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## Late Neolithic Settlement Patterns in Wādī az-Zarqa (6<sup>th</sup> and 5<sup>th</sup> Millennia BC)

### Introduction

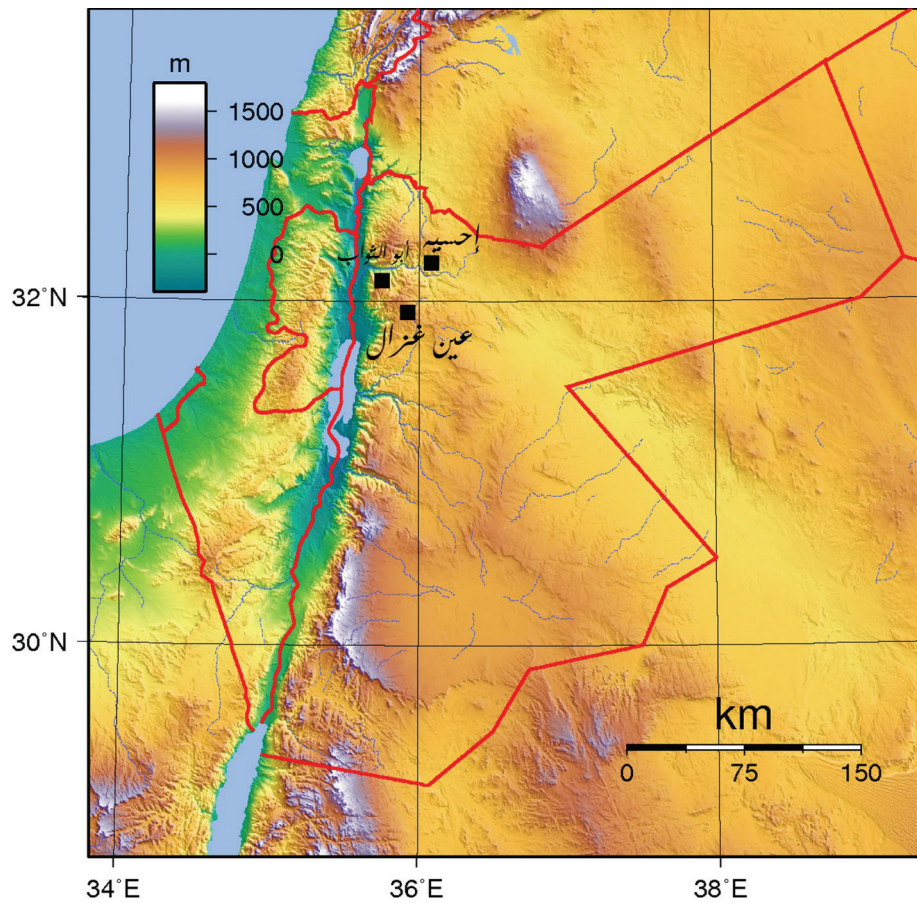
The az-Zarqa River (Wādī/Sel az-Zarqa) is the second largest tributary of the Jordan River, after the Yarmouk River. It rises in Ras Al 'Ayn springs/Amman and flows through a deep and broad *wadi*, measuring 70 km in length and ranging between 7 to 10 km in width, into the Jordan River. The *wadi* represents a passageway that connects the Jordan Valley in the west with the al-Badiya regions in the east. Archaeological sites were established on the banks of the *wadi* as early as the Palaeolithic (1 mya) to modern times (Kafafi *et al.* 2000; Palumbo *et al.* 2002).

This paper aims to present information about the Late Neolithic settlement patterns (*ca.* 5500–4500 BC), by studying the diversity of the type of settlements (village, camp, and station) side-by-side with the archaeological data excavated at major Late Neolithic sites (FIG. 1).

The main sources of information for

the subject under study are derived from surveys ('Ayn Ghazal Survey 1987, the Wādī az-Zarqa/Wādī ad-Ḍulayl Survey 1993, and Jabal abu Thawwab Survey 1985) and excavations ('Ayn Ghazal, eh-Sayyeh/al-Ḥusayyah, Khurīsan, Abu aṣ-Ṣuwwān, and Jabal abu Thawwāb) conducted in the Wādī az-Zarqa basin.

The above-mentioned archaeological surveys and excavations indicated that the *wadi* was heavily occupied during the Neolithic period (*ca.* 10,500–6,500 BP), and that the area was very rich in flora and fauna during that period. For example, the Neolithic site Khuraysān, which was established around 10,500 years ago, represents the earliest farming community to be established in the *wadi* (Ibanez *et al.* 2015). The Pre-Pottery Neolithic A (PPNA) settlements in the *wadi* were followed by large settlements such as 'Ayn Ghazal (Rolleson *et al.* 1992) and Abu aṣ-Ṣuwwān (Al Nahar and Kafafi 2015).



1. A map showing major Late Neolithic sites.

### Late Neolithic Pastoral Sites

During the 1930s, Nelson Glueck (Glueck 1951; 1951a) conducted an intensive survey in Jordan and parts of Palestine, including the Wādī az-Zarqa. This survey was followed by some others during the second half of the 20<sup>th</sup> century, with several others in Wādī az-Zarqa (*cf.* above), which discovered that this Jordanian geographical zone (Wādī az-Zarqa) was inhabited as early as the Palaeolithic period. Flint tools and a mammoth tusk belonging to this period were collected and excavated at several sites such as the as-Sukhna. Moreover, during the Neolithic period, this region witnessed the presence of the first settled communities in

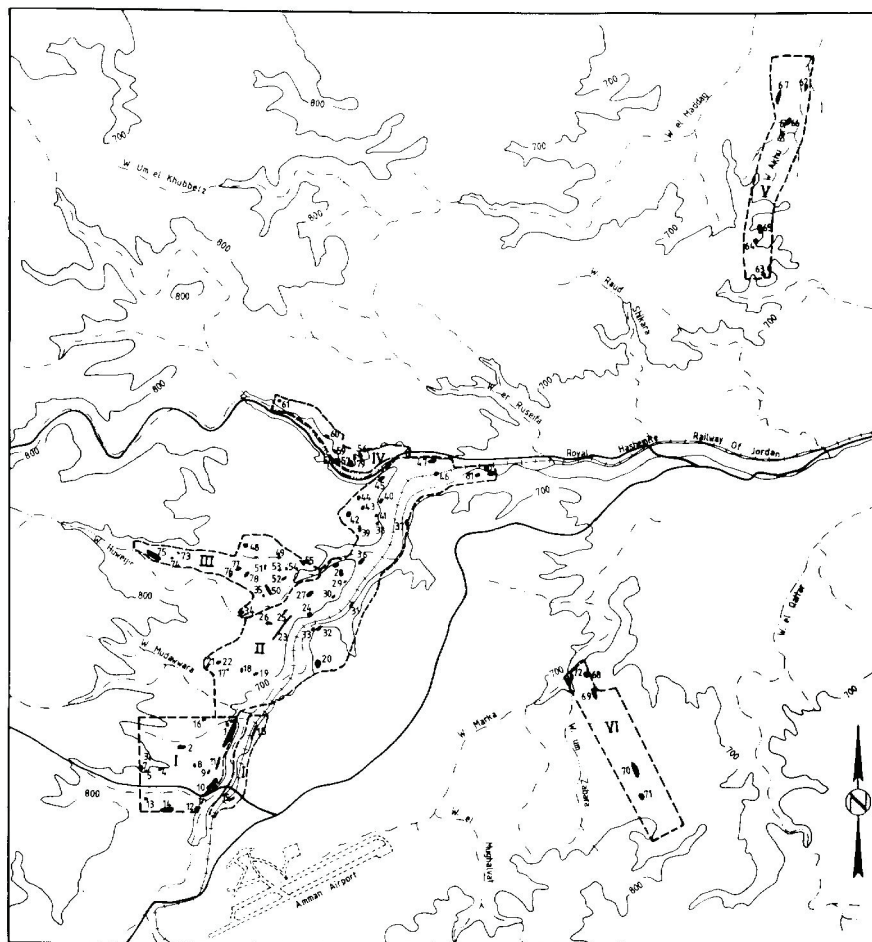
very large sites such as Khuraysān (PPNA and Early Pre-Pottery Neolithic B), 'Ayn Ghazal and Abu aş-Şuwwān (PPNB). These large Pre-Pottery Neolithic villages were affected by a climatic change in around 6000 BC (uncalibrated date), which led to the abandonment of many Early Neolithic villages (*i.e.*, Pre-Pottery Neolithic), except a few of them such as the sites of 'Ayn Ghazal and Abu aş-Şuwwān. Those two sites displayed continuation of occupation but were far smaller than previous settlements at the sites. As a result of this natural change, it seems that some of the farming communities changed their subsistence strategies to pastoralism, such as at the site

of eh-Sayyeh/al-Ḥusayyah (Bartl and Kafafi 2016) and the burin sites in the area located to the east of 'Ayn Ghazal. Moreover, new, smaller settlements were established very close to permanent water resources, such as the site of Abu Thawwab (Kafafi 2001) where people practiced farming, pastoralism, and hunting. A brief study of the results of the archaeological fieldworks conducted in Wādī az-Zarqa, and related to the Late Neolithic settlement patterns, is presented below.

'Ayn Ghazal is a major Neolithic settlement located in the northern part of Amman. In 1987, an archaeological survey

was conducted in the site's vicinity with the aim of documenting whether the site was surrounded by smaller Neolithic settlements and to examine the range of human occupation in the region of 'Ayn Ghazal (FIG. 2). As a result of the survey, 12 Neolithic settlements were identified. Three settlements are located in the immediate vicinity, just south of 'Ayn Ghazal, and might be considered as an extension to the PPN village (Simmons and Kafafi 1988, 1989), while the rest are situated a moderate distance from it. One of the three sites belongs to the Yarmoukian Period.

Several burin sites were reported in



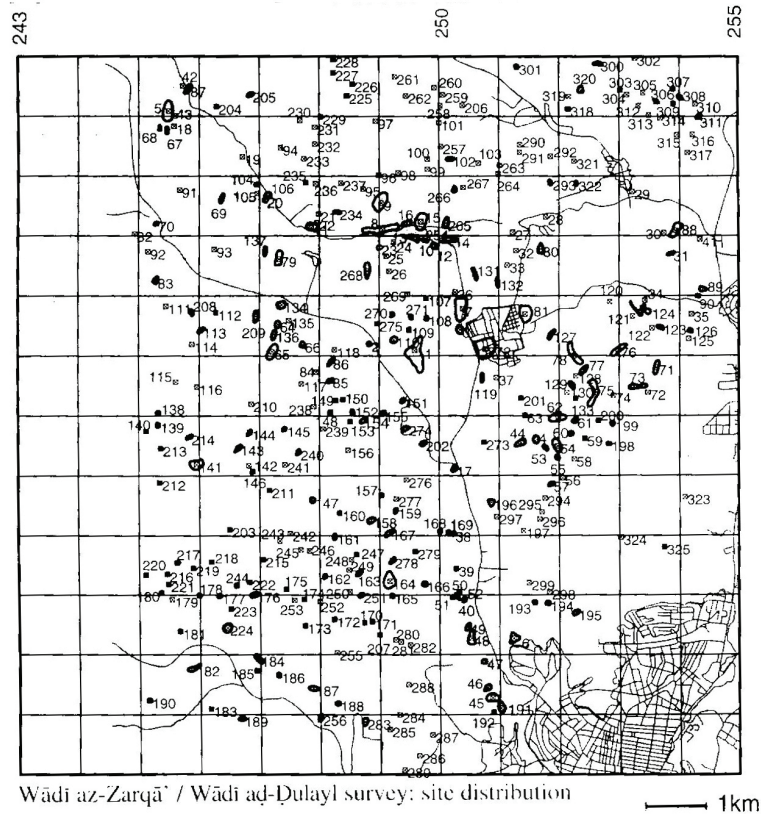
2. Map produced from the 1987 'Ayn Ghazal survey.

areas located a moderate distance from 'Ayn Ghazal, such as Wādī Marka (AGAS 70). Most of the recorded burin sites are surface scatters. Two sites, however, contained *rujum* that might be associated with the Neolithic occupations. They resemble the burin sites found in the Black Desert by Alison Betts in the 1980s. Many scholars feel that they date either to the Late Pre-Pottery Neolithic or to the Pottery Neolithic (Betts 1986, 1988, 1998; Betts and Helms 1986).

The surveyors of the 'Ayn Ghazal survey had expected to find smaller Neolithic villages, farmsteads, or pastoral sites, but that was not the case, unless some of the chronologically ambiguous lithic scatters and *rujum* or structure sites are Neolithic. It now appears that 'Ayn Ghazal did, in fact, operate as a relatively independent

settlement and that major support sites were not part of its settlement system. It is, however, possible that some Neolithic settlements may be buried under relatively recent deposition. The tendency for such sites to be located near major *wadi* systems may have rendered them nearly invisible to conventional archaeological survey (Simmons and Kafafi 1989). On the basis of the survey data, however, it is tentatively concluded that there are no major Neolithic sites located in the areas that were investigated.

In 1996, a survey project was conducted by the Rome La Sapienza University/Italy and Yarmouk University covering the area which extends between the city az-Zarqa and the village Quneyyeh (FIG. 3). In this survey 294 sites were recorded, and only



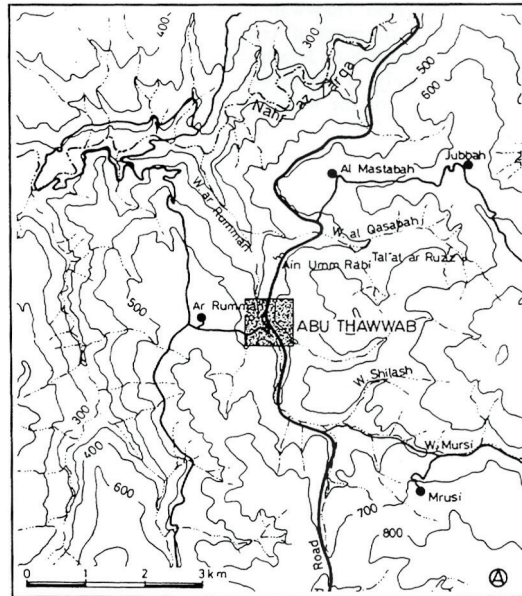
3. Map resulting from the Wādī az-Zarqā/Wādī edh-Dhulail survey.



one site (Site 9) namely Wada'a/eh-Sayyeh/al-Ḥusayyah has been identified as Neolithic (Palumbo *et al.* 1996: 380–4). Moreover, located 4 km downstream of Wādī az-Zarqa from the town as-Sukhna, the site Khuraysān, which was first registered by Hanbury-Tenison in 1978, has been revisited and recently excavated by a Spanish team. However, this survey proved that neither Late Neolithic farmsteads, stations, camps, nor villages were recorded in addition to eh-Sayyeh/al-Ḥusayyah.

The site eh-Sayyeh/al-Ḥusayyah was first sounded in 1997 (Caneva *et al.* 1999) and continued to be excavated in 2013, 2014, and 2015 (Bartl and Kafafi forthcoming). The results of the excavations indicated that the site was first established during the Late Pre-Pottery Neolithic B (PPNB) and continued in the Pre-Pottery Neolithic C (PPNC), Late Neolithic (Yarmoukian), and the Chalcolithic periods. Despite the fact the excavations yielded Late Neolithic architectural remains, there were very few from the Pottery Neolithic, leading the excavators to conclude that it belonged more to a pastoral community rather than a settled village. Moreover, the site is located halfway between the mega Neolithic sites 'Ayn Ghazal and Abu aṣ-Ṣuwwān, and no other Late Neolithic site has already been recorded in the distances extending between the sites. This deduction reinforces the belief that Late PPNB farming settlements were either abandoned or reduced to small villages and that portions of the farming community changed their subsistence strategy to pastoralism. This position might be supported by the large number of burin sites recorded in the regions located in the vicinity of Wādī az-Zarqa.

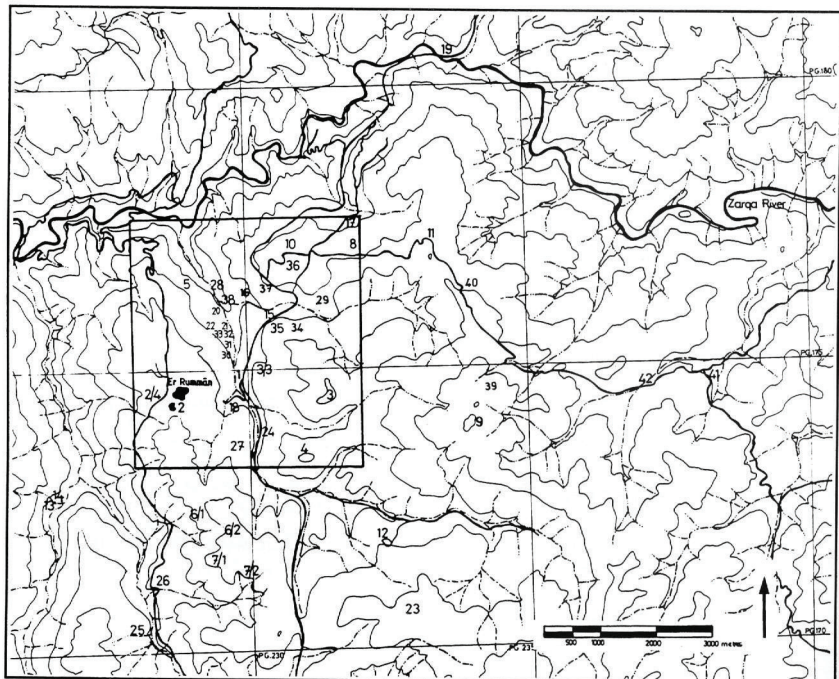
In 1985, within the framework of the Jabal Abu Thawwab project, a team consisting of six members visited 42 sites ranging in date from the Middle Palaeolithic to the modern era (FIGS. 4–5). The aim of this survey was to gain a deeper understanding of the site in



4. Map resulting from the Jabal Abu Thawwab survey.

the context of the larger area surrounding it. Out of the 42 visited sites, and in addition to Abu Thawwab, eight were assigned to the Late Neolithic and were identified as villages (Kafafi 2001: 9–10). Four identified as villages are as follows: Jabal Abu Thawwab (Site 1), 'Ayn el-Karm II (Site #15/2), 'Ayn el-Gathyan (Site #17), and 'Ayn Safsafeh (Site # 24). Four others produced pottery sherds related to the Yarmoukian Period: 'Ayn Ras al Ma (Site #2), as-Salihī (site #2/1), Haud el-Bayad (Site #29), and Umm el-Basatīn I (Site #31).

This survey determined that there was a concentration of settlement and farming activities during the period ranging from 5600 to 5000 BC (uncalibrated date). In addition, most of these sites were constructed on slopes very close to perennial springs or overlooking *wadis*. The largest of them is the Late Neolithic village Jabal Abu Thawwab, which appears to be the center of all these smaller sites. It seems that the Late



5. Map resulting from the Jabal Abu Thawwab survey.

Neolithic settlement patterns in this region are completely different from those in the Upper Wādī az-Zarqa where we have a central site (Abu Thawwab), surrounded by small either farmsteads or seasonal camps constructed in places where perennial water is available.

#### Sixth-Millennium BC Villages

The excavated archaeological material in Wādī az-Zarqa belonging to the 6<sup>th</sup> millennium BC was assigned to two different periods: the Pre-Pottery Neolithic C (ca. 6000–5600 BC) and the Yarmoukian (ca. 5600–5000 BC). The archaeological material attributed to each of the two periods is discussed below.

#### *The PPNC Settlements (ca. 6000–5600 BC)*

The two sites (‘Ayn Ghazal and eh-Sayyeh/al-Ḥusayyah) identified as PPNC

settlements are different in nature. ‘Ayn Ghazal is considered to be one of the most important PPNB villages excavated in Wādī az-Zarqa due to the large area of the settlement, the richness of excavated architecture and other objects (especially art objects), and the continuation of living at the site from the 7<sup>th</sup> to the 6<sup>th</sup> millennia BC, in other words, from the Pre-Pottery to the Pottery cultures (Rollefson *et al.* 1992).

Around ca. 6500 BC the farming villages in the Jordan Valley and Palestine were abandoned, and the inhabitants of this part of the southern Levant found themselves obliged to immigrate to the eastern side of the Jordan River (Kafabi 2001a). The immigrants were absorbed into communities at sites such as ‘Ayn Ghazal and other Late PPNB Neolithic villages where both the social and economic spheres of daily life were suitable. It seems that

during this period (Late PPNB), several immigrant families built houses in the eastern side of ‘Ayn Ghazal, a little bit far away from those of the original inhabitants in the southern and northern sides of the site. Unfortunately, the exposed areas in the East Field at ‘Ayn Ghazal across the River Zarqa were too limited to gain a clear understanding of the nature of settlement during the 7<sup>th</sup> and 6<sup>th</sup> millennia BC.

It has been argued (Rollefson and Kafafi 2000) that shortly after the beginning of the 6<sup>th</sup> millennium (*ca.* 5900 BC) the socio-cultural changes of ‘Ayn Ghazal witnessed a major alteration that is reflected in the architectural types found at the site. This also might be due to a natural catastrophe that affected the way of life not only in Wādī az-Zarqa but also all over the southern Levant. This natural catastrophe enforced a major change of the lifestyle during the first half of the 6<sup>th</sup> millennium, which is identified as the PPNC. At the site, two types of domestic buildings dating to the PPNC were recorded and studied, and both indicated the return to a nuclear family arrangement. The first type is characterized by a small single-room house with a walled courtyard. The second type was the ‘corridor building’ (FIG. 6), a semi-subterranean storage feature/

foundation probably belonging to families who lived only for a short period of the year at ‘Ayn Ghazal. It has been suggested that during this period, in the fall/winter until the end of the harvest in May/June, these families would have stayed in the steppe and Badia regions with their herds, returning to ‘Ayn Ghazal in Wādī az-Zarqa when the water and vegetation in the eastern side of Jordan had disappeared (Rollefson and Koehler-Rollefson 1993).

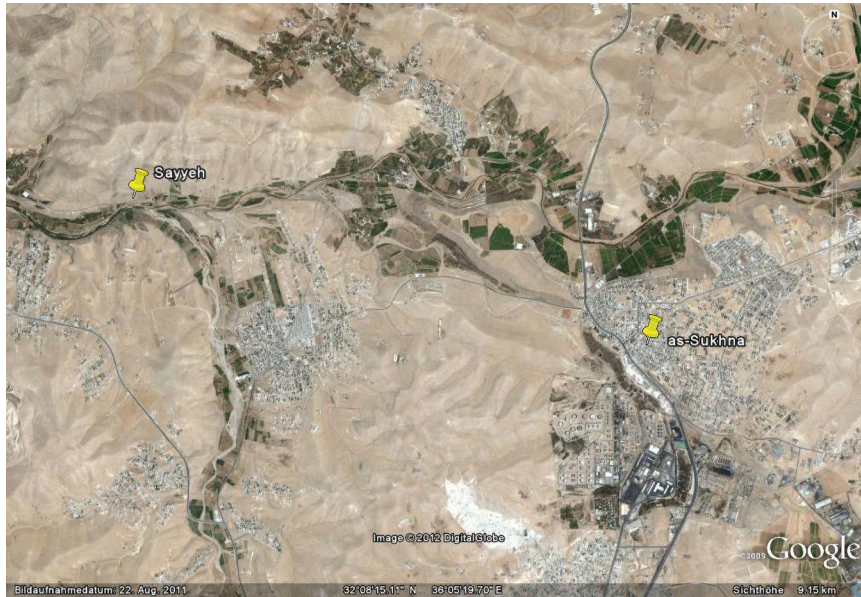
One more settlement has been excavated in Wādī az-Zarqa, namely the site eh-Sayyeh/al-Ḥusayyah, which is located very close to the confluence of both Wādī-az-Zarqa with Wādī edh-Dhulail (Kafafi *et al.* 1997; Caneva *et al.* 2001). The site was first registered during the survey conducted in 1993 by Gaetano Palumbo, and then sounded in 1997 by a Jordanian-Italian team (Caneva *et al.* 1999: 10–2; 2001: 102–5), and excavated in 2013, 2014, and 2015 by a Jordanian-German expedition (Bartl and Kafafi forthcoming). The site measures approximately 10 ha in area, and the archaeological excavations yielded architecture, flint tools, and pottery sherds dated to a period ranging from the Late PPNB to the Chalcolithic period without any interruption of settlement (FIG. 7).

As a result of the archaeological survey and excavations at eh-Sayyeh/al-Ḥusayyah, it has been deduced that the eastern side of the site did not produce any architectural remains; in the meantime, several constructions were encountered in the western part of the site. An elliptical feature was uncovered in the 2015 season which might be used either as a grave or a storage facility (FIG. 8). The same type and building plan was also uncovered



6. PPNC corridor buildings at ‘Ayn Ghazal.





7. A general view of eh-Sayyeh/al-Ḥusayyah.



8. An elliptical structure at eh-Sayyeh/al-Ḥusayyah.



9. Sixth-millennium BC structures at eh-Sayyeh/al-Ḥusayyah.



in the western part of the site, but it was accompanied by other constructed rooms, perhaps built later than this elliptical feature. In the Badia, the same kind of feature has also been discovered. Thus, it is possible that such an installation might have served as storage for semi-nomadic populations who lived in the region during the first half of the 6<sup>th</sup> millennium and used to stay at the site for only part of the year.

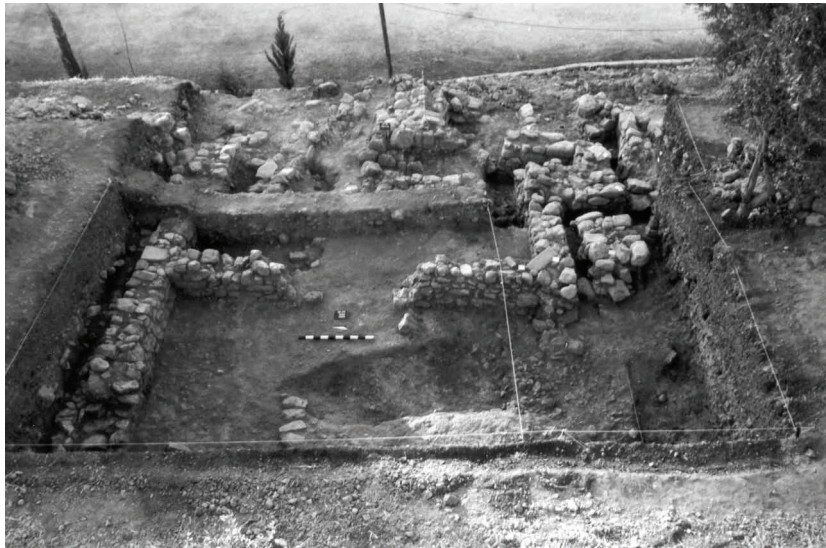
In addition to the elliptical feature, several rectangular rooms were likewise uncovered in the same area of the elliptical building, but built on top of it (FIG. 9). In these excavated rooms, only a few Yarmoukian pottery sherds were found along with more flint tools dating to the 6<sup>th</sup> millennium BC. This is an indication that the people who lived at the site during this period of time were semi-nomadic.

Regarding settlement patterns during the first half of the 6<sup>th</sup> millennium BC, one could conclude that no permanent villages existed in the valley, but transhumance was practiced and populations stayed in this region for several months of the year.

#### *Yarmoukian Settlements Patterns (ca. 5600–5000 BC)*

The results of excavations at several sites situated in Wādī az-Zarqa and belonging to the second half of the 6<sup>th</sup> millennium BC demonstrate that there was a shift in settlement patterns after the PPNC. At sites like ‘Ayn Ghazal, Tall Abu aṣ-Ṣuwwān, Jabal Abu Thawwab, and Tall Ḥimma, all located in the basin of Wādī az-Zarqa, villages and farmsteads were founded in this region of Jordan. People settled in permanent villages (e.g., ‘Ayn Ghazal and Jabal abu Thawwab), but they were small in area compared with the Pre-Pottery Neolithic villages. The excavations of Tall Abu aṣ-Ṣuwwān and Tall Ḥimma did not produce any major constructions, but storage pits were excavated at all Yarmoukian sites.

At ‘Ayn Ghazal, the uncovered Yarmoukian structures consist of both rectangular (FIG. 10) and curvilinear (FIG. 11) floor plans. The investigated buildings appear to have been used as regular dwellings for nuclear families, except one built during the last occupation of the Neolithic period (end of Yarmoukian) that



10. An excavated Yarmoukian house.



11. Sixth-millennium BC buildings at 'Ayn Ghazal.

was circular in plan and constructed only of one row of small stones, probably indicating that it was built as a barn. In addition, there was also an apsidal one (FIG. 12) that had a small courtyard and might have served a public purpose, such as a space for ritual.

The earliest phases of the Yarmoukian at 'Ayn Ghazal suggest that the PPNC partial separation of the population into permanent settled farming communities was evidently concluded. In addition, the

Yarmoukian presence once again suggests that the pastoral type of dwellings was no longer a part of the 'Ayn Ghazal community and a clear indication of a nuclear family structure was made very clear by the isolated courtyard houses (Kafabi and Rollefson 1995: 15–6).

With the beginning of the Yarmoukian period around 5600 BC, the size of the site continued to be reduced, and there was no evidence of domestic use either in the East or in the North Fields of the site. Furthermore, the Yarmoukian houses were built far away from each other. During the last phase of the Yarmoukian period, the end of the 6<sup>th</sup> millennium BC, the last farmers living at 'Ayn Ghazal were struggling to make their living at the site.

One more Yarmoukian settlement located in the Wādī az-Zarqa basin is the site Jabal Abu Thawwab, situated on the eastern bank of Wādī ar-Rummān, which empties into the Wādī az-Zarqa from its southern side. The site was first settled during the Yarmoukian Period (*ca.* 5600–4500 BC), followed by a gap of occupation,



12. An apsidal house at 'Ayn Ghazal.

then reoccupied during the Early Bronze Age I (ca. 3900–3100 BC).

The archaeological excavations conducted at the site during the 1980s revealed several rectilinear and curvilinear structures related to the Pottery Neolithic period. Moreover, many storage pits were also found at the site. The site is medium in size and measures around 300 m x 200 m. Furthermore, the Yarmoukian architecture, flint tools, and pottery assemblages suggest that the site served as a permanent, medium-sized Yarmouk village.

Two other Yarmoukian sites should also be mentioned here: the Tall Abu aṣ-Ṣuwwān and Tall Ḥimma. There is little Yarmoukian material at Tall Abu aṣ-Ṣuwwān and it does not give the impression that it functioned as a village. The excavator published only an assemblage of pottery sherds and flint tools, but no complete house plans or any other Yarmoukian structure. Nevertheless, storage pits were found at the site. This might indicate that the site served as a farmstead, a farming community, or a station for transhumance groups. At Tall Ḥimma, the test trenches excavated in 1996 by Evelyn van der Steen yielded a small amount of Yarmoukian pottery sherds, which do not shed light on the nature of the settlement during the Yarmoukian period.

### Conclusions

To conclude, the results of the archaeological fieldwork conducted in the Wādī az-Zarqa basin indicated the following:

1. The Wādī az-Zarqa Basin witnessed two types of settlements during the 6<sup>th</sup> and 5<sup>th</sup> millennia BC:
  - a. Permanent settlements and villages where the inhabitants relied on farming, pastoralism, and hunting.
  - b. Camps or small permanent settlements built by pastoralists and semi-nomads practicing transhumance.
2. There was continuous contact between the human groups who lived in the villages and farmsteads in the Wādī az-Zarqa Basin and others who lived in far distant regions, especially in the Badia. This is supported by the similarity of the type of storage in the two regions.
3. The 6<sup>th</sup>- and the 5<sup>th</sup>-millennium settlements were founded very close to the perennial water sources and on the slopes of the mountains overlooking either the Wādī az-Zarqa or its tributaries.

### Bibliography

- Al Nahar, M., and Z. Kafafi. 2015. "The Yarmoukian Pottery Assemblage of Tell Abu es-Suwwan, Jordan." *Mediterranean Archaeology and Archaeometry* 15:57–72.
- Bartl, K., and Z. Kafafi. 2016. "eh-Sayyeh, Jordanien. Die Arbeiten des Jahres 2015." *e-Forschungs Berichte 2016 des Deutschen Archäologischen Instituts, Fazikel* 2:74–7.
- , eds. Forthcoming. "The Neolithic Site of eh-Sayyeh/Jordan. Final Report on the Results of Archaeological Investigations 2013–2015." Berlin: German Archaeological Institute.
- Betts, A.V.G. 1988. "The Black Desert Survey. Prehistoric Sites and Subsistence Strategies in Eastern Jordan." In *The Prehistory of Jordan. The State of Research in 1986*. BAR-IS 396, edited by A.N. Garrard and H.G. Gebel, 369–91. Oxford: Archeopress.
- . 1998. "Holocene Cultural Ecology and Environments of the North-Eastern Badia." In *The Prehistoric Archaeology of Jordan*. BAR-IS 705, edited by D.O.



- Henry, 149–61. Oxford: Archeopress.
- Betts, A.V.G., and S. Helms. 1986. "Rock Art in Eastern Jordan: 'Kite' Carvings?" *Paléorient* 12:67–72.
- Caneva, I., Z. Kafafi, and G. Palumbo. 1999. "The Neolithic Site of es-Sayyeh: Preliminary Report on the 1999 Season." *Neo-Lithics* 3:10–2.
- Caneva, I. *et al.* 2001. "The Wadi az-Zarqa' / Wadi ad-Dulayl Archaeological Project. Report on the 1997 and 1997 Fieldwork Seasons." *ADAJ* 45:83–117.
- Glueck, N. 1951. "Explorations in Eastern Palestine. Vol. 4, Part 1: Text 1945–1949." *AASOR* 25.
- . 1951a. "Explorations in Eastern Palestine. Vol. 4, Part 2: Pottery Notes and Plates 1945–1949." *AASOR* 28.
- Ibanez, J.J. *et al.* 2015. "Kharaysin A PPNA and PPNB Site by the Zarqa River 2014 and 2015 Field Seasons." *Neo-Lithics* 2/15:11–9.
- Kafafi, Z. 2001. *Jebel Abu Thawwab (Er-Rumman) Central Jordan. The Late Neolithic and Early Bronze Age I Occupation*. Berlin: Ex oriente.
- . 2001a. "Jordan during the Late Seventh/Early Sixth Millennium BC." *Mediterranean Archaeology and Archaeometry* 1:31–42.
- Kafafi, Z. *et al.* 1997. "The Wadi az-Zarqa/ Wadi ad-Dulayl Archaeological Project on the 1996 Fieldwork Season." *ADAJ* 41:9–27.
- *et al.* 2000. "The Zarqa Valley in Jordan from Lower Palaeolithic Recent Times: Results The 1993–1997 Campaigns." In *Proceedings of the First International Congress on the Archaeology of the Ancient Near East, Rome, May 18<sup>th</sup>–23<sup>rd</sup> 1998*. Vol. 1, edited by P. Matthiae, A. Enea, L. Peyronel, and F. Pinnock, 699–713. Rome: Dipartimento di scienze storiche, archeologiche e antropologiche dell'antichità.
- Palumbo, G. *et al.* 1996. "The Wadi Zarqa/ Wadi adh- Excavations and Survey Project: Report on the October–November 1993 Fieldwork Season." *ADAJ* 40:375–427.
- *et al.* 2002. "The Joint Italian-Jordanian Project in the Zarqa Valley: Results of the 1993–2002 Seasons." In *Civilizations of the Past, Dialogue of the Present: Italian Research Missions in Jordan*, 131–53. Amman: Italian Embassy in Amman.
- Rollefson, G., A. Simmons, and Z. Kafafi. 1992. "Neolithic Cultures at 'Ain Ghazal, Jordan." *JFA* 19:443–70.
- Simmons, A., and Z. Kafafi. 1988. "Preliminary Report on the 'Ain Ghazal Archaeological Survey, 1987." *ADAJ* 32:127–41.
- . 1989. "Ain Ghazal Archaeological Survey, 1987." In *Archaeology of Jordan*. Vol. 2, *Field Reports, Surveys and Sites A–K*, edited by D. Homes-Fredricq and B. Hennessy, 13–16. Leuven: Peeters.