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Introduction

Since the first field season in 2009, the Jafr Basin Prehistoric Project (JBPP) has addressed the comprehensive study of the Neolithic barrage system that sustained the post-Pleistocene re-infiltration into the arid margin in southern Jordan. To date, we have excavated a total of ten examples dated to the PPNB: one at Wadi Abu Tulyaha (Fujii 2007), two at Wadi Ruweishid ash-Sharqi (Fujii *ibid.*), two at Wadi Ghuwayr 106 (Fujii et al. 2011), two at Wadi Nadiya 1 (Fujii et al. 2012), and three at Wadi Nadiya 2 (Fujii et al. 2013). With a view to tracing the functional transition of the Jafr Neolithic barrage in the course of pastoral nomadization, this season was devoted to a general survey of Late Neolithic barrages and a brief excavation at a contemporary encampment both located in the eastern part of the basin (Fig. 1).

Survey of Late Neolithic Barrages in the Eastern Jafr Basin

We located a few dozen barrages in the Adriyyat area, a hilly terrain fringing the eastern edge of the Jafr Basin. Most of them were a relatively small-scale, more or less closed-form cistern type of barrage and can probably be dated to the Late Neolithic on the basis of the comparative study of small finds and the typological sequence suggested at Wadi Nadiya 1 and 2 barrage systems.

BR-06 (i.e. Barrage No. 06) is a typical example of the Adriyyat Late Neolithic barrage. It has a roughly round plan with a diameter of ca. 30 m, being equipped with an intake ca. 15 m wide and a pair of guiding walls more than 100 m long (Fig. 2). BR-11 and BR-12 are a development form of BR-06, having an even more closed plan and a few very narrow intakes ca. 1 m wide (Fig. 3). These barrages incorporated bilaterally-notched stone weights and/or pillar bases, both chronological indicators of the Jafr Neolithic barrage, into their walls.

The investigation has revealed that while the large-scale basin-irrigation barrage focuses on the western half of the basin nearer to contemporary farming communities, the small-scale

cistern-type of barrage penetrates deep into the eastern Jafr Basin. It has also turned out that while the former is often associated with an outpost, the latter is isolated in desert and not associated with a fixed operating body. Both facts seem to suggest that the basin-irrigation barrage belonged to PPNB pastoral transhumants who derived from the contemporary west, and that the cistern-type of barrage was related to Late Neolithic pastoral nomads who penetrated further into the arid margin.

Excavation at Khashm al-'Arfa

In combination with the survey, we conducted a brief excavation at a Late Neolithic encampment of Khashm al-'Arfa (EJS-88). The site is located ca. 10 km south of the Adriyyat barrage complex, occupying the lower edge of a north-facing gentle hill. The excavation revealed three semi-subterranean masonry structures ca. 2-3 m by ca. 2.5-3.2 m in floor area and ca. 0.4-0.6 m in floor depth (Fig. 4). They were constructed with low-quality flint slabs c. 5-10 cm thick and up to ca. 1.5 m long. The upright slab wall technique was used for the underground retaining wall, whereas the stretcher bond technique was adopted for the on-ground courses. The uppermost course, when still preserved, often used the header bond technique for stabilizing the underlying courses. In terms of typology, they had an oval to bull-nosed rectangular plan and aggregated densely to form a beehive-like complex. One of the three structures was equipped with a sloping entrance at its southeastern corner. It was sealed with rubble and soil, suggesting that the settlement was used on a seasonal basis. (A similar custom has been confirmed at the PPNB outpost of Wadi Abu Tulayha.) In addition, five small features were found around the complex. Three of them were fringed with flint slabs and contained ash and heated rubble, suggesting the use as an outdoor hearth.

The structural complex produced a post-PPNB uni-directional blade assemblage, which included bifacial tools and various types of points (Figs. 5, 6). Thus the assemblage can probably be dated to the Late Neolithic. In addition, a stone bar and three bilaterally-notched stone weights, both chronological indicators of the Jafr Pastoral Neolithic, were also recovered. The groundstone assemblage included several grinding slabs and a polished axe (Fig. 7). Both faunal and floral remains were recovered in a certain amount but still await a close examination.

Kahsm al-'Arfa is a Late Neolithic settlement first found in the Jafr Basin. The harsh site-setting, the small site size (estimated at ca. 0.05 ha), and the limited variety of small finds are suggestive of the involvement of a small, high-mobility population who was probably engaged in initial pastoral nomadism.

Concluding Remarks

It is commonly accepted that the Late Neolithic holds a key to tracing the process of the pastoral nomadization in the southern Levant, but it has remained poorly documented. The series of investigation in the Jafr Basin has innovated in the situation. We have now the encampment of Khashm al-‘Arfa and the Adriyyat barrage complex as well as the open sanctuaries such as Qa’ Abu Tulayha (Fujii 2003) and the ‘Awja sites (Fujii *et al.* n.d.). There is little doubt that the Late Neolithic Jafr Basin witnessed the establishment of initial pastoral nomadism. However, evidence is still too patchy to formulate the process of the significant episode. We would like to continue efforts toward a better understanding of the prehistory of our research field, the Jafr Basin.

References

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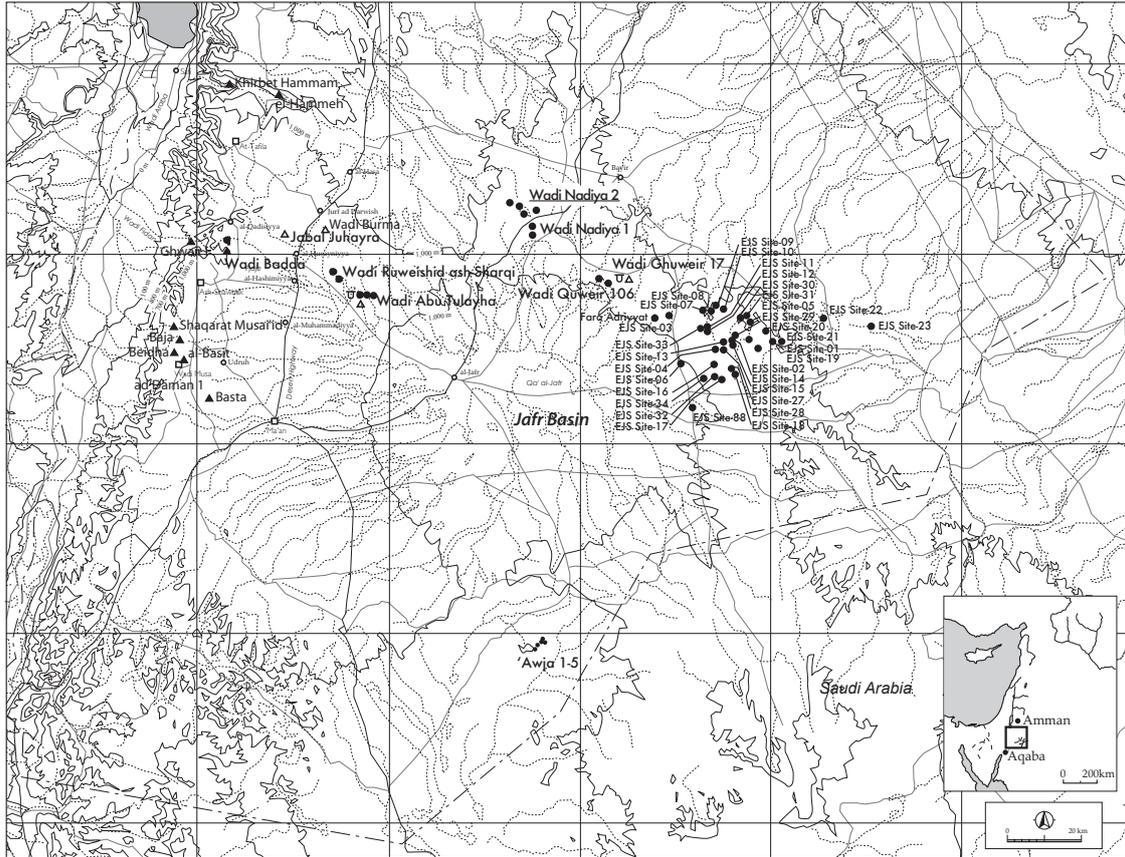


Fig. 1 Research field and located sites.



Fig. 2 BR-06: general view (looking NW).



Fig. 3 BR-12: general view (looking N).



Fig. 4 Khashm al-'Arfa: general view (looking NE).



Fig. 5 Khashm al-'Arfa: flint artifacts (points/arrowheads).



Fig. 6 Khashm al-'Arfa: flint artifacts (bifacial tools).



Fig. 7 Khashm al-'Arfa: groundstone artifacts.