wādī ash-Shumar, and northwest of Wādī ash-Shallāla (which flows into the Yarmouk River); the village's northern and north-eastern fields approach the Syrian border (**Fig. 1**)[3]. Situated between optimal agricultural land to the west and the steppe to the east, aṭ-Ṭurra experiences mid-range environmental conditions. Its fertile soils (largely a reddish brown loam[4]) are rocky and broken by natural, limestone outcrops and caves. The high water table here has recently raised concern about the vulnerability of its groundwater to contamination (Margane *et al.* 1999: 183). Annual rainfall (350 mm / yr) is sufficient for dry farming, but irregular: according to the atlas of 1964, for example, rainfall in nearby ar-Ramthā ranged between 152.5 and 359.4 mm / yr in one decade



1. View of village to the north, towards Syrian border.

3. Administratively, aṭ-Ṭurra belongs to the Liwā' of ar-Ramthā, in Irbid Governorate. Its map coordinates are 35° 25′ - 36° 10′ (long.) and 32° 25′ - 32° 45′ (lat.). Its altitude varies from 478 meters above sea level at its highest point (the highest hill located in the center of the village, now occupied by a cemetery) to 449 meters at its lowest (in fields to the north and east of the village).
4. This red Mediterranean soil is uniquely suited to the cultivation of cereals (Bender 1974: 189). The local soil is thick in organics and retains water. A more yellow, desert soil has also been noted at aṭ-Ṭurra.

(al-Shalash 1964: 20). Today, as in antiquity, the village is well connected by transport routes. The modern road, based on the former *ḥajj* route from ar-Ramthā to Muzayrīb, divides the village into two halves; we used this spatial division to organize our survey (as described below). This village was selected for survey for a variety of reasons: (1) it is located in a topographical and environmental zone of our study area we have not yet investigated, (2) historically it experienced a different history from villages studied in previous years of the project, as it was located on the Mamluk and Ottoman frontiers and served an important security role as a result and (3) we expected a different agricultural regime, as this region of the southern Hawran served global wheat markets in the 19th century.

Aṭ-Ṭurra was first archaeologically investigated by Mittmann in his regional survey of northern Jordan the late 1960s (Mittmann 1970: 6). In 1990 it was the subject of an MA archaeological and ethnographic thesis, published very recently by the author, al-Muheisen (al-Muheisen 2008: 119-188). The Department of Antiquities did preliminary fieldwork in the village in 1999, 2000 and 2002, with surveys that focused on the northern fields and the village center, as well as small-scale excavation of the Shaykh Khalīl shrine in the village proper in 1999. The results of these efforts appear in unpublished reports in the DoA archives in Amman (al-Bataineh and al-Naqrash, n.d.; Hawadineh and al-Naqrash, n.d.; al-Naqrash, n.d.). What was not covered by this fieldwork was a systematic survey of the southern fields or multi-disciplinary research, ethnographic interviews in the village excepted. The 2010 season drew from this work and expanded it, as was appropriate for the design of the larger Northern Jordan Project.

The goals of the brief, two-week season, conducted between 15 and 28 June, were quite specific: to document the settlement history of the village, begin to map the ways in which the physical village has changed over time, describe land use historically, identify ancient field and water and transport systems, and investigate locations in the village that could possibly be the Mamluk tower and Ottoman-era garrisons noted in written sources and by local residents. The team this season consisted of 20 faculty, students and staff from Missouri State and Yarmouk Universities, as well a phytolith specialist (Ms Sophia Laparidou, of University College London) and a geomorphologist (Dr Bernhard Lucke, of Erlangen University in Germany). The strong soil sciences component of our team this year allowed us to more fully explore our environmental history objectives and to experiment with data collection strategies. We innovated, as well, in our methods of data recording, opting for a largely paperless survey (recording directly into data forms on Blackberries) – a novelty for Jordanian archaeology. Fieldwork proceeded according to the model adopted in previous seasons. Four simultaneous surveys were thus run in tandem with one another: an archival project, an ethnographic survey, the more or less traditional archaeological survey with surface collection of ceramics and lithics, and a multi-faceted environmental survey. The following report summarizes the preliminary results of each of these.

2010 Case Study: The Village of aṭ-Ṭurra

The Village in Historical Perspective (Bethany Walker)

Traditionally part of an important grain-producing region of the southern Hawran, aṭ-Ṭurra gained economic and military importance in the Mamluk period, its lands supporting religious institutions in Damascus (specifically the mosque - *madrasah* complex of Sultan Baybars in Damascus and his *khān* in Jerusalem in the 13th century) and a tower for fire signals built there in 1418 as part of a system of communications on the Mamluks' eastern frontier (al-Yunini 1961: 248; Ghawanmeh 1982b: 61, 1982a: 72; al-Muheisen 2008: 151). Unlike many of the villages of central and southern Jordan, aṭ-Ṭurra continued to be settled after the Ottoman conquest in 1516. Over the course of the 16th century, its lands collectively became a family endowment (*waqf*) and then a land grant for an Ottoman officer (*timar*), the revenues consisting of taxes on primarily wheat but also barley, some summer crops, and goats and beehives. By century's end, it had a population of some 98 families and 40 single men, all Muslim (Hütteroth and Abdulfattah 1977: 123; al-Bakhit 2008: 171, 186).

There is a lacuna of textual sources for the

17th and 18th centuries, so the status of the village cannot be gauged for the Middle Ottoman period by the written record alone. Sitting astride the Ottoman *ḥajj* route likely brought aṭ-Ṭurra great benefits, and it is likely that settlement continued here unabated. In the early 19th century, when many historically known villages throughout Jordan (even in the north) had disappeared from the map, aṭ-Ṭurra was a steady presence. Both Burckhardt (in 1812) and Buckingham (in 1816) passed through, acknowledging this village on the Damascus – Mecca pilgrimage route. Burckhardt, travelling with a pilgrimage caravan, noted that the village was situated on a "low chain of hills" and that it was surrounded by grassland (apparently not cultivated - Burckhardt 1822: 246). Buckingham counted 300 households there – a not insignificant number for a Transjordanian village of the time (Buckingham 1825: 161). In 1854, as a result of the 'grain boom' that pushed local products to international markets, the village had become a 'colony' of the district capital at Dar'a, and there were active efforts to move families there to further develop it. Local *bedouin* told the Prussian consul of the time in Damascus, Wetzstein, that it was "the most important place of al-Nuqra" (a low-lying region of the southern Hawran - Wetzstein 1860: 84-5; Lewis 2000: 39). Some of our most detailed descriptions of the century are provided by Schumacher, who was contracted to do a survey of the region to lay railroad tracks as part of the German - Ottoman investment in regional infrastructure. His accounts, based on trips to the region in 1884, 1891 and 1897, describe the following: (1) it was a "good-sized village on the *ḥajj* road", which was generally well maintained (Schumacher 1886: 1999), (2) a telegraph passed through in 1891, but there was no station in aṭ-Ṭurra (the nearest one was at Shaykh Sa'd - Schumacher 1893: 73 and Map 1; Schumacher 1897: 112), (3) the village was serviced by several roads (in addition to the *ḥajj* route), including the main road connecting 'Ajlūn with the Hawran (this was an old Roman road still in use then), a 'new' road for trade leading to al-Mafraq, and the main trade artery for the region - another Roman road connecting aṭ-Ṭurra with ar-Ramthā and Irbid and leading caravan traffic westward to the Mediterranean ports of Acre and Haifa (Schumacher 1913b: 128) and (4) the markets at nearby Dar'a and ar-Ramthā provided ready access to a variety of goods (Schumacher 1897: 103-4). The village at the end of the century was home to 120 households (approximately 500 people), and was serviced by numerous large cisterns for water storage (Schumacher 1897: 131)[5]. Schumacher describes this region of the Hawran as treeless and generally empty of population, with the exception of a handful of villages connected by well travelled roads; aṭ-Ṭurra was among these.

What foreign travelers did not note in their accounts, and about which they were probably unaware, was the mobility of residents in the 19th century and the fluidity of village borders. Farmers regularly moved back and forth between villages in which they had traditional claims (and eventually officially registered ownership) of land, and this pattern continued well into the British Mandate era. To cite only one example, in 1922 AD an immigrant from the Salihiyya quarter of Damascus settled in aṭ-Ṭurra to marry there (Abu Sha'r 1995: 98). Physical mobility created competing land claims. As early as the mid-19th century, administrative documents attest to land disputes in the village by families resident outside the village proper. One such document, for example, describes an extended dispute between the Hashish clan of Tall Shihab in the Hawran and the Darabiseh clan in ar-Ramthā, both of whom laid claim to the same land in aṭ-Ṭurra from 1857 to 1865 (al-Jaludi 1990: 351, cited in Fischbach 2000: 44).

With the registration of local farmland in the late Ottoman era, land changed hands frequently. This process gained momentum with the passing of an Ottoman law in 1912 that authorized the sale and mortgage of farmland throughout its empire in payment of debt (Abu Sha'r 1995: 402). By the mid-1920s, loans of this kind resulted in a land crisis in the village: the newspaper "al-Sharq al-'Arab" regularly advertised local land for sale at public auction during the years 1926 and 1927 (Abu Sha'r 1995: 422-3). These exchanges created larger estates run by

5. The population had apparently dropped from the *ca.* 300 households estimated by Buckingham in 1816 (Buckingham 1825: 161).

landowners in ar-Ramthā and Irbid or further afield from Damascus. At the same time, several local proprietors in aṭ-Ṭurra came to acquire numerous lands and shares in lands in villages throughout the Irbid District and beyond. Documentation to this effect was identified in the archives of the Department of Lands and Surveys in Amman during research on the registration, transfer and use of village land during the British Mandate (1920s - 1940s) period. The *daftar ad-dabt* and *daftar ar-rahn wa fakk ar-rahn* files of Qaḍā' 'Ajlūn record land sales and mortgages. They include information on land borders, prices and the names of proprietors and leasees, and as such serve as an invaluable window on changes in Jordanian village life and the rural landscape during the emergence of the modern state. In previous seasons the NJP has made use of the *Asasi Yoqlema* (formal registration of land for tax purposes) to map, in a general way, old field divisions and compare them to modern ones[6]. These registers are hand-written in Arabic and Ottoman Turkish and document how the land was used, how much it was worth and where the new landowners came from. Collectively these late Ottoman and British Mandate-era registers obliquely describe movements of people that can shed light on the settlement fluctuations suggested by the archaeological record. What impact the land transfers of the 19th and early 20th centuries had on land use is part of an on-going study by the Project.

Unlike the registers studied previously for Malkā and Ḥubrāṣ, the files for aṭ-Ṭurra are later, beginning only in 1925. These are essentially documentation of the mortgage of land, which resulted in the development of some extensive landed estates in northern Jordan by regional elites. A preliminary reading of the documents suggests growth in the physical village and its lands from the 1920s to 1940s, as well as describing the familial and economic relationships between this village and others in the Irbid region.

In the 1920s, shares of local land were leased at a set price (generally ranging from 30 - 60 *lira*), for a set number of months (usually 10 - 20) to individuals and family groups living in Irbid. The farmland appears to have been located in the immediate vicinity of the village and bordered by the roads to ar-Ramthā and ash-Shajarah, as well as by other private land (DLS.ATR.Dabt - entries 34 and 38; Abu Sha'r 1995: 413, 416, 417). Over the course of the 1930s and 1940s the leasees included people from villages as close as ash-Shajarah and as far away as the city of Beirut. Local land was increasingly rented to neighbors in at-Ṭurra. An important trend in this period was the building of landed property in villages throughout northern Jordan. In one case (DLS.ATR.Rahn - entry 331) the property owner (leaser) also held land in ar-Ramthā, Ḥarthā, Ḥubrāṣ, Samā, al-Qum and Kharjā; in another, the land owner in aṭ-Ṭurra held title to land in nine different villages and towns in the region (DLS.ATR.Rahn - entry 579). The most striking example of this trend was a group of landowners from the family in aṭ-Ṭurra who collectively claimed farmland in ar-Ramthā, Ḥubrāṣ, Kafr Sūm, Kharjā, Marw, 'Anbā, Ḥawāra, Kafr Yūbā, Bayt Rās, Saḥam, Bayt Yāfā, Samā, Kafr Jāyiz, aṣ-Ṣarīḥ, Kafr Raḥta and numerous plots in aṭ-Ṭurra (DLS.ATR.Rahn - entries 598, 599, 603, 604, 639, 650, 651, 652, 667, 668, 694). In terms of archaeological relevance, these registers bear witness to a real physical and economic mobility in the NJP study region in the late 19th and early to mid-20th centuries, the village of aṭ-Ṭurra fully participating in the land purchases, sales and leases recorded therein. The economic and social ties the village had with other settlements in northern Jordan, southern Syria and Lebanon illustrated here provide a backdrop for understanding trends in the archaeological record related to settlement history, distributional patterns of material culture and agricultural developments.

The Village Today (Based on a Report by Mohammed Shunnaq)

In spite of land transfers earlier last century, demographically the village has changed little from the late Ottoman and British Mandate periods. Interviews with the village Mayor and staff of the Municipality office provided information regarding the origins of several of the families

6. The extant *Asasi Yoqlema* series for Jordan begins in 1876; aṭ-Ṭurra is not mentioned in this early series, suggesting that land registration began later in this village than in others previously investigated by the NJP.

of the modern village, many of them having moved there from what is today Syria, Lebanon, the West Bank and Egypt. The population of aṭ-Ṭurra today is largely defined by eight major clans, which include the Darabiseh (comprised of the lineages of Hijjiah, Judeh, Samarat, Barakat and Arshaydat), Ramadan, al-Hayek, al-Janaydeh, Hijazi, Hannawi, Girba' and Sukhni. Other clans include al-Goor and Khateeb (from Syria), Hamarneh and Gabha (from Palestine), Fardous (from Lebanon), al-Masri (Egypt), Shiyyab (from aṣ-Ṣarīḥ, in Irbid governorate), the Smeiraan and al-Kaldi (*bedu*), and the Sme'aat and Khabuur. In 1899 the Darabiseh, Ramadan and al-Janaydeh clans together either built or repaired the former 'Omari mosque in the village, according to an architectural inscription (al-Naqrash n.d.: 5).

The interviewees described a modern land use that is very similar to that of the past: a predominantly rain-fed regime with a limited number of fields irrigated by privately owned subterranean wells. Continuing work by Project staff is comparing cropping practices and field boundaries described by informants to that alluded to in the land registers, documented in aerial maps and suggested by environmental analysis (see below).

The Archaeological Survey (Based on a Report by David Byers)

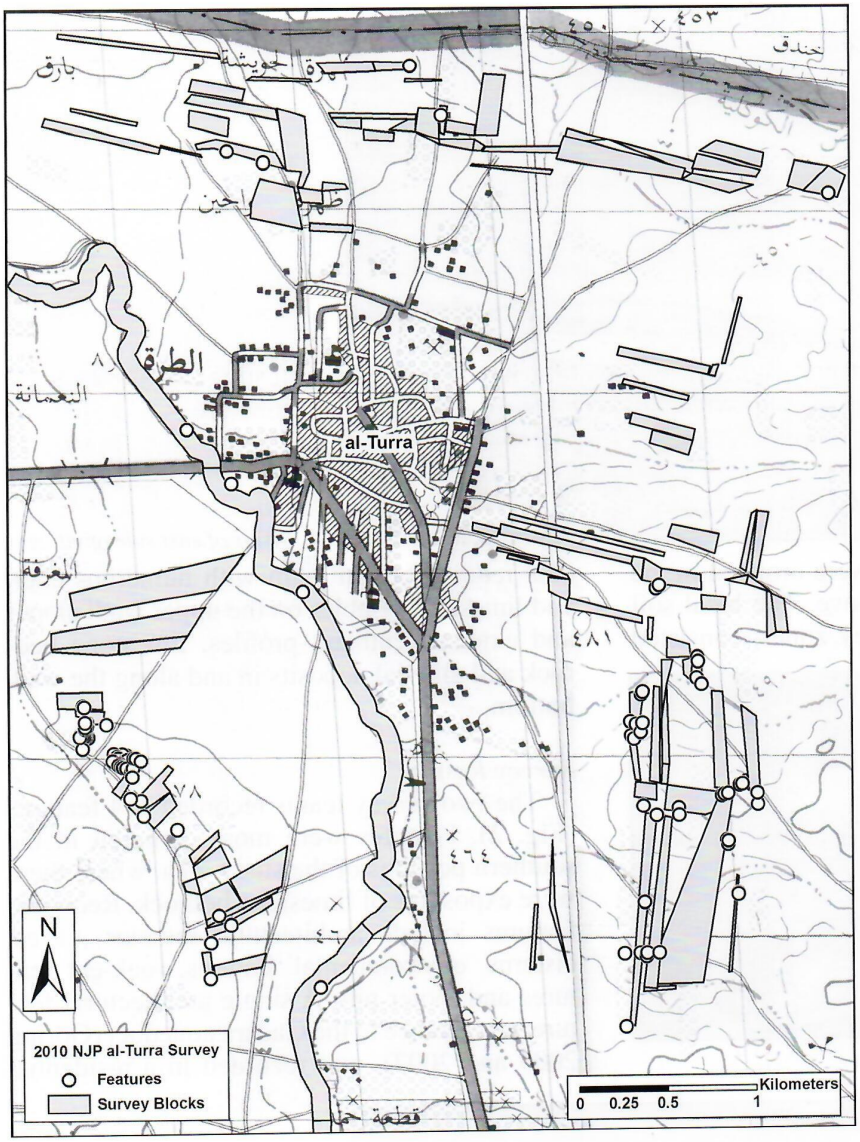
The core of the Project this season consisted of a traditional archaeological survey. A total of 106 separate survey parcels totaling approximately 291 hectares was inspected through pedestrian survey (**Fig. 2**). These include agricultural fields and olive groves to the north-west and north-east of the village of aṭ-Ṭurra and directly south of the Syrian border, as well as survey blocks to the south-west and south-east of the village. The 2010 survey also included a 100 m wide corridor centered on the portion of a large wadi that flows within the village boundaries. The goals of these investigations comprised the identification and mapping of cultural features and surface collection of temporally diagnostic ceramics.

Two survey teams surveyed the selected parcels within the village boundary. Survey parcels were identified on the basis on ground cover and were mapped on the 1999 1:25,000 aerial photo of the village by the Royal Jordanian Geographic Center. To survey each parcel, crew members were spaced at *ca.* 15 m transects, and parcels were walked from one end to the other. Parcel corners and feature locations were recorded with Magellan Sport Track Map handheld GPS units, and this data was entered into an Excel database at the end of each day. Descriptive information about features and sites were entered into database forms packaged in smart phones for download to laptops back at camp[7]. The survey teams collected 100 % of all ceramics in each parcel. In addition to the ceramics, a grab sample of lithics was recovered from the 13 parcels in the north-west portion of the study area. Owing to the ubiquity and generally non-diagnostic nature of the stone artifacts, surface collection of these items was subsequently terminated for the remainder of the project.

The northern portions of the survey area focused on agricultural fields and olive groves (**Figs. 3 and 4**). The local terrain included a gently rolling landscape covered with summer season crops – including olive groves, wheat, cucumber plots and potatoes – and fallow fields. These were often arranged in an alternating fashion, and although olive groves were found throughout, they were almost always encountered on the hill tops. Survey was conducted only in olive groves and fallow fields, and within these areas ground visibility ranged from 75 to 100 %. Wheat fields and vegetable gardens were avoided so as to not harm crops.

The southern survey area focused on agricultural fields located along several low ridgelines, consisting of a series of low north - south trending hills (**Figs. 5 and 6**). The local terrain to the west included a series of low hills and an otherwise gently rolling landscape planted in the same fashion as the north sector. To the east, the terrain was rockier than the area to the north and west. Throughout the southern project area, survey targeted the plowed earth in the olive groves and fallow fields where ground visibility ranged from 75 to 100 %. Extensive bedrock outcrops

7. These forms are electronic forms in Word format, adapted to mobile phone use and based on the survey forms used by the Madaba Plains Project (Herr *et al.* 1998).



2. *Map of survey parcels and feature locations.*

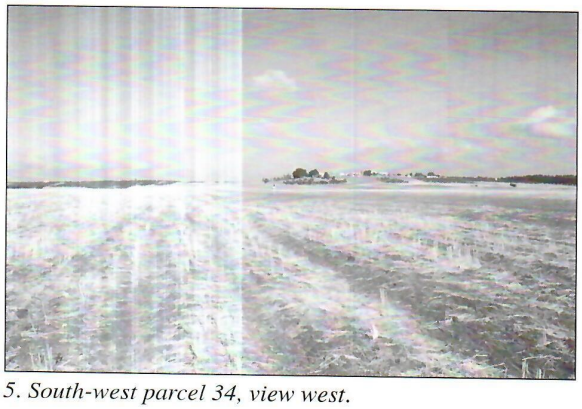
3. *North-west parcel W11, view west.*

also distinguished the lands to the south, where numerous caves and other rock-cut features were recorded. In addition to surface collection, survey in the south-eastern portion of the study area also sought to locate two sets of features visible in aerial photos: one potentially a road, and the other boundaries for ancient fields. Pedestrian survey failed to find evidence of either.

The final survey zone centered on the large wadi that flows north - south along the western margin of the built-up area of the village (**Fig. 7**). This survey area included a corridor *ca.* 100 meters wide and covered *ca.* 6.2 km of the wadi from the southern to the eastern boundaries of the village lands. The terrain included the steep slopes of the incised wadi, as well as the wadi bottom. Agricultural fields were encountered to

4. Fields of east side of village.

either side of the wadi and were cropped in the same manner as the hills above. The local soil matrix, as in the other survey zones, consisted of a reddish brown loam with numerous chert and limestone cobbles on the upper wadi slopes and exposed cutbank profiles, limestone bedrock and alluvial deposits in and along the wadi bottom.



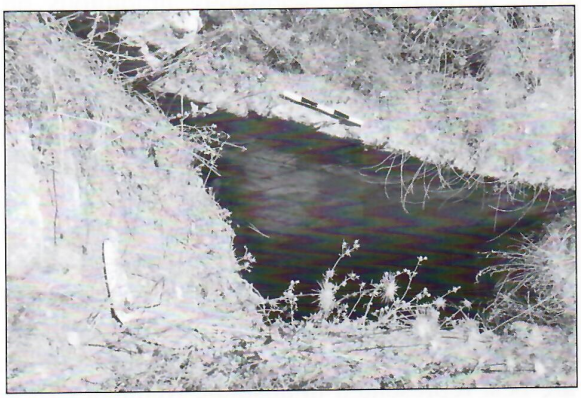
5. South-west parcel 34, view west.

Survey Results

The two survey teams recorded 114 features (**Fig. 2**). Features were more common in the southern portions of the study area, where there were exposures of limestone bedrock. Recorded features include architectural remains, caves, cisterns, environmental features, rock-cut features and looter pits. A single architectural feature, an entrance to the Gadara aqueduct (Göring 2005 and 2007), was recorded in a residential

6. South-east survey area.

7. Wadi overview, view north.



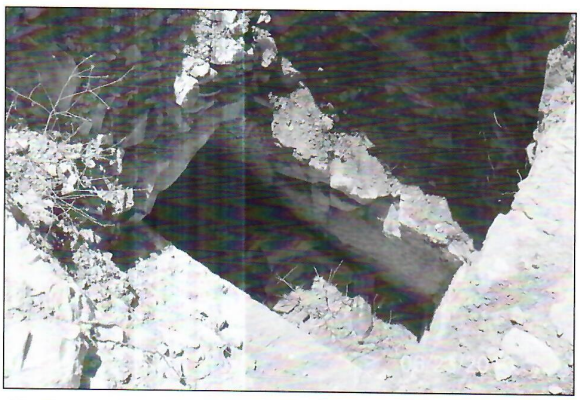
8. Entrance to Gadara aqueduct.

9. Feature 92, cave entrance (water collection drain).

10. Feature 44, cave entrance.

area along the south-western margin of aṭ-Ṭurra (**Fig. 8**). In addition to these were a number of caves, most within the southern half of the study area that include seven modified and 11 unmodified openings situated in the local limestone bedrock (**Figs. 9 and 10**). Most of these features were filled in with sediment, lacked any evidence of use beyond the presence of modern trash and will require test excavations to determine their cultural relevance. The survey teams also documented a number of cisterns and these included five ancient and 28 recent / modern water storage features. The cisterns likely dating to pre-modern periods ranged from rough circular shafts dug into the limestone substrate to deep (> 3 m) bell-shaped water storage features with plaster treatments to their interior surfaces (**Fig. 11**). Recorded environmental features include two dry stream beds that may have served to transport water to agricultural fields in the past. Rock-cut features represent another commonly encountered feature class. These include four cup holes excised into limestone outcrops, 26 quarry sites documenting the extraction of limestone building stones, one rock-cut step, one possible tomb, eight oil / wine presses and five

11. Feature 61, ancient cistern.



12. Feature 42, tomb previously investigated by the DoA.

13. Feature 62, wine or olive press.

unclassified rock-cut features (**Figs. 12, 13 and 14**). Many of these features occurred as clusters.

The survey teams observed both lithics and ceramics throughout the study areas. The small grab sample of lithics derive from what is best called a 'lithic landscape' that appears to characterize the region. Stone artifacts were commonly observed and these include unifacial flake tools, tested cobbles, irregular / expedient cores, blades, abundant debitage and numerous basalt groundstone fragments. This lithic phenomenon

14. Feature 100, quarry.

appears to document a widespread unifacial / flake tool industry that may represent Neolithic and Chalcolithic occupations in the area. In fact, lithic artifacts were seemingly ubiquitous on the ground within many of the survey parcels in the northern half of the study area. The recovered lithic assemblage totals 161 artifacts and these include 15 cores, nine blades, 61 modified flakes, two bifaces, 66 pieces of debitage and eight groundstone fragments.

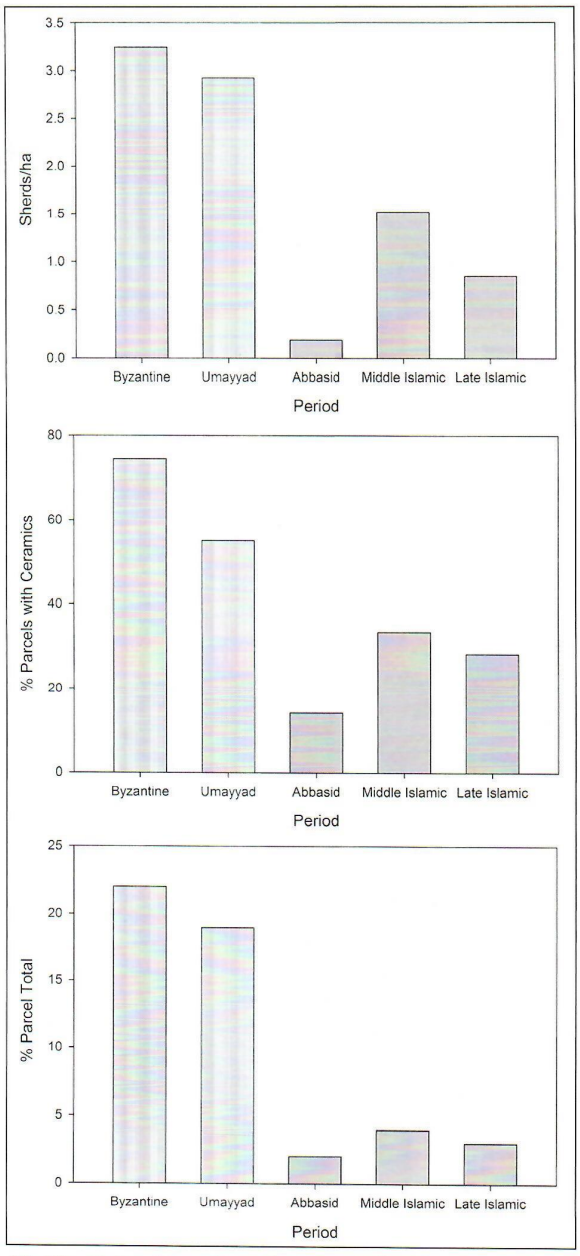
The NJP 2010 aṭ-Ṭurra survey recovered a substantial ceramic assemblage totaling 1423 sherds, recovered from 78 different survey parcels (**Fig. 15**). Within parcels producing ceramics, Early Islamic (7th – 12th century) ceramics are best represented in absolute frequency (n = 431), numbers of parcels (n = 65), mean sherds / ha (n = 5.19) and mean percent of individual parcel total (38 %). Within the Early Islamic assemblage, Umayyad ceramics (n = 255, 2.93 sherds / ha) are represented at far greater frequencies than those from the Abbasid period (n = 23, 0.19 sherds / ha). The Early Islamic ceramics are followed in decreasing frequency by ceramics from the Byzantine (n = 258, 3.25 sherds / ha), Middle Islamic (12th – 16th century: n = 129, 1.52 sherds / ha), Late Islamic (16th - early 20th century: n = 59, 0.85 sherds / ha) and Iron Age periods (n = 4, 0.02 sherds / ha).

Re-use of Space in the aṭ-Ṭurra Project Area

Several trends in the sherd data suggest a spatio-temporal pattern to the use of the agricultural lands within the study area. In fact, the data collected during the 2010 aṭ-Ṭurra project appears to document at least one temporal trend in the regional intensity of use within the proj-

15. Distribution of ceramics by period.

ect area. Assuming that sherd densities provide a reasonable proxy for occupational intensity, then the sherd / ha densities for each period outlined above suggest occupational continuity during two periods (**Fig. 16** top). The first includes a history of occupation from the Byzantine into the Early Islamic periods, with occupational intensity appearing to peak during the Late Byzantine and Umayyad transition. Sherd densities decline sharply during the Abbasid period, only to rebound again and then hold steady through the Middle and Late Islamic periods, although at lower numbers than during the preceding times. Likewise, the frequencies of parcels containing sherds from any given period mirror this pattern (**Fig. 16** middle). The numbers of parcels containing sherds are greatest for the Byzantine and Umayyad, lowest during the Abbasid and then rebound once again during the Middle and Late Islamic periods. While the temporal distribution of parcel use suggests a bimodal distribution in the numbers of parcels used across the past 1800 years, the average by-period, within-parcel sherd percentages are highest for the Byzantine and Umayyad periods (**Fig. 16** bottom). In other words, sherds from these two periods on average account for most of the ceramic assemblage from any given parcel. Conversely, the subsequent Abbasid, Middle Islamic and Late Islamic periods are, on average, represented at relatively minor levels within any given parcel. When viewed in sum, these three trends suggest that while there was a rebound in the numbers of parcels used after the apparent Abbasid period lull in the local occupational sequence, they were used much less intensively than during earlier times.



16. Sherd density and spatio-temperal pattenrs.

The data collected during the 2010 aṭ-Ṭurra project also allow for the recognition of patterns in the continuity of the intensity of use of individual parcels. The sherd / ha densities for all parcels during each period were ranked and then the rank orders were compared statistically to evaluate the hypothesis that parcels heavily utilized in one period, also experienced heavy use in preceding or following periods.

Our analysis of the spatio-temporal distribution of ceramics with the study area suggests a three-part occupational sequence initially focused on the north. Sherd densities, numbers of parcels used during various periods and the relative abundances of temporal diagnostics together suggest that the heaviest occupation for the area during pre-modern times appears to have occurred during the Byzantine and Umayyad periods. Moreover, fields in the northern portion of the survey area were used more intensively during the Byzantine era, while during following periods sherd densities were more spatially homogeneous across the entire project area. The intensity of field use falls during the Abbasid period, only to rebound once again, although not to the same levels as seen at the beginning of

the sequence. A comparison of individual parcel uses mirrors this trend. Our data indicates that the greatest levels of continuity in parcel use occur across the Byzantine / Umayyad and Middle / Late Islamic period boundaries. The ceramic evidence, in short, suggests no significant abatement in occupation or land use from the 16th century onwards, in contrast to other parts of the country. In contrast, the Abbasid period displays less continuity with either the preceding or the following periods and this time may represent a period of spatial, social and political reorganization in the aṭ-Ṭurra region.

Remnants of the Historical Village

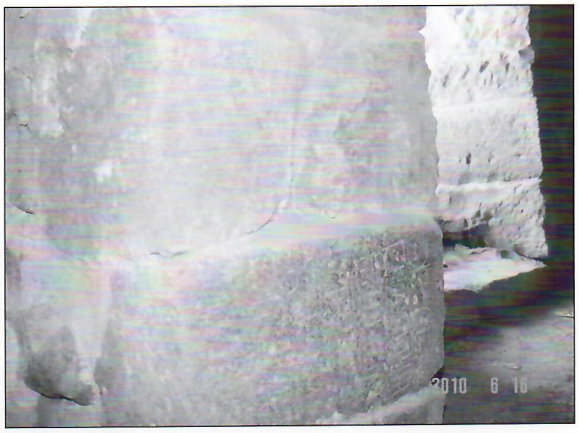
As in many villages of northern Jordan, heritage buildings in aṭ-Ṭurra are quickly disappearing. No trace could be found of the Mamluk tower mentioned by medieval Arabic chroniclers; the most likely location for it would be on the highest hill in the village, now occupied by the former village cemetery. The hewn basalt blocks used in the cemetery appear to have re-used building blocks from an earlier structure. Likewise, an Ottoman guard house, bulldozed to build a home, and the 'Omari mosque, which was either built or repaired in 1899 and was documented by the DoA survey of 2002 (al-Naqrash n.d.: 5), no longer remain. Systematically recording heritage structures remains a priority of the NJP.

The Architectural Survey (Based on a Report by Muwafaq al-Bataineh)

Concurrent with the archaeological survey, a component of our team from Yarmouk University conducted an ethnographic survey in the village, documenting the oldest standing architecture (19th century in date) and interviewing village officials and elders with the longest collective memory of the village. Such surveys have been done in each NJP season and have as their goal describing the physical and functional transformation of the village and its agricultural and pasture lands from the late Ottoman period until today. They also support the Project's commitment to systematically recording historical buildings and, where most needed, making plans to facilitate their conservation and restoration. Modern development and looting are rapidly erasing the last vestiges of the historical village. In the decade that has passed since the DoA surveys and excavations until now, two historical buildings have disappeared and robbers' pits have effaced ancient fields and cave systems.

The village-wide architectural survey of the oldest standing architectural structures built on the documentation and fieldwork done by the DoA a decade ago[8]. The Maqām Shaykh Khalīl, a masonry shrine built in the late 19th century, was photographed, drawn and studied in detail (**Fig. 17**). A basalt stone re-used at the base of a wall pillar inside the doorway of the shrine bears an inscription in Egyptian hieroglyphics and dates to the reign of Pharaoh Ramses II (**Fig. 18**). The construction from which this was originally taken has not been identified in aṭ-Ṭurra but may have been transported there from

17. View of Maqām Shaykh Khalīl, facing south.

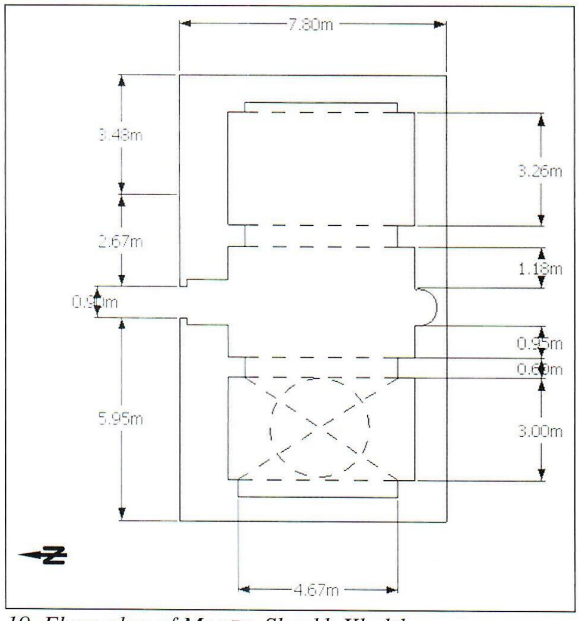


18. Hieroglyphic stone re-used in Maqām Shaykh Khalīl, facing north-east.

8. Exploratory probes were excavated inside and outside this structure by the DoA in 2000 (Hadawineh and al-Naqrash n.d.).

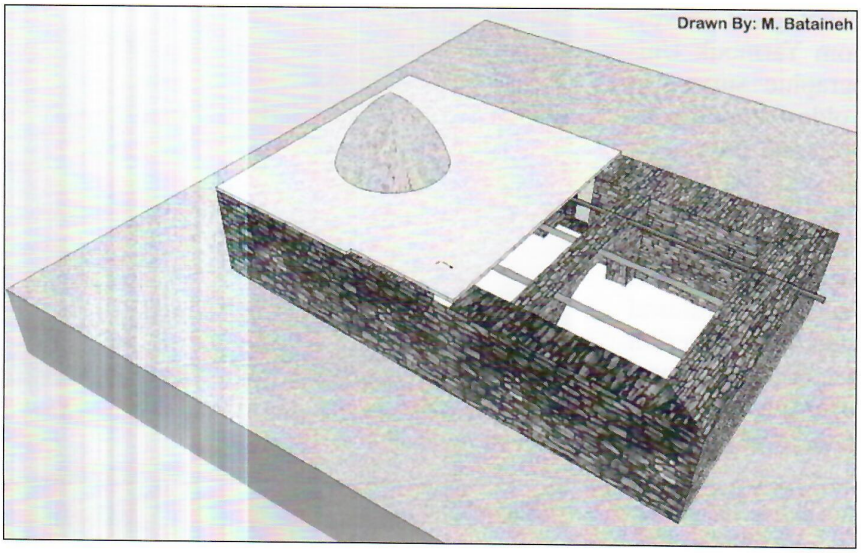
ash-Shihab, 5 km away (Wimmer n.d.). While the results of the excavations in 1999 were inconclusive in determining the date of original construction, the floor plan (**Fig. 19**), design of superstructure and building techniques (**Fig. 20**) all point to the Ottoman era (late 19th - early 20th century AD). The construction of long, rectangular buildings covered by a tri-partite superstructure – the latter produced by a combination and barrel and cross-vaults (supported by engaged piers), and domes (of various forms) – is a familiar one in northern Jordan during this period (**Fig. 21**) (McQuitty 2004: 259). The pebble floor and portable *minbar* are other characteristics that bind the Shaykh Khalīl shrine to this tradition. The Saḥam mosque studied by the NJP during the 2006 season exemplifies, as well, many of these traits (Kenney in Walker *et al.* 2007: 433-435).

Our architect examined two other historical buildings in the village - Maḍafat Ayed Samarra (**Fig. 22**) and Qirbā' House (**Fig. 23**) – in conjunction with ethnographic interviews with village elders. The first, a *maḍafah* (or public rest house), traditionally provided a place to stay for travelers and visitors and was financially supported by either the entire community or a wealthy local patron. This particular rest house was built, according to the interviews, in 1938 by Basheer Ershaidat, a local master mason. The Qirbā' House, dated by its building inscription to 1350 H (or 1930 AD), was constructed of finely

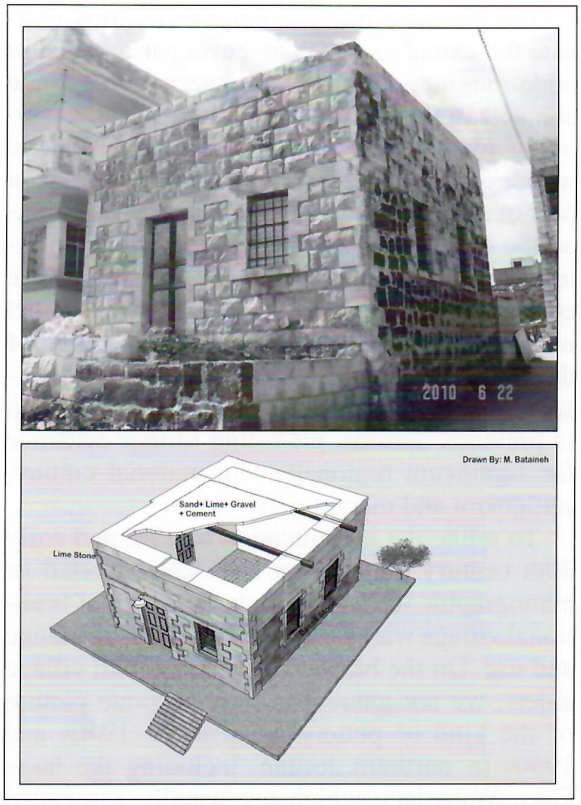


19. Floor plan of Maqām Shaykh Khalīl.

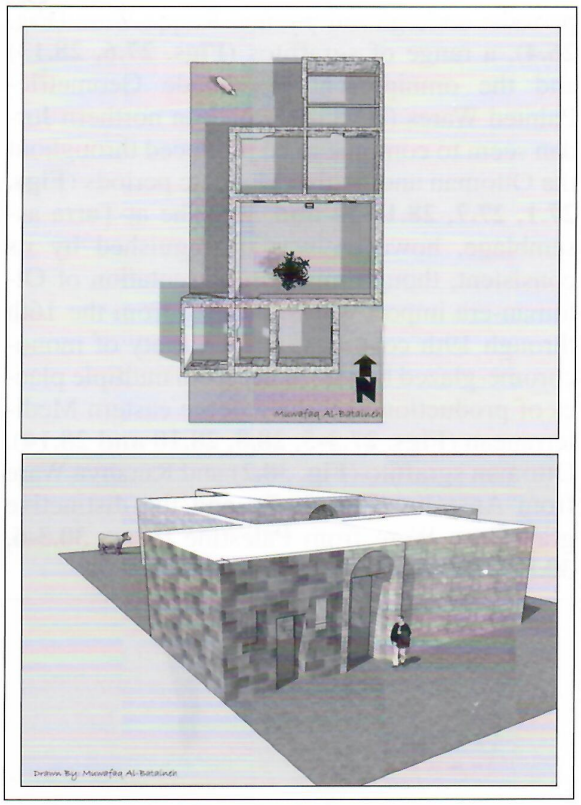
21. Interior of Maqām Shaykh Khalīl - note barrel vaults supported on engaged piers, miḥrāb to right.



20. Computer drawing of Maqām Shaykh Khalīl - note mixed construction of limestone and basalt.



22. Photo and computer drawing of Maḍafat 'Ayed - note mixed limestone - basalt construction and iron rebar-reinforced cement roof.



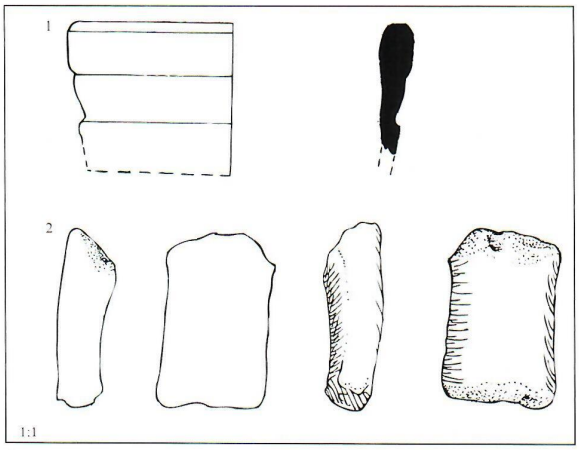
23. Computer drawings of Qirbā' House, aerial and frontal views.

worked basalt stone imported from Syria and carried to aṭ-Ṭurra by camels, at the cost of 5 piasters per stone. 3D computer-generated images of these buildings, adopted for this first time in the NJP this season, documented information regarding construction techniques and building materials, information that we are using to develop a database of traditional building styles in northern Jordan for dating purposes. Together, these preliminary studies suggest a level of wealth and economic integration with the rest of Syria during the British Mandate period and provide a foundation on which to build future studies of traditional architecture. A database and architectural survey forms are being developed for the next field season to further the documentation and study of heritage architecture.

Ceramics Analysis (Figs. 24 - 33) (Bethany Walker)

It became clear in previous NJP seasons that the material culture of northern Jordan differed significantly from that of the rest of the country, so extensive ceramic analysis has been a priority of the project from the start. In 2010, all sherds – as in every survey season – were surface-collected from each plot and read daily. While the ceramic analysis is still underway, we can make a few general statements about the corpus. The majority of the sherds ranged in date from the Late Byzantine to Mandate eras, with particular concentrations in the Late Byzantine and Umayyad periods. Vessel forms were dominated by jars (table wares and storage jars) and bowls. The most characteristic wares of each period were identified on survey, attesting to settlement, transport and economic exchange throughout the Late Antique and Islamic eras. African red slip, painted wares, combed jars and ridged amphorae constituted the bulk of the Byzantine-era assemblage (**Fig. 25**). Among the most typical wares of the Early Islamic era were Umayyad and Abbasid painted pottery (**Fig. 26.3**), Abbasid mold-impressed bowls (**Fig. 26.2**) and Iraqi Abbasid splashed glazed ware (**Fig. 26.1**). The Middle Islamic pottery was reminiscent of a Syrian assemblage of the Ayyubid and Mamluk

periods: underglazed-painted Raqqa Ware (**Fig. 26.4**), a range of sgraffitos (**Figs. 27.6, 28.13**) and the omnipresent Handmade Geometric-Painted Wares (HMGP), which in northern Jordan seem to continue to be produced throughout the Ottoman and British Mandate periods (**Figs. 27.1, 27.7, 28.11-12 and 30**). The aṭ-Ṭurra assemblage, however, was distinguished by its consistent, though minor, representation of Ottoman-era import wares, ranging from the 16th through 19th centuries, *viz.* a variety of monochrome-glazed bowls, likely from multiple places of production in Syria and the eastern Mediterranean (**Figs. 27.3-5, 28.8, 28.10 and 28.14**), Ottoman sgraffito (**Fig. 30.2**) and Kütahya Ware from Anatolia (**Fig. 30.7**), and the distinctive gray Gaza Ware from Palestine (**Figs. 30.3-6, 30.8-9, 31.10, 31.12-14 and 32**).



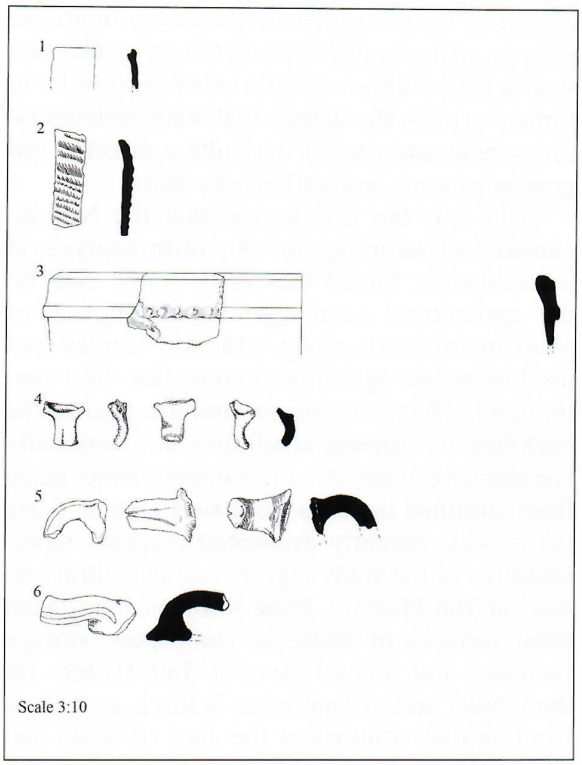
24. Pre-Medieval pottery from aṭ-Ṭurra survey.

The presence of these ceramic imports indicate the extent to which aṭ-Ṭurra participated in wide-ranging regional and international trade contacts in the later Islamic periods. The developing road networks of the late Ottoman era, which connected aṭ-Ṭurra to the Mediterranean port of Acre and markets of Damascus, facilitated the distribution of ceramic imports from international markets to the Hawrani interior. The ceramic assemblage as a whole is quite distinct in terms of fabric and chronology from that of the Madaba Plains, for example, and very similar to other sites in the NJP study area analyzed in previous seasons, providing further evidence for significant regionalism in material culture, settlement and market networks.

To refine the identification of 19th and early 20th century pottery, the NJP has extended its ethnographic work to include the study of traditional village wares – their production, exchange and use. On the basis of interviews with village elders, we are gaining a more accurate picture of the kind of pottery used in the 1940s and 1950s in northern Jordan, including the large Gaza Ware jars, which are usually associated with 19th century Palestinian production, and monochrome-glazed jars used to store honey and butter (**Fig. 34**)[9]. Fragments of such vessels are regularly encountered on archaeological surveys in the region, and more complete vessels can also be found in the ruins of Mandate-era farmhouses that are quickly disappearing from the villages of the study area.

No.	Registration	Ware	Form	Fabric	Published parallels
1	NJP10.EP069.88	plain, wheel-made	store jar	(surfaces) 7.5 YR 6/3 (light brown); (fabric) semi-coarse with small-medium white & black inclus; 7.5 YR 6/6 (reddish yellow), with light gray core	Iron II fabric; (form) Tall al-Sa'īdiyyah – *Pritchard 1985: Fig. 14.6 (Iron II)
2	NJP10. WP036.102	coarseware	jar	(fabric) semi-coarse with small-medium white & limestone incls; 7.5 YR 6/6 (reddish yellow)	Iron II fabric
*I am grateful to Larry Herr for this reference.					

9. The informant in this case was the owner of the Qirbā' House, aged ninety-five, who received these vessels as part of her dowry in the 1940s.



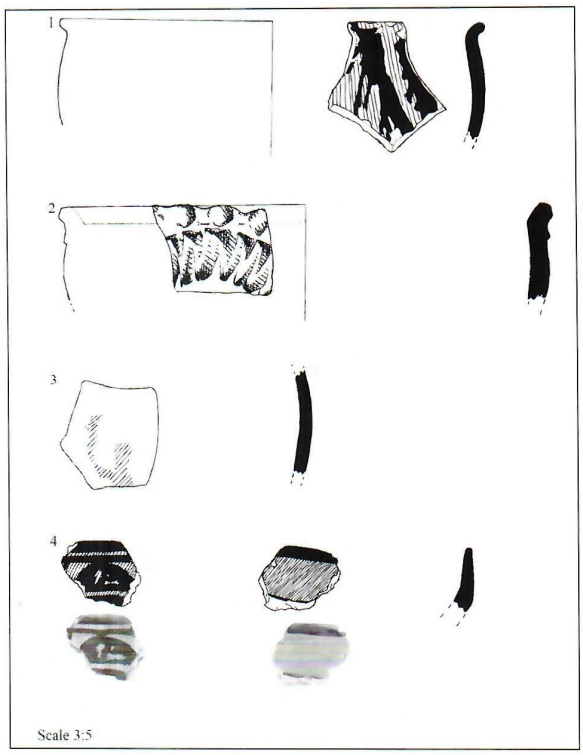
25. Byzantine and Early Islamic pottery from aṭ-Ṭurra survey.

The Environmental Survey (Based on Reports by Sophia Laparidou and Bernhard Lucke)

Phytolith Analysis

Environmental and palaeoecological studies have been incorporated in most of the field seasons of the NJP study area. This season a more comprehensive and multi-faceted study of land use, based on archaeological survey, the study of historical documents, and microfossil and soil chemistry analyses, has been combined with study of the phytolith record in an effort to address multiple research questions related to cropping, diet and climate (the latter when combined with pollen and geomorphological analyses). Among these are: (1) an understanding of imperial agricultural policies through identification of cropping practices applied in the sites under study, (2) identification and measurement of the fluctuation of yield of villages throughout the periods of study, (3) cross-referencing historic documentation with palaeoecological research regarding developments in agricultural strategies and cropping patterns of these sites from Mamluk to the British Mandate periods, (4) identification of the human factor affecting the environmental

No.	Registration	Ware	Form	Fabric	Published parallels
1	NJP10.WP016.89N	plain, wheel-made	jar	2.5 YR 8/2 (pinkish white), fine with small black and white incls.; fitted with a rim ledge for a lid	
2	NJP10.WP016.89G	plain, wheel-made	amphora	2.5 YR 7/6 (light red), fine with small red, white, and black incls; Venetian blinds-style external ribbing	Late Byzantine
3	NJP10.EP005.47	handmade	basin	(surfaces) 5 YR 5/1 (gray); (fabric) 5 YR 5/6 (yellowish red); ext. with thumb-impressed ridge below rim	Early Abbasid - Khirbat Yājūz – Khalīl and Kareem 2002: 125, Fig. 11.7
4	NJP10.WP017.19	wheelmade fineware	amphora	(surfaces) 2.5 YR 5/8 (red); gray core; (fabric) fine with possible mica incls.	Early Byzantine – Saraçhane – Vroom 2005: 60, Fig. 16.1
5	NJP10.WP016.89K	plain-wheel-made	amphora	2.5 YR 7/6 (light red), fine with small red, black, and white incls.	Early Islamic fabric
6	NJP10.WP032.90	coarseware	jar	(surfaces) 10 YR 5/2 (grayish brown); (fabric) 5 YR 6/6 (reddish yellow), coarse with small calcite and black incls.	



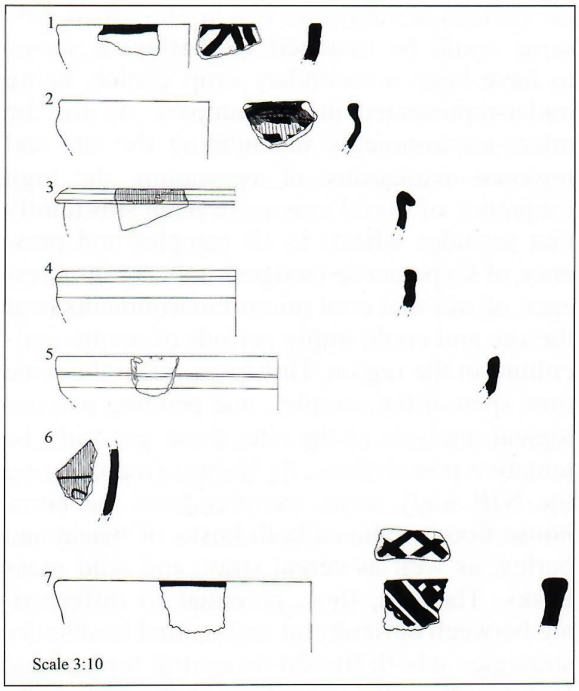
26. Early Islamic pottery from aṭ-Ṭurra survey.

history of these regions, in association with soil genesis analysis, and (5) combining historic research with palaeoecological studies in order to further explain the degree that state agricultural investment and market agriculture affected migration patterns and settlements shifts.

2011 was the first season that the NJP included soil sampling for phytolith analysis in its fieldwork. Given the focus of the NJP on the agricultural economy, the distribution of plant microfossils along with soil studies was used to assess agricultural strategies. In a preliminary effort to compare land use against the backdrop of climatic conditions in a regionally comparative context, soil samples were taken from stratified deposits from sites near aṭ-Ṭurra (to provide recently excavated contexts representative of the study region) and in central Jordan (at Tall Ḥisbān). Nine samples were taken from surfaces of domestic complexes, storage facilities and animal pens at Tall Ḥisbān (in the citadel and village ruins below), as well as from similar contexts at the sites of Abila and Tall al-Ḥuṣun, near aṭ-Ṭurra[10]. These were com-

No.	Registration	Ware	Form	Fabric	Published parallels
1	NJP10.WP017.35	Iraqi splashed glaze	bowl	(ext) white slip; (int) glossy pale yellow glaze splashed with bright green glaze over same slip; (fabric) 7.5 YR 7/4 (pink), semi-fine with small white incls.	Abbasid – On ware, form, and distribution see Mason and Keall 1991.
2	NJP10.WP011.7	plain, wheel-made	basin	(surfaces) 5 YR 5/1 (gray), pie-crust rim form and mold-impressed design on ext; (fabric) 5 YR 5/3 (reddish brown), fine with few small black incls.	Early Abbasid – Yoqne'am – Avissar 1996: 128, Fig. XIII.82.2 (Abbasid); al-Muwaqqar – Najjar 1982: 313, Fig. 5.13 (mid 8th-mid 9th c.); Jarash – Schaefer 1986: Fig. 8.13 and 14 (Umayyad); Khirbat Yājūz – Khalil and Kareem 2002: Fig. 11.11 (Abbasid)
3	NJP10.WP011.11	painted, wheel-made	jar	(ext) faint trace of reddish purple painted floral pattern; (fabric) 7.5 YR 7/4 (pink), fine with small white and black incls.	Late Umayyad/Early Abbasid – Tall Jāwā – Daviau and Beckmann 2001: Fig.4.19 (early Abbasid)
4	NJP10.EP023.63	Raqqa Ware	plate	(surfaces) black-painted design under thick turquoise glaze; (fabric) fritware	Ayyubid (*Note: drawing scanned wrong – rim form is flanged) – Jerusalem, Armenian Garden – Tushingham 1985: Fig. 41.35 (Mamluk)

10. Ms. Laparidou wishes to thank the directors and staff of the Tall Ḥisbān (Profs Øystein LaBianca and Bethany Walker), Abila (Prof. Robert Smith, Mid-Atlantic University), and Tall Ḥuṣun (Prof. Zeidoun al-Muheisen, Yarmouk University) excavations, as well as the Department of Antiquities of Jordan, for permission to take surface samples from these recently excavated contexts.

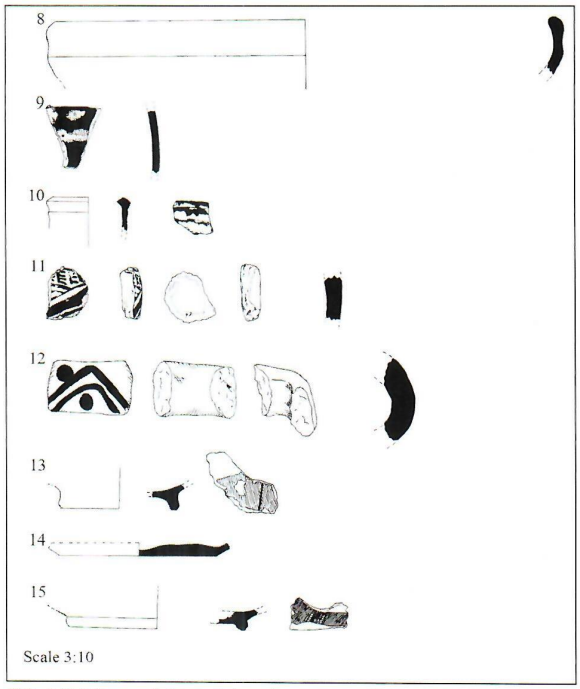


27. Middle and Late Islamic pottery from aṭ-Ṭurra survey.

pared to two representative soil samples from the 2006 NJP excavation at Ḥubrāṣ – extracted from surface and below surface loci in the Field B farmhouse – sent from the United States to the phytolith labs in London (**Fig. 35**). Collectively these contexts spanned the Byzantine to British Mandate eras, and the soils sampled were rich in phytolith remains. While analysis is still underway, a few preliminary statements can be made about this component of the laboratory work.

The phytolith samples examined this year have demonstrated great potential to provide information about agricultural activities and continuity of occupation and crop production (specifically wheat and barley) from the site of Ḥisbān between the Byzantine and Ottoman periods. In terms of cropping and diet, analysis of samples from all contexts and periods at Tall Ḥisbān attest that wheat remained the most common and important crop in the periods studied, and also that wheat production was local: the crop was cultivated on-site through

No.	Registration	Ware	Form	Fabric	Published parallels
1	NJP10.WP011.17	HMGP	bowl	(surfaces) yellowish-red (5 YR 4/6) painted design over pink (5 YR 7/4) slip; (fabric) 5 YR 7/4 (pink), coarse and sandy	Mamluk – For common forms and designs, see Franken and Kalsbeek 1975 (Jordan Valley)
2	NJP10.WP017.34	slip-painted	bowl	(surfaces) bright yellow glaze over white slip-painted design in interior (glaze extends over rim exterior); (fabric) 5 YR 5/8 (yellowish red), fine with few incls.	Mamluk – Horbat 'Uza – Getzov *et al.* 2009: 149, Fig. 3.26.5
3	NJP10.WP032.95	monochrome-glazed	bowl	(int) gritty olive glaze, continues over rim ext.; (ext) plain; (fabric) 5 YR 5/8 (yellowish red), fine with small white and black incls.	Ottoman – Tall Ḥisbān – Walker 2009: 147, Fig. 5.18.6 (poss. 19th c.)
4	NJP10.EP034.75	monochrome-glazed	bowl	(int) uneven, streaked pea-green glaze over thin white slip (continues down rim ext); (ext) otherwise plain, 10 YR 8/4 (very pale brown); (fabric) 5 YR 6/6 (reddish yellow), fine with small white, black, and red incls.	Ottoman
5	NJP10.WP009.3	monochrome-glazed	bowl	(surfaces) glossy, dark green glaze over white slip; (fabric) 7.5 YR 6/6 (reddish yellow), fine with few incls.	Ottoman
6	NJP10.WP017.31	sgraffito	bowl	(int) glossy, olive green glaze over white slip, incised design; (fabric) 5 YR 7/6 (reddish yellow), fine	Mamluk
7	NJP10.WP011.15	HMGP	bowl	(ext) thick white slip with chaff pocking; (int) reddish brown (5 YR 4/2) painted design over same slip; (fabric) 5 YR 6/4 (light reddish brown), coarse	Mamluk – as in #1



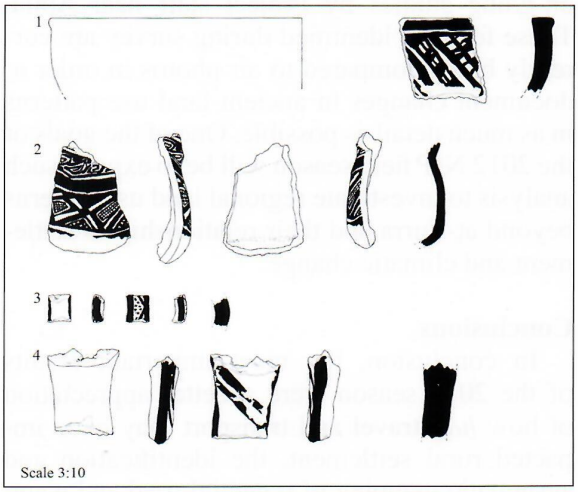
28. Middle and Late Islamic pottery from aṭ-Ṭurra survey.

the periods of study and was not imported. The same could be assumed for barley; it seems to have been a secondary crop choice, being under-represented in the samples. As for the micro-environments surrounding the site and regional availability of vegetation, the high frequency of Pooid grasses (a plant sub-family that includes wheat) in all samples and presence of Cyperaceae (sedges) indicate the presence of wet and cool micro-environments near the site and could imply periods of secure agriculture in the region. However, given the wide time span of the samples, and pending palynological analysis at the site, these can only be tentative postulations. At Ḥubrāṣ (representing the NJP study area), samples from the farmhouse floor produced both husks of wheat and barley, as well as cereal straw and wild grass husks. There is, thus, potential to differentiate between agricultural and animal husbandry strategies at both Ḥisbān (in central Jordan) and Ḥubrāṣ (in northern Jordan). Once analysis of

No.	Registration	Ware	Form	Fabric	Published parallels
8	NJP10.EP034.76	monochrome-glazed	bowl	(surfaces) dark green, glossy glaze over thick white slip; (fabric) 7.5 YR 6/6 (reddish yellow), fine with few small white and red inclusions	Ottoman
9	NJP10.WP006.1	glazedcoarse-ware	bowl/jar	(int) uneven, clear yellow glaze; (ext)10 YR 4/1 (dark gray), covered by splotches of white slip; (fabric) 7.5 YR 5/6 (strong brown), fine cooking fabric	
10	NJP10. WP032.96	monochrome-glazed	ibriq	(surfaces) olive green glaze over thin pink (5 YR 7/3) slip; (fabric) 5 YR 6/4 (light reddish brown), fine with few incls.	Ottoman – Saraçhane – Hayes 1992: 340, Fig. 106 (16th-17th c.)
11	NJP10.EP001.44	HMGP	jar	(int) plain; (ext) dark brown (7.5 YR 3/3) painted design over thin white slip; (fabric) 5 YR 7/6 (reddish yellow), coarse with small white and medium-sized black (river pebbles?) incls.	Mamluk – as in #1
12	NJP10.EP034.72	HMGP	jar	(surfaces) dark brown (7.5 YR 3/3) painted design over thick white slip on handle ext.; (fabric) 7.5 YR 6/6 (reddish yellow), coarse and poorly levigated	Mamluk – as in #1
13	NJP10. WP017.30	sgraffito	bowl	(int) pale yellow glaze over thin white slip, incised design, spot of green glaze; (fabric) 2.5 YR 4/8 (red), fine with few inclusions	Mamluk – (form) Malkā – Walker 2005: 14, Fig. 8
14	NJP10.EP064.84	monochrome-glazed	jar	(int) iron-speckled olive green glaze; (fabric) 5 YR 6/6 (reddish yellow), semi-fine with small white and black inclusions	Ottoman – (ware) Saraçhane – Hayes 1992: 272-4 (Ware B – 15th-mid 17th cs.)
15	NJP10. WP017.32	slip-painted	basin/ bowl	(int) green glaze over white slip-painted linear design; (fabric) 5 YR 6/6 (reddish yellow), fine with few incls.	Mamluk – Malkā – Walker 2005: 22, Fig. 13.5; Yoqne'am – Avissar and Stern 2005: 21, Fig. 7.8

the Abila and Tall Ḥuṣun samples is complete, we will be able to generalize trends of irrigation (or absence of irrigated regimes) during specific periods and thus imply drier periods or intensification of production.

In later stages of analysis, phytolith size measurements of multi-cell forms of wheat and barley will be considered as data for irrigation signals. Also, identification of more food crops (such as vegetables), possibly through starch analysis, will be helpful in exploring diversification of production and could give more information on local diet. This is an ongoing investigation that could imply risk- buffering strategies adopted against short drought events and can contribute to a better understanding of the agricultural strategies used by villagers and the government that facilitated continued settlement during periods of environmental stress. Further excavation in the NJP study area will provide more data to shed light on the different environments, ecologies and agricultural practices of northern Jordan.

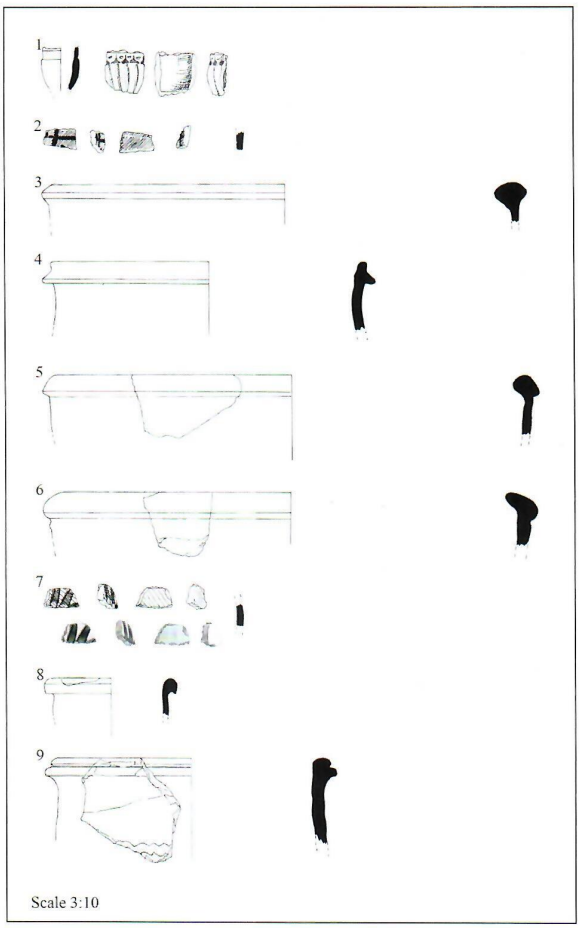


29. Handmade Geometric Painted Ware from aṭ-Ṭurra survey.

Soil Genesis Analysis

To complement to the phytolith study, soil development (soil genesis) analysis was conducted to document soil formation, erosion and landscape change against the backdrop of changes in land use and environmental conditions. To this end, soils from the same excavated contexts as the phytolith study (namely Abila and Tall Ḥisbān), as well as naturally visible soil profiles in the study area, were compared. In addition to the more traditional method of studying soil profiles to assess landscape developments over time, sediment samples suitable for magnetic and optically stimulated luminescence (OSL) dating were collected, with the hopes that such techniques might help refine archaeological chronology in future seasons.

No.	Registration	Ware	Form	Fabric	Published parallels
1	NJP10.WP017.26	HMGP	bowl	(ext) heavy pinkish-white (7.5 YR 8/2) slip; (int) strong brown (7.5 YR 5/6) painted design over same slip; (fabric) 7.5 YR 6/4 (pink), sandy, coarse, and poorly fired with white and black inclusions	Mamluk – For these common patterns and forms in the Jordan Valley – Franken and Kalsbeek 1975
2	NJP10.WP017.20	HMGP	jug	(int) hand-impressed and plain; (ext) dark gray (7.5 YR 4/1) paint over pinkish-white (7.5 YR 8/2) slip; (fabric) 7.5 YR 7/3 (pink), coarse with small white and black incls.	Mamluk – as above and (form) Tall Ḥisbān – Walker and LaBianca 2003: 451, Fig. 11; Saḥam – Walker *et al.* 2007: 449, Fig. 21.4; Bet She'an - Avissar and Stern 2005: 114, Fig. 36.1-2
3	NJP10.WP017.24	HMGP	jug	(ext) brown (7.5 YR 4/2) painted design over pinkish-white (7.5 YR 8/2) slip; (fabric) 7.5 YR 7/3 (pink), semi-coarse with small to medium-sized dark incls.	Mamluk – as in #1
4	NJP10.WP017.21	HMGP	jar	(surfaces) brown-painted (7/5 YR 5/3) lines over reddish-yellow (7.5 YR 7/6) slip; (fabric) 7.5 YR 6/6 (reddish yellow), coarse and sandy with small to medium-sized white and black incls.	Mamluk – as in #1



30. Late Islamic pottery from aṭ-Ṭurra survey.

In order to start obtaining the calibration curve, three archaeologically dated floors from different periods at Tall Ḥisbān were sampled. Laboratory analysis is still underway. If the results are promising, the technique will be applied to previously excavated contents in Ḥubrāṣ, which is part of the NJP study area, next season.

The survey in the fields of aṭ-Ṭurra pointed to ancient land use patterns, such as potential earthen roads and field systems, preserved by variations of soil color as already indicated by on-going studies by Project staff near Abila. These features identified during survey are currently being compared to air photos in order to document changes in ancient land use patterns in as much detail as possible. One of the goals of the 2012 NJP field season will be to expand such analysis to investigate regional land use patterns beyond aṭ-Ṭurra and their relationship to settlement and climatic change.

Conclusions

In conclusion, the most important results of the 2010 season were a better appreciation of how *ḥajj* travel and transport may have impacted rural settlement, the identification and systematic mapping of potential road and water systems that connected the village with a much larger region between the Roman and Late Ot-

No.	Registration	Ware	Form	Fabric	Published parallels
1	NJP10.EP013.1	mold-made *chibouk*	pipe (bowl)	(ext) impressed pattern, slightly polished; (fabric) 5 YR 5/6 (yellowish red), fine with small black and white inclusions	Middle Ottoman - Belmont Castle – Simpson 2000: 148, Fig. 13.3.17-21 (late 18th-early 19th c.); Athenian Agora – Robinson 1985: 182 and Pl. 53 (15th-17th c.)
2	NJP10.EP001.43	monochrome-glazed	bowl	(ext) light olive green glaze over thick white slip; (int) same slip and glaze, with deeply incised linear design; (fabric) 5 YR 6/6 (reddish yellow), fine with few incls.	Ottoman – Saraçhane – Hayes 1992: 271-80 (15th-17th cs.)
3	NJP10.EP034.73	Gaza Ware	jar / bowl	(ext) 7.5 YR 5/6 (strong brown); (fabric) 7.5 YR 6/6 (reddish yellow), fine with small black inclus. and crushed river pebbles (?)	Late Ottoman (19th c.) – Malkā – Walker 2009: 135, Fig. 5.7.8
4	NJP10.WP032.92	Gaza Ware derivative	jar	(surfaces) 10 YR 3/1 (very dark gray); (fabric) 7.5 YR 6/8 (reddish yellow), fine with small red and black incls.	Late Ottoman (19th c.) - see #9
5	NJP10.WP009.5	Gaza Ware	basin	7.5 YR 5/6 (strong brown), very fine with few small black and white incls.	Late Ottoman (19th c.)

6	NJP10.EP003.46	Gaza Ware	basin	(surfaces) 5 YR 6/6 (reddish yellow); (fabric) 5 YR 7/4 (pink), fine with few small black inclus.	Late Ottoman (19th c.) – Malkā – Walker 2009: 135, Fig. 5.7.6
7	NJP10.EP003.45	Kütahya Ware	coffee cup	(int) thick clear glaze; (ext) blue and black painted floral decoration under same glaze; (fabric) coarse fritware	Ottoman (18th c.) – Saraçhane – Hayes 1992: 266-8; Pl. 43
8	NJP10.WP018.37	Gaza Ware derivative	jar	(surfaces) GLEY 1 4/N (dark gray), with trails of clear glaze over rim; (fabric) 7.5 YR 5/6 (strong brown), fine with small black and white incls.	Late Ottoman – (rim form like Rashayya al-Fukhkhar Ware) Saḥam and Ḥubrāṣ – Walker 2009: 128, Fig. 5.2.3, 4, 5; Mt. Hermon – Zevelon 1978: 195, #5 and 6
9	NJP10.EP064.83	Gaza Ware derivative	jar	(ext) color ranges from 10 YR 4/3 (brown) to 10 YR 6/3 (pale brown), surface sponge-wiped with incised wave design; (fabric) 7.5 YR 6/6 (reddish yellow), fine with small black incls.	Late Ottoman (19th c.)– Ḥubrāṣ – Walker *et al.* 2007: 456, Fig. 28.4 and 457, Fig. 29.5; Giv'at Dani – Lazar 1999: 134, Fig. 8.4, 6; Tell Jemmeh – Schaefer 1989: Fig. 8.7

toman periods, and documentation of settlement here in the 18th and early 19th centuries (a period when many other villages in the country were either abandoned or in decline). The NJP is in a publication phase this coming year, as further laboratory results become available and the results of this season can be placed into the larger changes of settlement and land we have documented in the three distinctive ecological zones of the northern highlands since 2003.

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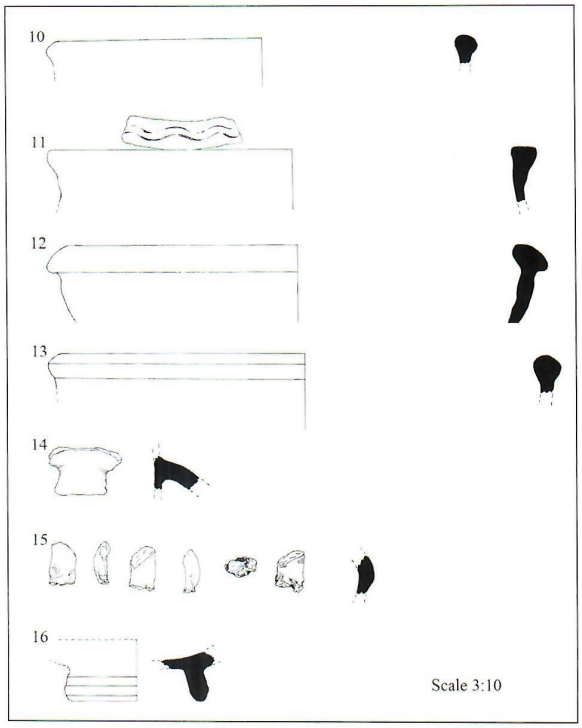


31. Late Islamic and misc. pottery from aṭ-Ṭurra survey.

Bibliography

Archival

Department of Land and Surveys – Amman Office'Ajlun Tapu Collection, ar-Ramthā District (DLS.ATR) Daftar ad-Dabt (DLS.ATR. Dabt) - 1925 Daftar ar-Rahn wa Fakk ar-Rahn (DLS.ATR.Rahn) – registers for 1920-1945

Non-archival

Abu Sha'r, H. G.

1995 *Irbid wa Jiwaruha (Nahiyat Bani 'Ubaid) 1850-1928 M.* Amman: Bank al-A'mal.

Avissar, M.

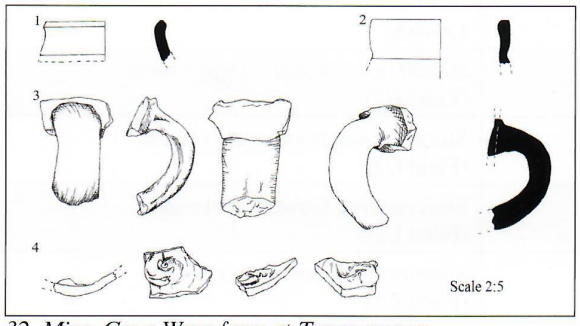
1996 Ch. 13: The Medieval Pottery. Pp. 74-172 in A. Ben-Tor, M. Avissar, and Y. Portugali (eds.), *Yoqne'am I: The Late Periods*. Jerusalem: The Hebrew University.

2009 Ottoman Pottery Assemblages from Excavations in Israel. Pp. 7-134, 98-108 in B. J. Walker (ed.), *Reflections of Empire: Archaeological and Ethnographic Studies on the Pottery of the Ottoman Levant*. Boston: American Schools of Oriental Research.

Avissar, M., and Stern, E. J.

2005 *Pottery of the Crusader, Ayyubid, and Mamluk*

No.	Registration	Ware	Form	Fabric	Published parallels
10	NJP10.EP024.67	Gaza Ware	jar	(surfaces) 10 YR 5/1 (gray); (fabric) 7.5 YR 5/8 (strong brown), slightly coarse with small white and black incls.	Late Ottoman (19th c.) – Malkā – Walker 2009: 135, Fig. 5.7.3
11	NJP10.EP037.80	plain, wheel-made	basin	rim surface incised in wave pattern; (fabric) 10 YR 6/3 (pale brown), fine with mineral pockets and possible mica	Early Abbasid – (form) Jarash – Schaefer 1986: 428, Fig. 9.5 and 430, Fig. 10.1
12	NJP10.EP034.74	Gaza Ware	jar	(ext) 7.5 YR 4/3 (brown); (int) 7.5 YR 4/2 (brown); (fabric) 7.5 YR 5/4 (brown), fine with small white incls.	Late Ottoman (19th c.)
13	NJP10.EP037.81	Gaza Ware	jar	7.5 YR 5/6 (strong brown), semi-fine with small white incls.	Late Ottoman (19th c.) – Malkā – Walker 2009: 135, Fig. 5.7.5; Giv'at Dani – Lazar 1999: Fig. 8.5
14	NJP10.EP024.66	Gaza Ware	jar	(surfaces) 5 YR 5/8 (yellowish red) with traces of trailing green glaze; (core) light gray; (fabric) incompletely fired, fine with small black incls.	Late Ottoman
15	NJP10.EP023.64	monochrome-glazed	jug	(surfaces) glossy dark green glaze over white slip; (fabric) 7.5 YR 7/6 (reddish yellow), semi-fine with small black and white incls.	Ottoman
16	NJP10.EP024.65	monochrome-glazed	bowl	(int) olive green glaze over uneven, thin white slip; (ext)10 YR 5/4 (yellowish brown); (fabric) 7.5 YR 6/6 (reddish yellow), semi-coarse with small to medium-sized black incls.	Early Ottoman – Saraçhane – Hayes 1992: 352, Fig. 110.73.44 (Ware B – 15th - mid 17th c.)



32. Misc. Gaza Ware from aṭ-Ṭurra survey.

Periods in Israel. Jerusalem: Israel Antiquities Authority.

al-Bakhit, M. A.

2008 Nahiyat Bani Juhma fi al-Qarn al-'Ashir al-Hijri (al-Sadis 'Ashr al-Miladi). Pp. 145-216 in M. A. al-Bakhit (ed.), *Dirasat fi Tarikh Bilad al-Sham, "al-Urdunn"*. Amman: Wizarat al-Thaqafah.

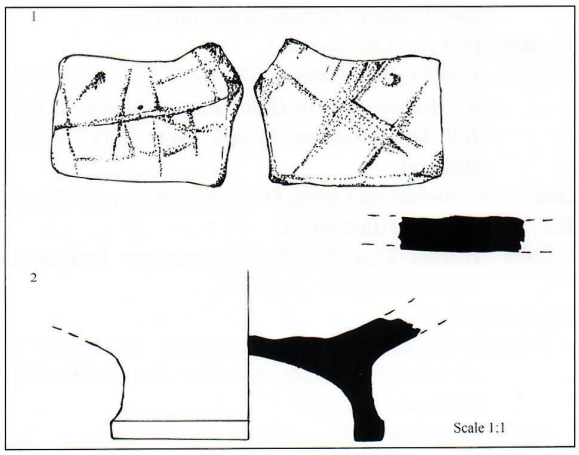
Bender, F.

1974 *Geology of Jordan.* Berlin: Gebrüder Borntraeger.

Boas, A. J.

2000 Pottery and Small Finds from the Late Ottoman

No.	Registration	Ware	Form	Fabric	Published parallels
1	NJP10.WP011.12	Gaza Ware	jug	(surfaces) 5 YR 6/1 (gray); (fabric) 5 YR 6/4 (light reddish brown), fine with small black incls.	Late Ottoman
2	NJP10.WP018.38	Gaza Ware	store jar	(surfaces) 10 YR 5/3 (brown); (fabric) 10 YR 5/8 (yellowish brown), semi-coarse with small white and black incls.	Late Ottoman – (form) Habonim-Kafr – Avissar 2009: 104, Fig. 2.8.9
3	NJP10.WP108.36	Gaza Ware	jar (handle)	(surfaces) 10 YR 5/1 (gray); (fabric) 5 YR 6/4 (light reddish brown), fine with few incls.	Late Ottoman
4	NJP10.WP011.10	Gaza Ware	jug (base)	(surfaces) 10 YR 5/1 (gray); (fabric) 5 YR 6/4 (light reddish brown), fine with few incls.	Late Ottoman



33. Pottery of uncertain date from aṭ-Ṭurra survey.

34. Early 20th century glazed storage jar from at-Ṭurra.

No.	Registration	Ware	Form	Fabric	Published parallels
1	NJP10.WP023.41	coarseware, gaming piece or token?	unknown	(surfaces) plain except for roughly incised lines, executed before firing; (fabric) 5 YR 6/6 (reddish yellow), coarse with medium- sized red, black, and white incls.	possible Iron II fabric
2	NJP10.WP009.4	wheelmade, poss, glazed	bowl	(int) trace of a white slip, so vessel may have been originally glazed; (fabric) 5 YR 6/6 (reddish yellow), fine with no visible incls.	Ottoman

Sample number	Date	Context
H-00-1	14th-16th centuries	Hearth in a domestic storage room (Field Q2)
H-00-3	14th-16th centuries	Storage room floor next to hearth (Field Q2)
H-00-4	14th century	Storeroom of Governor's house (Filed L1)
H-00-6	14th century	Storeroom of Governor's house (Field L2)
H-00-7	16th century, phase III of L1	Governor's courtyard (Field Q5)
H-00-9	Late Ottoman-Early Mandate	Animal pen/ courtyard (Field O)
H-00-10	Byzantine-Early Islamic	Domestic house (Field N)
H-00-12	Byzantine	Cistern (Field G)
H-00-13	Byzantine	Cistern (Field G)
H-00-16	Late Ottoman-Mandate	Farmhouse floor (Hubras/NJP)

35. Chart of phytolith sample numbers and contexts.

Village and the Early Zionist Settlement. Pp. 547-580 in Y. Hirschfeld (ed.), *Ramat Hanadiv Excavations: Final Report of the 1984-1998 Seasons*. Jerusalem: Israel Exploration Society.

Buckingham, J. S.
1825 *Travels Among the Arab Tribes Inhabiting the Countries East of Syria and Palestine*. London: Longman, Hurst, Rees, Orme, Brown, and Green.

Burckhardt, J. L.
1822 *Travels in Syria and the Holy Land*. London: John Murray.

al-Butaineh, T., and al-Naqrash, 'A.
n.d. Taqrir Awwali, Mashru' al-Masḥ Athari li-Aradi Baldat al-Turra/al-Ramtha, al-Mawsim al-Awal, 2000. Unpublished report, Department of Antiquities, Ramtha Office.

Daviau, P. M., and Beckmann, M.
2001 Umayyad Painted Pottery and Abbasid Period Lamps at Tell Jawa: A Chronological Dilemma. Pp. 259-274 in E. Villeneuve and P. M. Watson (eds.), *Le céramique byzantine et proto-islamique en Syrie-Jordanie (IVe-VIIIe siècles apr. J.–C.* Beirut: IFAPO.

Döring, M.
2005 Romische Wasserversorungstunnel im Norden Jordaniens. Eine Vorerkundung. *ZDPV* 121: 130-139.
2007 Wasser für Gadara. 94 km langer antiker tunnel im norden Jordaniens entdeckt. *Querschnitt* 21: 24-35.

Fischbach, M. R.
1994 British Land Policy in Transjordan. Pp. 80-107 in E.L. Rogan and T. Tell (eds.), *Village, Steppe and State: The Social Origins of Modern Jordan*. London: British Academic Press.

Franken, H. J., and Kalsbeek, J.
1975 *Potters of a Medieval Village in the Jordan Valley: Excavations at Deir 'Alla – A Medieval Tell, Tell Aby Gourdan, Jordan*. New York: North-Holland.

Getzov, N., Avshalom-Gorni, D., Gorion-Rosen, Y., Stern, E.J., Syon, D., and Tatcher, A.
2009 *Horbat 'Uza: The 1991 Excavations*. Jerusalem: Israel Antiquities Authority.

Ghawanmeh, Y.
1982a *al-Tarikh al-Hadari li-Sharqi al-Urdunn fi al-'Asr al-Mamluki*. Amman: Dar al-Fikr li-l-Nashr wa al-Tawzi'.
1982b *al-Tarikh al-Siyasii li-Sharq al-Urdunn fi 'Asr al-Mamluki al-Awal (al-Mamalik al-Bahriyyah)*. Amman: Dar al-Fikar li-Nashr wa al-Tawzi'.

Hadawineh, N., and al-Naqrash, 'A.
n.d. al-Tanqibat al-Athariyyeh fi al-Turra/Liwa' al-Ramtha (Mintaqah Maqam al-Shaykh Khalīl), 2000. Unpublished report, Department of Antiquities, Ramtha Office.

Hayes, J. W.
1992 *Excavations at Saraçhane in Istanbul, Vol. 2: The Pottery*. Princeton: Princeton University Press.

Herr, L., Christopherson, G., Younker, R.W., and Merling, D.
1998 *Excavation Manual: Madaba Plains Project.*

Berrien Springs, MI: Andrews University Press.

Hütteroth, W.-D., and Abdulfattah, K.
1977 *Historical Geography of Palestine, Transjordan and Southern Syria in the Late 16th Century.* Erlangen: Fränkischen Geographischen Gesellschaft.

al-Jaludi, 'I. 'A.
1990 Qada' 'Ajlun, 1864-1918. Unpublished M.A. thesis, University of Jordan.

Khalīl, L., and Kareem, J.
2002 Abbasid Pottery form Area E at Khirbat Yajuz, Jordan. *Levant* 34: 111-150.

Lazar, D.
1999 A Mamluk and Ottoman Settlement at Giv'at Dani in the Ayalon Valley. *'Atiqot* 38: 127-136, 231-232. (Hebrew)

Lewis, N.
2000 The Syrian Steppe During the Last Century of Ottoman Rule: Hawran and the Palmyrena. Pp. 33-43 in M. Mundy and B. Musallam (eds.), *The Transformation of Nomadic Society in the Arab East.* Cambridge: Cambridge University Press.

Lucke, B., al-Saad, Z., Schmidt, M., Bäumler, R., Lorenz, S. O., Udluft, P., Heussner, K. U., and Walker, B. J.
2008 Soils and Land Use in the Decapolis Region (Northern Jordan): Implications for landscape development and the Impact of Climate Change. *ZDPV* 124.2: 171-188.

Margane, A., Hobler, M., and Subah, 'A.
1999 Mapping of Groundwater Vulnerability and Hazards to Groundwater in the Irbid Area, N Jordan. *Zeitschrift für Angewandte Geologie* 45: 174-187.

Mason, R. B., and Keall, E. J.
1991 The 'Abbasid Glazed Wares of Siraf and the Basra Connection: Petrographic Analysis. *Iran* 29: 51-66.

McQuitty, A.
2004 The Architecture of Hospitality: A Madafah in Northern Jordan. Pp. 255-264 in K. von Folsach, H. Thrane, and I. Thuesen (eds.), *From Handaxe to Khan: Essays Presented to Peder Mortensen on the Occasion of His 70th Birthday.* Aarhus: Aarhus University.

Mittmann, S.
1970 *Beiträge zur Siedlungs- und Territorialgeschichte des nördlichen Ostjordanlandes.* Wiesbaden: Harrossowitz.

al-Muheisen, Z.
2008 *Dirasat fi 'Ilm al-Athar al-Ijtima'i li-Qura fi Muhafazat Irbid—Bushra, Sal, Hawarah, al* Turrah. Amman: Wizarat al-Thaqafah.

Najjar, M.
1989 Abbasid Pottery from el-Muwaqar. *ADAJ* 33: 305-322.

al-Naqrash, 'A.
n.d. A'mal al-Mash al-Athari fi Baldat al-Turra/al-Ramtha (Taqrir Awal), 2002. Unpublished report, Department of Antiquities, Ramtha Office.

Pritchard, J. B.
1985 *Tell es-Sa'idiyeh: Excavations on the Tell, 1964-1966.* Philadelphia: University of Pennsylvania.

Robinson, R. C. W.
1985 Tobacco Pipes of Corinth and of the Athenian Agora. *Hesperia* 54: 149-203, Pls. 33-64.

Schaefer, J.
1986 An Umayyad Potter's Complex in the North Theatre, Jerash. Pp. 411-441 in F. Zayadine (ed.), *Jerash Archaeological Project 1981-1983, vol. I.* Amman: Department of Antiquities of Jordan.
1989 Archaeological Remains from the Medieval Islamic Occupation of the Northwest Negev Desert. *BASOR* 274: 33-60.

Schumacher, G.
1886 *Across the Jordan: Being an Exploration and Survey of Part of Hauran and Jaulan.* London: Richard Bentley and Son.
1893 Ergebnisse meiner Reise durch Hauran, 'Adschlun, and Belka. *ZDPV* 16: 71-83, 153-170.
1897 Das südliche Basan. *ZDPV* 20: 67-228.
1913a Eine Wetterkatastrophe im Ostjordanland. *ZDPV* 36: 314-315.
1913b Unsere Arbeiten im Ostjordanlande, Berichte I und II. *ZDPV* 36: 123-130.

Seetzen, U. J.
1854 *Reisen durch Syrien, Palästina, Phönicien, die Transjordan-Länder, Arabia Petraea und Unter-Aegypten*, vol. I. Berlin: G. Reimer.

al-Shalash, 'A. H.
1964 *Rainfall Atlas of the Hashemite Kingdom of Jordan.* Amman: University of Jordan.

Simpson, St J.
2000 Ch. 13: The Clay Pipes. Pp. 147-171 in R. P. Harper and D. Pringle (eds.), *Belmont Castle: The Excavation of a Crusader Stronghold in the Kingdom of Jerusalem.* Oxford: Oxford University Press.

Tushingham, A. D.
1985 *Excavations in Jerusalem, 1961-1967, vol. I.* Toronto Royal Ontario Museum.

Vroom, J.
2005 *Byzantine to Modern Pottery in the Aegean: an Introduction and Field Guide.* Bijleveld: Parnassus Press.

Walker, B. J.
2005 The Northern Jordan Survey 2003 – Agriculture in Late Islamic Malka and Hubras Villages: A Preliminary Report on the First Season. *BASOR* 339: 67-111.

2007a Peasants, Pilgrims, and the Body Politic: The Northern Jordan Project and the Landscapes of the Islamic Periods. Pp. 473-480 in T. E. Levy, P. M. M. Daviau, R.W. Younker, and M. Shaer (eds.), *Crossing Jordan – North American Contributions to the Archaeology of Jordan*. Bedforshire, UK: Equinox Publishing, Ltd.

2007b The Politics of Land Management in Medieval Islam: The Village of Malka in Northern Jordan". *SHAJ* 9: 253-261.

2007c Rural Sufism as Channels of Charity in Nineteenth-Century Jordan. Pp. 217-234 in N. Naguib and I. M. Okkenaug (eds.), *Interpreting Welfare and Relief in the Middle East*. Leiden: Brill.

2007d Sahm and Hubras. Pp. 523-524 in S.H. Savage and D. R. Keller (eds.), "Archaeology in Jordan, 2006 Season". *American Journal of Archaeology* 111.3: 523-547.

2009a Identifying the Late Islamic period ceramically: Preliminary observations on Ottoman wares from central and northern Jordan. Pp. 37-69 and 127-153 in B. J. Walker (ed.), *Reflections of Empire: Archaeological and Ethnographic Studies on the Pottery of the Ottoman Levant*. Boston: American Schools of Oriental Research.

2009b Imperial Transitions and Peasant Society in Middle and Late Islamic Jordan. *SHAJ* 10: 75-86.

Walker, B. J., and Kenney. E.

2006 Rural Islam in Late Medieval Jordan: NJP 2006 – the Mosques Project. *Newsletter of ACOR* 18.2 (2006): 1-4.

Walker, B. J., Kenney, E., Carroll, L., Holzweg, L., Boulogne, S., Lucke, B.

2007 The Northern Jordan Project 2006: Village Life in Mamluk and Ottoman Hubras and Saḥam: A Preliminary Report. *ADAJ* 51 (2007): 429-470.

Walker, B. J., and LaBianca, Ø. S.

2003 The Islamic Qusur of Tall Hisban: A Preliminary Report on the 1998 and 2001 Seasons. *ADAJ* 47: 443-71.

Wimmer, S. J.

n.d. A New Stela of Ramesses II in Jordan in the Context of Egyptian Royal Stelae in the Levant. Unpublished conference paper, Third International Congress on the Archaeology of the Ancient Near East, Paris, 18 April 2002. (accessed on-line at: www.stefan-jacob-wimmer.de/3ICAANE_wimmer.pdf)

Wetzstein, J. G.

1860 *Reisebericht über Hauran und die Trachonen*. Berlin: Dietrich Reimer.

al-Yunini, Qutb al-Din Musa b. Muhammad b. Ahmad (d. 726/1326)

1961 *Dhayl Mir'at al-Zaman*, vol. 4. Hyderabad: Osmania Oriental Publications Bureau.

Zevelon, U.

1978 The Pottery of Rashia el-Fukhar. Pp. 190-197 in S. Applebaum *et al.* (eds.), *Hermon and its Slopes*. Jerusalem: Section for Homeland Studies of the Kibbutz Movement (Hebrew).