



# Wadi Hammeh 27, an Early Natufian Settlement at Pella in Jordan

*Edited by*  
Phillip C. Edwards





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## 'SPRINGS, SWEET AND CLEAR': WADI HAMMEH 27 AND ITS ENVIRONS

Phillip C. Edwards

## 1.1 Introduction

Writing of the springs of ancient Pella (Figs 1.1-2), Glueck (1946: 75) observed that:

The steep slopes above Pella lead down, at the east end of the shelf on which it is situated, into a caldronlike hollow. Along its sides there gushes forth a whole series of springs, sweet and clear, and so strong that within a few hundred yards a rushing stream is formed, which plunges headlong down to the floor of the valley. It was inevitable that men should settle by this gathering of the waters, and build large houses and temples and strong fortifications.

His evocation aptly describes the multiple spring heads seeping from the floor of Wadi Jirm (Fig. 1.3), beside and beneath the ancient mound called Khirbet Fahl (Smith 1973).

Glueck added (1968: 143):

It seems likely that some day there will be found in the vicinity settlements contemporary with earliest Natufian or Neolithic Jericho.

These words proved to be prescient, since one of the southern Levant's richest Early Natufian sites was found in 1980 in Wadi al-Hammeh (Macumber 1981, 2001), which lies two kilometres to the north of Pella (Fig. 1.2). The site is Wadi Hammeh 27, numbered according to the nomenclature of the Villiers-Petocz survey of Wadi al-Hammeh (Villiers and Petocz 1984) as the twenty-seventh one recorded in that valley.

This report describes the results of excavations undertaken at Wadi Hammeh 27 between 1983 and 1990. The site, dating to *ca.* 12,000 BP (12,000 cal BC), yielded several superimposed constructional phases featuring oval, limestone hut footings and a variety of associated features such as hearths, postholes and pavements. Material culture included a varied repertoire of rock-art, ranging from large-scale incised slabs to small plaques; many artefact types in flint, limestone, basalt and animal bone; ochre and shell fragments; and

taxonomically diverse faunal and botanical remains. Several human burials were interred beneath the lowest architectural phase and isolated human skeletal elements were found throughout the occupational deposits.

Wadi al-Hammeh is a perennial stream which emerges as a hot water spring called Hammamat Abu Dhabla about two kilometres east of the Jordan Valley (Fig. 1.2). The valley lies opposite Beisan, or modern Bet Shan (Fig. 1.4), the gateway to the Jezreel Valley (Marj ibn al 'Amr), which in turn strikes westward to the Mediterranean coast. The springhead in Wadi al-Hammeh is now enclosed in a concrete bathhouse (Fig. 1.5). The Romans, according to their invariable practice, trained this excellent hot water source through a much larger stone built complex, vestiges of which are still to be seen embedded in the wadi terrace (Watson 1996: 73). Several classical authors made note of the plentiful groundwaters of the Pella region. Pliny termed it *civitas aquarum*, or, 'a city rich in water' (*Natural History* V. 16. 74; Bowsher 1997: 227). But this phase represented only a comparatively recent use of the spring waters which had watered Wadi al-Hammeh since prehistoric times (Edwards and Macumber 1995). Groundwater outflows have attracted humans and their hominine ancestors to the region for at least the past 400,000 years (Macumber and Edwards 1997). Settlement in Wadi al-Hammeh owes its long and rich prehistory to the Hammamat Abu Dhabla spring and its antecedents.

## 1.2 Wadi Hammeh 27 in the Context of Previous Natufian Research

On a clear day, the headland of Mount Carmel can be seen from the site of Wadi Hammeh 27, protruding behind Jabal al-Fuq'ua (traditionally known as Mount Gilboa). It was at Mount Carmel that the exploration of the Natufian culture began in earnest over eighty years ago (Garrod and Bate 1937), soon after Garrod's initial discovery of

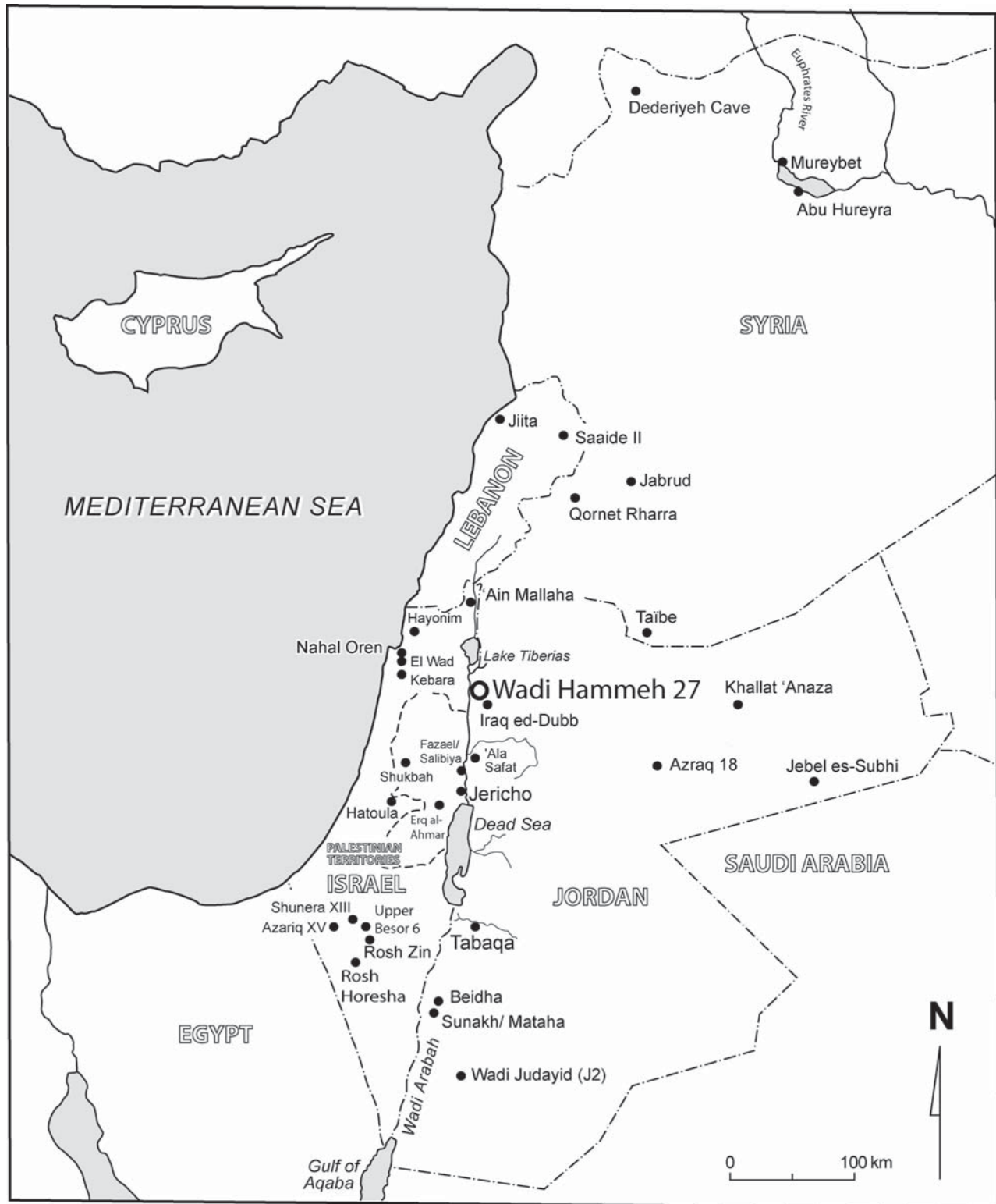


Fig. 1.1. The locations of Pella, Wadi Hammeh 27 and Natufian sites mentioned in the text.

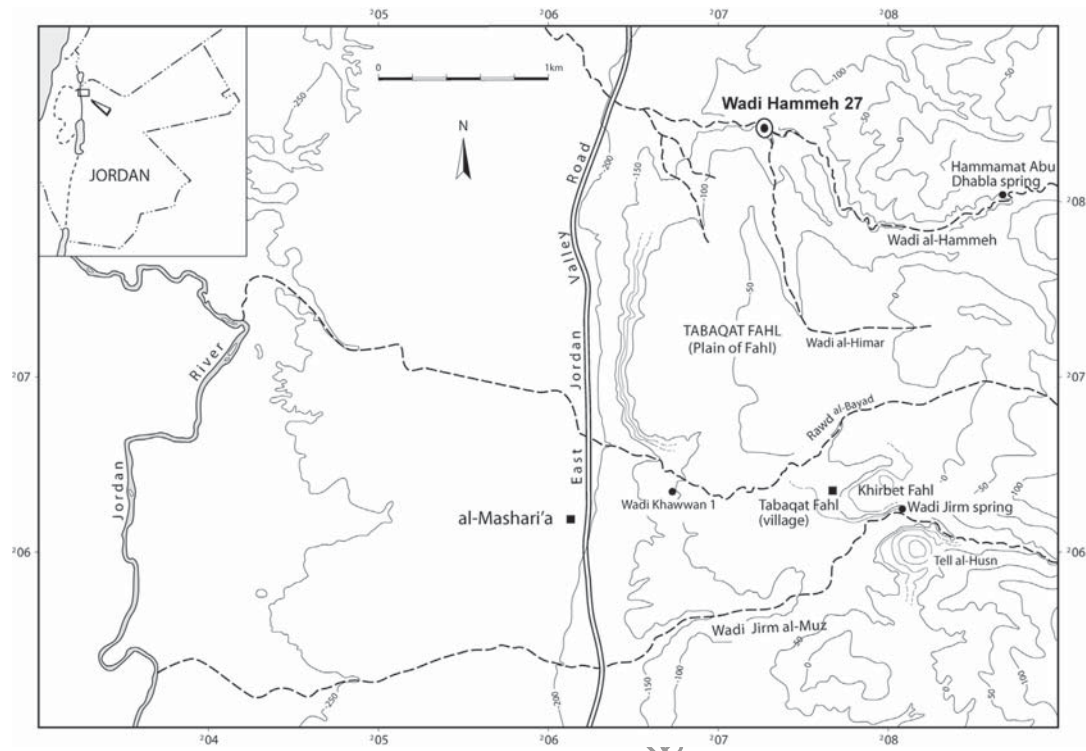


Fig. 1.2. Wadi Hammeh 27 and the Pella (Tabaqat Fahl/Wadi al-Hammeh) region.



Fig. 1.3. View south over Wadi Jirm al-Muz next to Khirbet Fahl (ancient Pella). Braided streams from the spring-heads traverse the valley floor. Conditions in Wadi al-Hammeh may have been similar during the late Pleistocene.





Fig. 1.4. View west from Wadi Hammeh 27 across Beisan/Bet Shan in the Jordan Valley towards the Mediterranean coast.



Fig. 1.5. George Willcox with son Tristan at the Hammamat Abu Dhabla hot water spring in Wadi al-Hammeh.



Natufian deposits at Shukbah Cave (Garrod 1932, 1957) and the earlier, brief work of Lambert at El Wad (Weinstein-Evron 1998). Others working around the same time as Garrod also discovered Natufian deposits in cave sites, including Turville-Petre (1932) at Kebara, Rust (1950) at Jabrud Cave near Damascus, and Neuville (1951) in the northern Negev. Many of these sites yielded tools and portable artworks of a quality higher than expected from such deep reaches of prehistory.

In the wake of Braidwood's interdisciplinary project on the origins of agriculture in Kurdistan, commenced after the Second World War (Braidwood and Howe 1960), scholarly attention in the Fertile Crescent shifted to the investigation of open air sites, which might provide evidence on the transition to farming and village life. Coincidentally, Natufian researchers in the 1950s turned to an important series of Natufian sites in the Jordan Valley and Galilee. Large open-air settlements were discovered for the first time at 'Ain Mallaha (Perrot 1957) and Tell as-Sultan, or Jericho (Kenyon 1960), containing oval huts founded on courses of undressed limestone blocks. Their discovery added a new dimension to our knowledge of terminal Pleistocene settlement practices and were important not only for regional Levantine prehistory but also for our understanding of global developments.

Henceforth, Natufian studies benefited from the introspection and increasing professionalisation that characterised European and American archaeology in the 1960s. The early 1970s brought a surge of interest in Levantine prehistory which increased the numbers and distribution of known Natufian sites. The Natufian (or Natufian-like) culture was extended to the banks of the Euphrates River by the excavation of Mureybet (Cauvin 1972, 1974; Gilot and Cauvin 1973) and Tell Abu Hureyra (Moore 1975) in northern Syria. Like Jericho, the Natufian occupations in these sites underlay later Neolithic settlements, further highlighting the pivotal role of the Natufian period in the agrarian transition. Elsewhere in Syria, the excavation of Qornet Rharra rockshelter near Damascus (De Contenson 1966) and Taibe in the basalt plains of the southern Hauran (Cauvin 1973), provided, by contrast, indications of small hunting stations, and thus evidence of transitory Natufian settlement in the arid Levantine hinterland. To the west, Schroeder's research in Lebanon, conducted before the outbreak of war in the 1970s, demonstrated the existence of both Natufian open-air and cave sites in lowland and

montane regions of the Central Levant (Copeland 1991; Schroeder 1991).

Marks and colleagues began to investigate the Negev in 1969, at a time when the desert could still be considered a black hole in regional prehistory (Marks 1976a). This was despite its importance to a host of hypotheses involving cultural connections, ranging in time from earliest hominid dispersals to the Biblical narrative. Among the Palaeolithic riches to emerge from this project were the Natufian sites of Rosh Zin (Henry 1976) and Rosh Hoesha (Marks and Larson 1977). Although small (*ca.* 900 m<sup>2</sup>), Rosh Zin represented a more substantial kind of arid zone encampment than the desertic Syrian sites. It contained paved stone huts and other built accoutrements reminiscent of Natufian sites in the more mesic Mediterranean regions to the north. Rosh Hoesha was a similar but bigger site (*ca.* 7,000 m<sup>2</sup>), rivalling the northern Palestinian open sites in size and density of artefacts. Local palaeoenvironmental data suggested that the region was moister than in modern times, approximating marginal Mediterranean *maquis* country.

During this period, work continued at the cave sites of Mount Carmel and Galilee. The excavations undertaken at Nahal Oren between 1951 and 1960 (Stekelis and Yisraeli 1963) brought to light extensive evidence of a Late Natufian horizon and bequeathed a large corpus of gracile human skeletons (Crognier and Dupouy-Madre 1974), while later work at Hayonim Cave between 1964 and 1970 produced "five successive stages of the Natufian" (Bar-Yosef and Tchernov 1966; Bar-Yosef and Goren 1973: 67). The new appreciation of chronological complexity complicated Garrod's two-stage Natufian chronology from El Wad and Neuville's (1934) four-stage chronology based on his work in the Judean Desert caves. So far, chronologies based on single-site stratigraphy had failed to provide a coherent regional picture. However, by the 1980s, Valla and Bar-Yosef were able to propose a pan-Levantine Natufian chronology with the aid of radiocarbon dating (Bar-Yosef and Valla 1979; Valla 1987). This three-stage system separated the Natufian into early (12,500-11,000 BP), recent (11,000-10,500 BP) and final (10,500-10,200 BP) phases. The precise ordering of Natufian sites was of prime importance in tracing human steps towards sedentism and early food production. It was also noteworthy that the new chronology did not reveal the Natufian growing inexorably, nor transmuting smoothly into the earliest Neolithic. Rather, there seemed to be signs

of a scaling down of sedentism and the abandonment of many sites in the later stages of the period.

Hayonim Cave yielded a range of elaborate Natufian material culture elements including agglomerated round stone structures, burials, groundstone items in basalt and limestone, bone artefacts, incised rock art and the distinctive Natufian-type of lithic industry. This prompted Bar-Yosef and Goren (1973: 67) to propose Hayonim as an exemplar of the Natufian 'base-camp', which they likened, in scale, to most of the other sites discovered in the region. A separate project at Hayonim Terrace (in front of the cave; Henry and Davis 1974) revealed a dense accumulation of Natufian material overlying a Geometric Kebaran horizon. While caves retained their role in Natufian archaeology, detailed knowledge of the open-air 'village' or 'base-camp' types, located in or near the Mediterranean region of the Levant essentially remained restricted to the site of Mallaha, at which excavations continued (Lechevallier and Perrot 1973). This scarcity was subsequently addressed by the exploration of terrace deposits in Wadi Fazeel, a western tributary of the Jordan River (Bar-Yosef *et al.* 1974). Like the Negev project mentioned above, the work conducted in Wadi Fazeel reflected a wider trend in interests, away from the rich depths of cave prehistory towards the subtler and more dispersed records of the palaeo-landscape (Goring-Morris 1980: 1). The research discovered Early (Fazeel VI) and Late (Fazeel IV) Natufian sites. Like Hayonim Terrace and Nahal Oren, it also provided a stratigraphic superposition of both stages of the Natufian over antecedent Geometric Kebaran (Fazeel VIII) and Kebaran (Fazeel VII) horizons. In spite of the limited possibilities for excavation in the terrace setting, it appeared that Fazeel VI (at 300 m<sup>2</sup>) and Fazeel IV (at 150m<sup>2</sup>), which both lacked architecture, were smaller and less developed than Mallaha and might represent more transitory occupations. Nonetheless, Goring-Morris (1980: 104) suggested Fazeel VI as a base camp, drawing a distinction between its site size and that of the smaller Salibiya sites (at 100 m<sup>2</sup>) located on the fan of the same wadi.

As Garrod stated (1957: 226), the Natufian culture was a "dramatic and brilliant appearance on the scene", the culmination of an immensely ancient way of life. For Garrod (1957: 212), it was a markedly more complex culture than the preceding early Epipalaeolithic of Palestine, which she described as "rather uninteresting." Major interest centred on the possibility that the Natufian

represented the beginnings of sedentary, agrarian village life in the Middle East, and indeed, in the world. Based on the presence of bone sickles found at El Wad and Kebara and lusted flint blades, Garrod (1957: 215-216) initially concluded that Natufian communities represented the world's premier agriculturalists. She was not doctrinaire in this position, however, pointing out that sickles could otherwise have been employed to harvest wild emmer.

From the outset, it was clear that Natufian animal exploitation involved hunting rather than herding. Dorothea Bate's (Garrod and Bate 1937) analysis of the El Wad fauna demonstrated a preponderance of gazelle, followed by wild goat, horse, onager, and red deer and fallow deer. Apart from goat, none of these species were used as livestock by later Neolithic herders. The dog, which Bate interpreted as domestic (an attribution which has withstood the test of time, *cf.* Davis and Valla 1978), was seen as a hunting companion rather than a source of protein. Pierre Ducos' subsequent analysis of the fauna from Jean Perrot's excavations at Mallaha (Perrot 1960, 1966) confirmed the existence of hunting in the Natufian and rejected the possibility of animal domestication. The lakeside community at Mallaha also profited from its local environment by procuring fish and shellfish from Lake Huleh.

Perrot (1960) agreed with Garrod that cereal harvesting had featured prominently in the Natufian, but he doubted that cultivation had been practiced, arguing for an "insufficiently documented phase of incipient cultivation" (Perrot 1962: 162). Subsequently, he interpreted Natufian plant exploitation as the culmination of ancient patterns of gathering strategies (Perrot 1966), while reiterating his position (Perrot 1968: 383) that only gathering, particularly amongst the dense cereal stands of Galilee, and not cultivation, had been practiced in the Natufian period. (It is fair to say that this view still holds sway and provides the current consensus: that the Natufian phenomenon represents a stage of pre-agrarian subsistence practiced by complex hunter-gatherer communities).

Charred plant remains proved more elusive than bones and attempts at their recovery by flotation remained uncommon. Consequently, the crucial evidence for plant exploitation lagged behind the theoretical modelling of its utilisation. In fact, botanical evidence for the Natufian did not materialize until the mid-1970s and the publication of Tell Abu Hureyra in north Syria

(Hillman, in Moore 1975). Even so, this site was sufficiently far from the southern Natufian heartland to warrant an alternative cultural designation of 'Mesolithic'. The Mesolithic, or late Epipalaeolithic levels of Abu Hureyra yielded plentiful remains of wild einkorn, accompanied by vetch, along with plants such as *Polygonum* (Buckwheat) and *Stipa*, which could have been utilized as food resources. This assemblage corroborated the status of Natufian communities as gatherers and not cultivators. It is remarkable, considering the long tradition of research into the Natufian period by this stage, that Wadi Hammeh 27 provided, by a short margin (*cf.* Van Zeist and Bakker-Heeres 1984 for Mureybet), only the second Natufian botanical assemblage (Willcox, in Edwards 1984) and the first macrobotanical remains from an Early Natufian site in the south.

As yet, virtually nothing was known of Natufian adaptations east of the Jordan River, apart from a small Natufian encampment in the Jordan Valley cave-site of 'Ala Safat (Waechter 1948). In the 1970s and 1980s, research projects into the Epipalaeolithic of Jordan were focussed on the arid steppic zones of the eastern and southern parts of the country (Fig. 1.1). Natufian sites were excavated in the basalt deserts of the *Badiyah ash-Sham* to the north-east (Betts 1982), in Wadi al-Hasa along the southern Arabah Valley (Byrd and Rollefson 1984), in the Azraq Basin to the east (Garrard *et al.* 1987), and Ras an-Naqb to the south (Henry 1982). Earlier, a small open-air Natufian site had been found in the arid south at Beidha (Kirkbride 1960, Byrd 1989a) and the Natufian of the Petra region has since been further profitably developed by new discoveries (Gebel and Starck 1985; Gregg 2002).

Much of this research was positioned in the arid margins to provide a contrast with the bulk of earlier work done in the moister Mediterranean zones of the more westerly Levant. However, for a variety of historical reasons, prehistory in the Mediterranean flanks of the east Jordan Valley had not yet taken off. When work commenced in Wadi al-Hammeh in December 1982 at the Kebaran site of Wadi Hammeh 26 (Edwards 1984; Edwards *et al.* 1996), no *in situ* Pleistocene sites other than 'Ala Safat had been excavated in the east Jordan Valley between Lake Tiberias and the Dead Sea. Excavations at Wadi Hammeh 27 began in January, 1983.

The discovery of the open-air site of 'Ain Mallaha in the 1950s lent new impetus to the consideration of earliest human sedentism in the Middle

East. The issue was raised by Perrot (1960: 21-22) who equated the settlement remains at Mallaha with a community of sedentary hunter-gatherers. This conception carried profound implications for the causes of agriculturally-based societies in the early Holocene, since it purported that sedentary lifestyles preceded, rather than followed, the development of agricultural food surpluses (Binford 1968a: 334). Yet, since the excavations at Mallaha and Jericho, no exemplars of the larger, more complex Early Natufian sites had been excavated in the Mediterranean zone of the southern Levant. Given these considerations, the commencement of work at Wadi Hammeh 27 was timely. In pursuit of the role that the Natufian played in the transition to earliest sedentism, we made it an objective to clear broad exposures of the site in order to adequately sample aspects of site structure, contextual details of activity areas and the prodigious artefactual and subsistence-related variability.

This strategy made progress relatively slow. Large Natufian sites combine Pleistocene-scale amounts of debris with expansive architectural remains on the Neolithic scale. Excavations must be broad in order to make any sense of the settlements, but such operations generate huge quantities of finds. Our excavations were designed to maximise horizontal exposure of the site's upper constructional phase, while simultaneously attempting total retrieval of artefacts and ecofacts by a sampling strategy combining dry-sieving, wet-sieving and flotation. Ultimately, nearly 440,000 artefacts and ecofacts were recovered. Additionally, a small sounding was excavated through the cultural sediments in order to investigate the vertical extent of the site, while two additional soundings were excavated in peripheral areas in order to evaluate the lateral extent of the site. The relationship of Natufian sites to early sedentism has remained a central issue in Levantine prehistory and this figured as a key theme in the investigations at Wadi Hammeh 27.

### 1.3 Early Reports and Surveys of Wadi al-Hammeh

In ancient times, the Hammamat Abu-Dhabla spring was known for the restorative properties of its warm waters (Weber 1997). Presently, the pungent flow enters the bathhouse from a natural rock-shelf at the rear of the structure and exits through another small drain, continuing



downstream along Wadi al-Hammeh. Later investigations by Watson (1996) conducted in the vicinity of the present bathhouse revealed a major bathing complex built during the Roman period. This facility included a feeder aqueduct which snaked along the edge of Wadi al-Hammeh in the upstream direction. However, the current spring is a much smaller descendant of the stronger groundwater outflows that upwelled in Wadi al-Hammeh during the Pleistocene (Chapter 2.2-3).

The earliest study of the valley conducted in modern times was carried out by the German explorer and antiquarian, Gottlieb Schumacher (1895), during his visit to Pella. Schumacher did not observe any of the flaked stone antiquities scattered in Wadi al-Hammeh, but he did produce a detailed topographic map of the valley, together with lithographic illustrations of the natural arch that overlooks the bath-house. Ibrahim and colleagues (1976) inspected Wadi al-Hammeh during their survey of the Jordan Valley, and although their work referred to archaeological sites in the mouth of Wadi al-Hammeh (Sayl al-Hammeh), they did not refer to Wadi Hammeh 27 and the other Pleistocene sites discussed here. The detection of Wadi al-Hammeh's Pleistocene prehistory was to await the next phase of archaeological research in the Pella region.



Fig. 1.6. Phillip Macumber (left) and Tony McNicoll (right) at work on Wadi Hammeh 27 in 1983, removing one of the large incised stone slabs from the Plot XX D sondage.

#### 1.4 The University of Sydney Investigations in Wadi al-Hammeh

Wadi Hammeh 27 was excavated over eight seasons between 1983 and 1990 as part of the University of Sydney excavations at Pella, co-directed by T. Basil Hennessey and Tony McNicoll (McNicoll *et al.* 1982; McNicoll *et al.* 1992). Its discovery came about through a request made to Phillip Macumber by Tony McNicoll (Fig. 1.6) to report



Fig. 1.7. View east in lower Wadi al-Hammeh. The Natufian site Wadi Hammeh 27 lies at the northern end of 'the Plateau' (to left in the middle ground).





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*Wadi Hammeh 27, an Early Natufian Settlement at Pella in Jordan*

is a detailed report on one of the most important Natufian sites to have emerged in the past thirty years and an integrated analysis and interpretation of subsistence strategies, settlement patterns and ritual life in one of the world's earliest village communities. The 14,000-year-old settlement of Wadi Hammeh 27 is one of the most spectacular sites of its kind, featuring the largest, most complex pre-Neolithic building yet discovered in the Middle East, an unparalleled series of artefact caches and activity areas, and a rich corpus of late Ice Age art pieces.

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