SURVEY AND EXCAVATION: A COMPARISON OF SURVEY AND EXCAVATION RESULTS FROM SITES OF THE WĀDĪ AL-ḤASA AND THE SOUTHERN AL-AGHWĀR AND NORTH-EAST 'ARABAH ARCHAEOLOGICAL SURVEYS

by
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Introduction

The writer carried out two archaeological survey projects in Jordan between 1979 and 1986. The first, The Wādī al-Ḥasa Archaeological Survey (WHS), was in the field for three seasons, namely, 1979, 1981, and 1982. In 1983, infield work rechecked some of the sites of the previous seasons. This first project surveyed a total of 1074 sites (MacDonald *et al.* 1988). In 1985 and 1986, a second project, namely, The Southern Ghors and Northeast 'Arabah Archaeological Survey (SGNAS), examined a total of 240 sites to the west and southwest of the WHS territory (MacDonald *et al.* 1992).

The areas which the WHS and the SGNAS covered are both located in west-central Jordan (Fig. 1). Wādī al-Ḥasa, which begins in the eastern Jordan Desert and flows in a northwesterly direction to empty into the southeastern plain of the Dead Sea at aṣ-Ṣāfī, formed the northern boundary of the WHS. The SGNAS territory extended from the agricultural fields just to the north of aṣ-Ṣāfī southward to Wādī Faydān, a distance of approximately 40 km.

Beginning in 1984 several archaeological projects have carried out excavations and/or further investigations at 22 of the surveyed sites: 12 from the WHS (Table 1); and 10 from the SGNAS (Table 2). It is now opportune to compare the original survey results with those obtained by this later work. This will point out the correlation, at least as far as the WHS and SGNAS are concerned, between the results of survey archaeology and follow-up excavation and/or investigation of the same sites. It will also point out the value of surface-survey results in choosing what site(s) to excavate.[1]

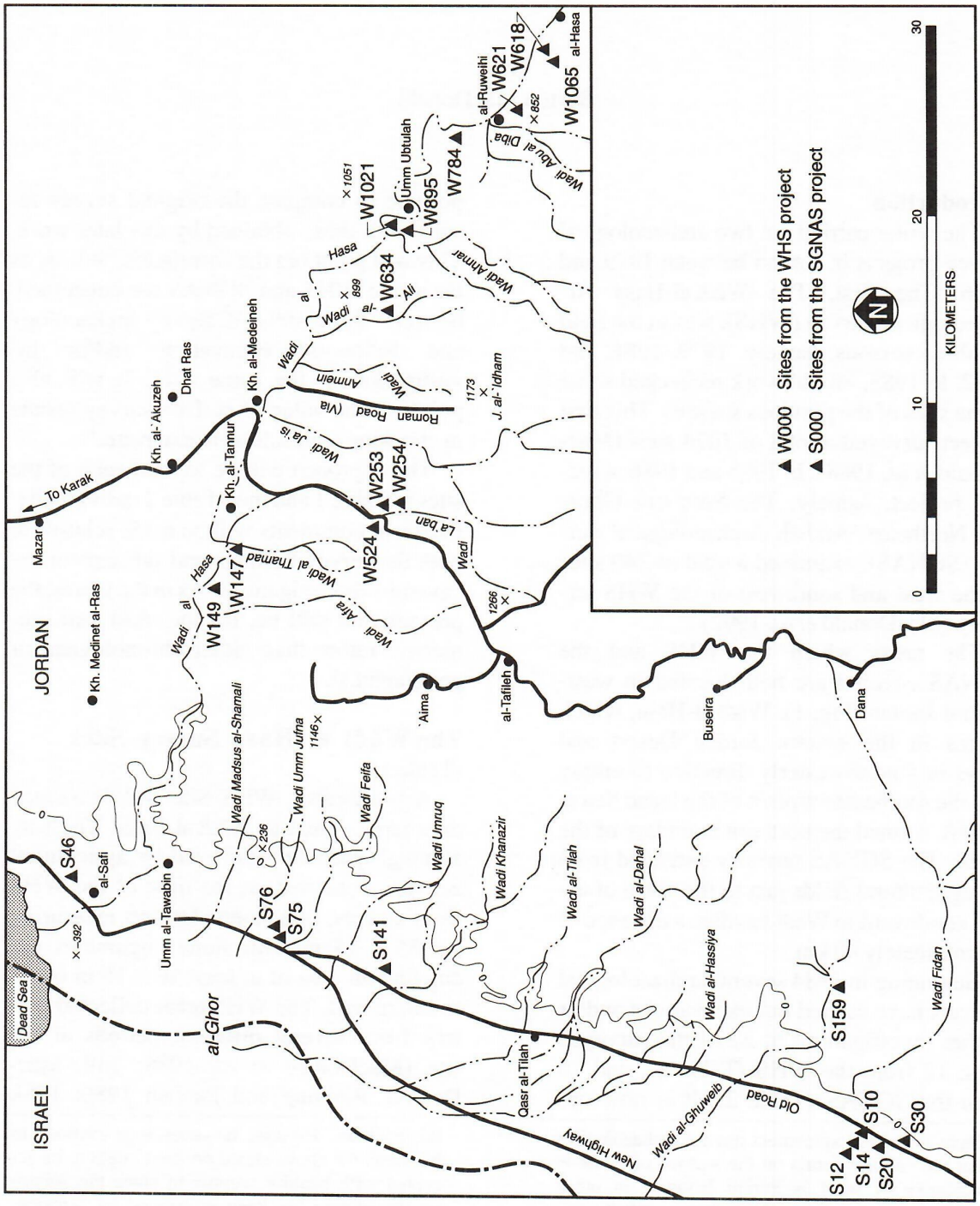
The approach will be to treat each of the sites in Table 1 and then Table 2 individually. Pertinent comments will be made relative to both the survey findings and subsequent excavations/investigations. As in the tables, the presentation will be, for the most part, numerical rather than either chronological or geographical.

The Wādī al-Ḥasa Survey Sites

(Table 1)

Ash-Shorabat, WHS Site 147, is located on a terrace next to Wādī al-Ḥasa. The site, although partially destroyed by agricultural activity, consisted, at the time of the WHS team's visits, of a stone platform measuring ca. 35 x 15 m with stone alignments occupying an area of at least 10 x 15 m on its southern half. The WHS team collected pottery from several different periods at the site (MacDonald *et al.* 1988: 169; MacDonald, Banning and Pavlish 1980: 175).

1. There is general agreement among archaeologists that the cultural debris on the surface of a site is indicative of what is buried below. In other words, a description of surface, artifact distribution will allow the archaeologist to predict what is under the surface (Redman and Watson 1970: 279-80). Flannery generally agrees with this position. He does, however, urge caution. In his view, the above-stated position ought to be accepted with healthy scepticism since the pattern on the surface has been influenced by "erosion, gravity, monumental construction and disturbance, plowing, looting, and modern occupation" (1976: 62).



1. Selected Sites from the Wādi al- Ḥasa and Southern al-Aghwār and North-east 'Arabah Archaeological Surveys.

Table 1.*

WHS Site No. (Name, if any)	WHS Findings**	Excavation Results
147 (Ash-Shorabat)	LB-Iron;Iron IA; Byz;LIsl;Ud sherds	EB I;Iron II
149 (Kh.al-Ḥammām)	UPL;EPL-ENL;PNL; Nab;Mod;Ud sherds and lithics	Late PPNLB phases
253 (Qaṣr adh-Dharīḥ)	MPL;UPL;Late lithics***; Ud lithics;Iron II; Hell,poss;Nab;Nab/Rom; LRom;Ud sherds	Nab temple (end of 1st cent. BC-LRom); Byz;Um
254 (Kh. adh-Dharīḥ)	MPL;Late lithics;Ud lithics;Iron II,poss; Nab;Nab/Rom;LRom; Ott,prob;Ud sherds	Nab,predom.;Iron II; Rom;Isl
524	PNL sherds and lithics	PNLA (2nd half of 6th millennium BC)
618 ('Ayn al-Buḥayra)	LPL-MPL;MPL; UPL;UPL-EPL	UPL, Ahmarian (mean age of 22,450 BP)
621	MPL;MPL-UPL;UPL	MPL (70,000 BP[?])
634 ('Ayn ad-Dufla)	MPL;UPL;Late and Ud lithics	MPL (105,000 ± 15,000 BP)
784 (Yutil al-Ḥasa)	EPL EPL (after ca. 13.3	UPL (ca. 19 kyr BP); kyr BP; and between ca.12.5 & 11 kyr BP)
895	EPL	Natufian base camp (Tabaqa) (ca. 10,000 and 9,000 BC)
1021	EPL	Natufian
1065 (Ṭor aṭ-Ṭarīq)	UPL-EPL	Kebaran (possibly 16.9-15.6 kyr BP)

* It must be kept in mind, in reading Tables 1 and 2, that the WHS and SGNAS record all collected sherds and lithics. Excavators will generally be interested in the main component(s) of a site. They will, for the most part, not record, especially in a preliminary report, all lithics and/or sherds excavated.

** Lithics and/or sherds are listed chronologically; standard abbreviations are used.

*** Refers to lithic material which is dated, without further precision, more recent among the time-stratigraphic units.

Bienkowski put down two soundings at the site in April-May 1995. Both soundings uncovered, according to the excavator, phases or levels which date to the Iron II period. Bienkowski also reports considerable amounts of EB I pottery in both excavated areas. None of this latter pottery, however, was *in situ* (Bienkowski 1995).

On its first visit to Site 149, Khirbat al-Ḥammām, which is located in agricultural fields on the slopes leading down to Wādī al-Ḥasa, the WHS team noted architectural features in a roadcut which transects the site. There was a predominance of Epipaleolithic–Prepottery Neolithic materials along with sherds from both the Neolithic and the Nabataean periods among artifacts collected at the site (MacDonald *et al.* 1988: 128). Rollefson and Kafafi carried out a more intensive examination of the site in January 1984. Their main interest was its lithic components.

During the course of their investigations, Rollefson and Kafafi collected, and subsequently drew for publication purposes, a number of chipped stone tools, a polished adze/celt, a groundstone, and other artifacts. They also examined the architectural features at the site, especially those which the roadcut exposed, and concluded that the site is a village which dates to the Prepottery Neolithic B phases (1985: 63) and that "... in general there are many technological, typological, and stylistic expressions among the artifacts and architectural remains that are shared with the late PPNB phases of Jericho, Beidha, and 'Ain Ghazal" (1985: 69).

WHS Sites 253 and 254, Qaṣr and Khirbat adh-Dharīḥ respectively, are located in the central segment of Wādī al-La'bān. The survey team judged Qaṣr adh-Dharīḥ to be a smaller version of the Nabataean temple at Khirbat at-Tannūr, WHS Site 229, which is located farther to the south at the confluence of Wādī al-La'bān and Wādī al-Ḥasa (MacDonald *et al.* 1988: 204; Glueck 1965). It viewed Khirbat adh-Dharīḥ to be the ruins of a Nabataean village/town (MacDonald *et al.* 1988: 204-05; Roller 1983; MacDonald, Rollefson and Roller 1982: 127). The Institute of Archaeology and Anthropology of Yarmouk University and the French Institute of Archaeology of the Near East carried out its first season of excavation at both sites in 1984 (Villeneuve 1984) and its sixth season in 1993 (al-Muheisen and Villeneuve 1991; 1992; 1994; 1995). The Nabataean temple, that is, Qaṣr adh-Dharīḥ, was the principal object of the excavations. Various structures such as an official building, several houses, two cemeteries, and the agricultural character of the complex, however, were also investigated. According to the excavators, the temple was continually occupied from Nabataean times (end of the first century BC) up to the Late Roman period (al-Muheisen and Villeneuve 1991: 508). They state, furthermore, that it was reused as a church during the Byzantine period while parts of it were used as a habitation area during the Umayyad period. The official building, according to the excavators, knew two phases of occupation, namely, during the first century BC and the first century AD (al-Muheisen and Villeneuve 1992: 358).

The WHS team judged Site 524, located in the central segment of Wādī al-La'bān, to be an *in situ* village of at least a semi-permanent nature dating to the Late Neolithic period. It collected both abundant lithics and ceramics along with bone, burnt stones, and a basalt grinding-stone at the site (MacDonald *et al.* 1988: 129, 131; MacDonald, Rollefson and Roller 1982: 121). Bossut, Kafafi and Dollfus, in conjunction with the above-mentioned 1987 excavations at Khirbat adh-Dharīḥ, carried out explorations at WHS Site 524/Dharīḥ Survey Site 49 (1988). They drew one section which, for the most part, was formed by a roadcut. Moreover, they collected pottery, especially in the form of bowls and jars, several fragments of stone bowls, one very regular grooved stone, and lithics at the site. The bowls collected are similar to those "ascribed

to the second half of the sixth millennium B.C." (Bossut, Kafafi and Dollfus 1988: 128). The lithic material which Bossut, Kafafi and Dollfus collected at the site is atypical and not very abundant. In conclusion, they state: "From the material, it seems possible to ascribe Dharih Survey site 49 to the PNA period. However, this assumption has to be confirmed by radiocarbon dating..." (1988: 131).

Clark, director of the Wādī al-Ḥasa Paleolithic Project (WHPP), began an examination of five WHS sites in 1984. These sites, namely, 618, 621, 634, 784 and 1065, are located, for the most part, along the shores of an Upper Pleistocene lake at the eastern end of Wādī al-Ḥasa. Attention is now turned to these sites.

The WHS team collected predominantly Upper Paleolithic materials at Site 618, 'Ayn al-Buḥayra. It judged the site to be a possible camp (MacDonald *et al.* 1988: 95-98, Table 9). The WHPP team excavated it in 1984 (Coinman 1993; 1990; Clark *et al.* 1987). With five dates clustering between 26,000 and 19,000 BP, Schuldenrein and Clark give a mean site age of 22,450 BP (1994: 39). The excavators posit two occupation loci for the site: 1) the western locus, which includes large numbers of narrow, thin microlithics, is associated with the Late Ahmarian culture (Schuldenrein and Clark 1994: 39 and 46, Table II); and 2) the second locus, located less than 40 m to the north, "registers a period of desiccation following, and perhaps accounting for, site abandonment" (Schuldenrein and Clark 1994: 40).

Site 621, according to the WHS explorers, is a large (4000 m^2), scatter of predominately MPL artifacts (MacDonald *et al.* 1988: 89; 1983: 315). The WHPP excavators date the site to 70,000 BP, with a question mark (Schuldenrein and Clark 1994: 46, Table II; compare Potter 1995: 498; 1993: 4). Moreover, "a single radiometric determination at WHS 621 is a Chalcolithic hearth of Holocene age (7500 ± 130 BP), located in footslope deposits" (Schuldenrein and Clark 1994: 41; see also Clark *et al.* 1987: 30).

The WHS team reported Site 634, 'Ayn ad-Dufla, located in Wādī- al 'Alī, a southern tributary of Wādī al-Ḥasa, as a medium-sized, MPL rockshelter (MacDonald *et al.* 1988: 89). It judged the site to be a basecamp (MacDonald *et al.* 1983: 315). The WHPP excavators worked at the rockshelter, which is the only one of their five sites not at the eastern end of Wādī al-Ḥasa, in 1984, 1986 and 1992 (Potter 1995; 1993; Barton and Clark 1993: 43; Clark *et al.* 1988: 226-35; 1987: 31-38; Lindly and Clark 1987). They have recovered the remains of dozens of small hearths and firepits, thousands of artifacts, and poorly-preserved animal bones at the site. Many of the artifacts show signs of having been burned (Clark 1992: 343). Surficial deposits indicate a date no later than the MPL time-span (ca. 230-45 kyr BP) (Barton and Clark 1993: 43). Moreover, Oxford University's Laboratory for Isotope Geochemistry has dated, by thermoluminescence, the rockshelter at 105,000 ± 15,000 BP (Schuldenrein and Clark 1994: 34, Table 1 and 44).

Site 784, Yutil al-Ḥasa, is a collapsed rockshelter. The WHS team observed dense numbers of Geometric Kebaran artifacts at the site (MacDonald *et al.* 1983: 315-16). The WHPP team excavated the site in 1984 and 1993 (Clark *et al.* 1994: 50-52; 1988; 1987: 46; Coinman 1993; 1990; Olszewski *et al.* 1990) and reports three distinct episodes of use/occupation at the site: 1) late UPL Ahmarian, ca. 19 kyr BP; 2) after about 13.3 kyr BP, a probable series of Madamaghan occupation is documented; and 3) between ca. 12.5 and 11 kyr BP, an early Natufian Epipaleolithic occupation occurred at the site (Clark *et al.* 1994: 51).[2]

2. The WHPP excavators labelled the site WHS 784X in 1984 (Olszewski *et al.* 1990; Clark *et al.* 1988; 1987: 46). They now call it merely WHS 784, Yutil al-Ḥasa, (Clark *et al.* 1994: 50-52). See the discussion on this in Clark *et al.* 1987: 46).

The WHS explorers judged Site 1065, Tor aṭ-Tarīq, to be a predominantly UPL-EPL basecamp with characteristics of the Natufian culture (MacDonald *et al.* 1988: 103, 105). The WHPP excavators worked at the site in 1984 (Coinman, Clark and Donaldson 1989; Clark *et al.* 1987: 52-67) and 1992 (Neeley 1995; Clark 1992). Excavations revealed that the site "consists of several superimposed basecamps with intact subsurface deposits including hearths, pits, remnants of structure walls and middens more than 1.5 m thick" (Coinman, Clark and Donaldson 1989: 213). The material recovered, namely, large quantities of stone tools and animal bones, are dated, by radiocarbon means, from 16.9 to 15.6 kyr BP (Schuldenrein and Clark 1994: 38; Clark 1992: 344; Coinman, Clark and Donaldson 1989: 213). The WHPP excavators identified the site as Kebaran on the basis of the date and artifact typology (Neeley 1995; Schuldenrein and Clark 1994: 36, 38). Sediments younger than 12,000 BP give the site a possible Natufian component (Schuldenrein and Clark 1994: 36, 38 and 46, Table II).

Byrd and Rollefson, two members of the 1982 WHS team, made further visits to Sites 895, Tabaqa (MacDonald *et al.* 1983: 316), and 1021 following the termination of the WHS infield seasons. They, moreover, studied closely the lithics which the WHS collected at the sites. On the basis of this work, they classify Tabaqa as a Natufian base camp. This classification was due to "the site's large size, the diversity of chipped stone tool types, the abundance of lunates, and the presence of groundstone tools, beads, and shell" (Byrd and Rollefson 1984: 149). Byrd and Rollefson date the site to between around 10,000 and 9,000 BC, that is, to the early phase of Natufian. They also classify Site 1021, a much smaller site than Tabaqa and located approximately 0.50 km upstream, as Natufian. They state that "the color, patina, and morphology of the artifacts collected at the site is very similar to the artifacts recovered at Tabaqa" (1984: 150). They think that there may be remnants of architectural features at the site (1984: 150).

The Southern al-Aghwār and North-east 'Arabah Archaeological Survey Sites (Table 2)

Adams, a member of the 1986 SGNAS team, began the Wādī Faydān Project (WFP) in 1989 "whose long term aim is to examine the archaeological remains throughout the Wādī Faydān gorge and surrounding area, in order to understand more fully the human adaptation to and exploitation of the environment and natural resources of this area throughout the late prehistoric periods" (1991: 181). The WFP team has investigated to date five SGNAS sites.

The WFP explorers began with the examination of two areas, namely, a large cemetery complex and a small artificial mound at the western mouth of the wadi, SGNAS Sites 14 and 12 respectively. According to the SGNAS team, the former is a Chalcolithic/Early Bronze cemetery consisting of over 200 graves, some looted (MacDonald *et al.* 1992: 40, 59-60, 250-51), while the latter is a small "island"/mound. The SGNAS investigators identified Site 12 as a Neolithic settlement although other periods were represented in the form of lithics and sherds (MacDonald *et al.* 1992: 27-31). The WFP excavators investigated six graves in the cemetery, SGNAS Site 14/WFP Site 009, which they posit had two distinct periods of use (Adams 1991: 181). The first period is represented by grave circles constructed of wadi cobbles overlying, in many cases, a carefully constructed grave cist capped by large flat rocks (Adams 1991: 181). The bone remains excavated were in an extremely poor state of preservation and were accompanied by no datable grave goods. Thus, the dating of the graves, on the basis of their contents, proved to be impossible (Adams 1991: 181). The WFP team does, however, date them tentatively to the Chalcolithic/

Table 2.*

SGNAS Site No. (Name, if any)	SGNAS Findings	Excavation Results
10	Chal;Chal/EB;Ud sherds and lithics	Chal;EB I
12	NL;EB;EB IV(?); EB IVB-MB(?); Ud sherds and lithics	Late PPNLB
14	Chal/EB;EB IVB;Ud sherds and lithics	Chal/EB;EB
20	Chal;Chal/EB;Ud lithics	Chal;EB I
30 (Kh. Hamr Ifdān)	Chal;Chal/EB;EB IV; Chal;Chal-EB I; EB IVA&B;EB;Iron II; Rom;LRom;Byz;LByz; Isl;Ud sherds and lithics	EB I;EB IV;Iron Age,poss;Rom(Nab); Isl;Mod
46 (Dayr ʻAyn ʻAbātā)	Nab;Rom;Byz(E & L); Byz(?);Um(?);Abb;Ud sherds	LChal-EB sherds and lithics;Byz-Abb (ca. 5th-9th cent. AD)
75 (Ancient Feifa)	PNL;NL-Chal;Chal; Chal/EB;EB I;EB IIB; EB IVA;EB;Iron I-II; Iron II painted;Rom; LByz-Um;Fatt/Ayy;Isl; Ott;Ud sherds and lithics	EB IA;Iron II (7th & early 6th cent. BC);Rom;Byz
76 (Feifa Cemetery)	PNL;NL-Chal;Chal; Chal/EB;EB I;EB IV; EB;Isl;Ott;Ud sherds and lithics	EB IA & B;PNL
141 (Kh. al-Khanāzīr/ Abu Irshareibeh)	EB IV;EB IVA & B; EB III (?); EB II-III;Byz;Ud sherds	EB IV
159 (Kh. an-Nuḥās)	Iron IA;Iron IC; Iron I-II;Iron IIA,B&C; Iron II;Iron Age; ʻNegevite' ware;Ud sherds	12th-9th cent. BC; Iron II

* The notes at the bottom of Table 1 are also pertinent here.

Early Bronze Age using two criteria: 1) the grave circles are of a similar construction to those excavated at the Chalcolithic, mortuary complex at Shiqmim in the Negev to the west; and 2) the grave cists are of a similar construction to those found throughout the Southern al-Aghwār, and specifically at the cemetery at aṣ-Ṣāfī where they are dated to the EB I period (Adams 1991: 181). It thinks that the second period of the use of the cemetery is much later. The reused graves produced small fragments of iron bracelets and very well preserved, iron-stained bones, suggesting an Iron Age or later date (Adams 1991: 182). In a communication of July 21, 1995, Adams now thinks that what he has been previously calling Chalcolithic is more probably Early Bronze. This would mean that the site is dated to sometime after 3700 BC.[3]

The WFP excavators uncovered prehistoric graves at SGNAS Site 12/WFP Site 008 and found shell bracelets and a cache of six bifacial flaked and ground axes in one of them. Their probe on the mound revealed part of a well preserved building "dated by the flint assemblage and a C14 date (to be confirmed) from the floor debris of the structure, to the late PPNB" (Adams 1991: 183).

The WFP team, in conjunction with the Department of Antiquities of Jordan and the German Mining Museum of Bochum, also carried out excavations at SGNAS Sites 10 and 20/Wādī Faydān 4 which are located on a rocky plateau along the south bank of Wādī Faydān to the southeast of Sites 12 and 14. The SGNAS investigators noted that Site 10 is a small mound on which there appears to be domestic structures. They found basalt quern and mortar fragments at the site (MacDonald *et al.* 1992: 56, 59, 250) and thought that Site 20, which consists of a cemetery, indications of camping, wall lines, and a heavy lithic and sherd scatter could possibly be one with it (MacDonald *et al.* 1992: 40, 56, 59, 251). They dated both sites to the Chalcolithic/Early Bronze period.

The WFP team opened a total of four areas at combined SGNAS Sites 10 and 20 which it labelled WFP 4. It identified the site "as an extended village settlement of the Chalcolithic period" (Adams and Genz 1995: 17). On the basis of the metallurgical finds and mining picks found at the site, Adams and Genz state that the community was involved in the mining and smelting of copper (1995: 17). In a communication dated July 21, 1995, Adams opts for an Early Bronze, rather than a Chalcolithic, date, that is, sometime after about 4000/3700 BC, for this site, as he does for Site 14.[4]

SGNAS Site 30, Khirbat Hamr Ifdān, is located on an "island" on the west side of Wādī Faydān around 1 km north of 'Ayn Faydān. The site consists of a large slag area, small circles of stone which may be the remnants of hearths, and remains of what appears to be ancient building foundations. The SGNAS team judged the site to be predominantly Chalcolithic/Early Bronze in date (MacDonald *et al.* 1992: 40, 56, 59, 252). The WFP investigators began explorations at the site in 1990. They prepared a map of the remains on the surface and made a deep sondage (Adams 1992: 178). According to the WFP team, the surface of the excavated area produced Chalcolithic, EB I, EB IV, Roman (Natabaean), Islamic and modern sherds, as well as one possible Iron Age sherd while the upper levels produced Early Bronze ceramics above a late Chalcolithic/EB I structure (Adams 1992: 178).

In summary, the WFP's excavators uncovered "a well defined sequence of late Chalcolithic-Early Bronze Age I stratigraphy of over 2.5 m which was founded on bed-rock" (Adams 1992: 178-80). In a communication dated July 12, 1995, how-

3. Adams' change of mind is due to recent findings resulting in the tendency to date the beginning of the Early Bronze to around 3700 BC rather than to the traditional date of around 3300 BC.
4. See the previous note.

ever, Adams states that the site "is late EB III (literally on the cusp of EB IV)." In a more recent communication (July 21, 1995), he is even more firm on the Early Bronze Age date of the site.

Workers of the Italian Impresit Company pointed out the site of Dayr 'Ayn 'Abāṭā, SGNAS Site 46, to team members in 1986. From the time of the SGNAS team's first visit to the site, there was the impression that the site was a Byzantine, church/monastery complex. This was due to the building and other artifactual remains collected at the site (MacDonald *et al.* 1992: 97, 100-04). SGNAS team members soon raised the question as to whether or not the site was indeed the "sanctuary of St. Lot" depicted on the Mādabā Map (MacDonald *et al.* 1992: 104; MacDonald and Politis 1988).

Politis began to excavate Dayr 'Ayn 'Abāṭā in 1988 (1989). He resumed his work in 1990 (1990) and has conducted excavations and restorations there up to the present (1995a and b; 1994; 1993a and b; 1992a, b and c). His work has uncovered evidence, in the form of pottery and lithic scatters, of the Late Chalcolithic to Early Bronze Age (1993a: 336). He dates, however, the substantial structures at the site between the Byzantine to Early Abbasid periods (around the fifth-ninth centuries AD). These structures are, in his opinion, the remnants of a monastery complex consisting of "a three-apse basilica church built around a cave, a large arched reservoir with a water-catchment system, domestic and kitchen areas, and terraced fields surrounding the settlement" (1993a: 336). He writes: "The pottery repertoire is largely representative of the Byzantine period, with some evidence of Roman-Nabatean and Abbasid wares" (1993a: 338). He dates, on the basis of two mosaic inscriptions, the construction of the church to the seventh century. Below the mosaic floor of this church, however, he found earlier pottery belonging to the fifth and sixth centuries. This pottery, along with a number of reused, inscribed architectural stones, leads Politis to postulate the existence of an earlier church on the spot (1993a: 338). The Abbasid pottery and glass which the excavator found on the mosaic floors of the seventh-century church are the basis for him to posit that this church ceased functioning in the late eighth century (1993a: 338). The reservoir, which Politis believes was also built in the seventh century, continued to be used for several centuries, "perhaps even after the church stopped functioning as a religious institution" (1993a: 338). Politis writes, in conclusion: "... the monastery stopped functioning at the end of the Byzantine period and that only the cave and the church, with its adjacent reservoir, were used into the Abbasid period" (1993a: 338).

Rast and Schaub, directors of the Expedition to the Dead Sea Plain (EDSP), examined Ancient Feifa and its associated cemetery in 1973 and assessed them to be Early Bronze in date (1974). Frolich and Lancaster, with several objectives related to the EDSP in mind, also examined the cemetery segment of the site in January 1985 (1985). The SGNAS team investigated Feifa in both 1985 and 1986 and divided the site into a western and eastern segment, namely, Sites 75 and 76 respectively. At the former, where there are substantial architectural remains, possibly remnants of a fort, it found sherds from several different periods. It concluded, however, that the sherds associated with the fort (?) were predominantly from the Iron Age, specifically Iron I-II and Iron II (MacDonald *et al.* 1992: 64, 73). The eastern portion, or cemetery, SGNAS Site 76, also yielded pottery from a number of periods. Nevertheless, the SGNAS team opted for a predominantly Early Bronze Age date for the cemetery (MacDonald *et al.* 1992: 64, 257).

The EDSP excavators carried out work at the SGNAS Sites 75 and 76 in December 1989-January 1990 (Lapp 1994; 1993; Schaub 1991). Their objective was to determine the date and nature of the walled

complex which comprises Site 75 and the graves, located immediately to the east, which are the major component of Site 76. In the investigation of the former, the EDSP team chose an area near the southeast corner of the walled complex as the location for its two exploratory trenches, one to the east and one to the west. The surface layers in these trenches contained Iron II pottery along with a few Roman and Byzantine sherds (Lapp 1994: 219; 1993: 482; Schaub 1991). The excavators found Iron II to be the latest pottery in the brick and sandy layers below. They reached fairly flat levels on both sides of the wall at a depth of about 1.60 m. These levels contained a few diagnostic Iron II sherds. Lapp concludes: "There is little doubt that the wall was constructed during the Iron Age, probably in the seventh century BCE" (1994: 221). She adds: "The parallel kraters, cooking pots, and jugs from good Iron II loci and further sherds from the surface material date the Feifa material to the seventh and early sixth centuries BCE, and the pottery from the stratified layers dates the construction of the wall around the site to the seventh century BCE" (1994: 225-26). Lapp also writes about burial remains at the site:

> "In surface debris as well as in the Iron II levels occasional Early Bronze sherds appeared. Below the town wall and at that depth east of the wall, several disturbed EB IA tombs appeared, similar to those in the large cemetery to the east of the Feifa town site. Some of the Early Bronze sherds seem to be from domestic pottery, so there may well have been a small Early Bronze I settlement in the area" (1994: 226, n. 1).

The EDSP workers excavated 11 cist tombs, consisting of two structural types, in three widely separated areas in the cemetery, Site 76. One tomb, lined with boulders, had a large group of Early Bronze IB (ca. 3200 BC) pottery. "Artifacts in a slab-lined tomb suggest an earlier date, perhaps contemporary with the EB IA tombs of Bab edh-Dhra' or even slightly earlier" (Schaub 1991: 262). Furthermore, the EDSP team's excavations confirmed Pottery Neolithic presence in the cemetery area since some of the EB I cist tombs cut into occupational levels from this period (Schaub 1991: 262).

The SGNAS explorers initially identified Khirbat al-Khanāzīr/Abū Irshareibeh, Site 141, as an EB IV habitation site (MacDonald, Clark and Neeley 1988; MacDonald *et al.* 1987). The excavation of the site, under the auspices of the EDSP, took place in conjunction with that of Ancient Feifa and nearby cemetery mentioned above. The EDSP team's survey of the site resulted in the mapping of 88 well-preserved, rectangular structures in a 2 km area (Schaub 1991: 262). The EDSP worker's excavation of nine of these determined conclusively that they are EB IV tombs (MacDonald 1995; Schaub 1991: 262).

Khirbat an-Nuḥas, SGNAS SITE 159, is a smelting site which has received attention from various explorers and/or archaeological surveyors over the years. The SGNAS team saw it as a predominantly Iron I-II period site (MacDonald *et al.* 1992: 73, 76-77, 266; 1987: 406-08). Hauptmann *et al.* of the German Mining Museum, Bochum, carried out explorations at the site as part of their archaeometallurgical explorations and mining-archaeological studies in the Wādī Faynān region (Hauptmann and Weisgerber 1987). Fritz put in soundings at the site in 1990. The results of this work have not been published to date. However, in a communication dated October 20, 1995, the excavator indicated that the material excavated is very meagre and is to be dated to the end of Iron Age II. In addition to Fritz's work, Engel analyzed charcoal remains from a slag heap at the site (1993). Radiocarbon calibrated dates from the charcoal range from the 12th to the ninth century BC. This indicates that this particular dump at Khirbat an-Nuḥās was in use for at least 200-300 years of copper ore smelting

(Engel 1993: 209, especially Table 3).

Conclusions

There is general agreement, as the previous discussion and Tables 1 and 2 point out, between the findings of both the WHS and SGNAS teams and subsequent excavations/investigations at common sites. This agreement points out the value of surface surveys for predicting what is under the surface of a site. It, thus, provides a guidance as to what site(s) should be excavated to obtain further data on a particular time-stratigraphic unit. Moreover, this data may be used to obtain information on settlement patterns within the surveyed areas (Redman and Watson 1970: 279-80).

There is, nevertheless, some disagreement between the findings of the surveys and excavation results at common sites. It is important to discuss areas of disagreement so that investigators may approach survey results with a healthy scepticism (Flannery 1976: 62).

There is quite a difference, as Table 1 and the associated discussion makes clear, between the WHS team's findings and Bienkowski at Site 147. Could this be due to a misreading of the pottery on the part of one or both of the projects? Or, was the excavated area too limited?

Rollefson and Kafafi emphasize the Late PPNLB phases of WHS Site 149. They would, however, have no difficulties acknowledging the WHS team's findings at the site.

Al-Muheisen and Villeneuve confirm the WHS explorers' position that Sites 253 and 254 are predominantly Nabataean. The WHS team, however, missed the Byzantine and Umayyad aspects of the site which the subsequent excavations have brought to light.

There appears to be a disagreement between the WHS and WHPP teams' findings at Site 784. Caution is necessary, however, since the Upper Paleolithic component of the site which the WHPP excavators report came from WHS Site 784X which is located some 150 m south of WHS Site 784 (Clark *et al.* 1987: 46).[5] Otherwise, there is agreement.

The WHPP excavators' findings indicate a Chalcolithic hearth, based on the dating of charcoal, at WHS Site 621. This would seem to indicate a divergence between the findings of the two projects. The excavators, however, found no evidence of a Chalcolithic "occupation" or "living" surface and only a handful of non-diagnostic artifacts at the site. A survey would not be able to date definitely a site on such evidence.

The SGNAS team and Politis are in general agreement on the main components of Site 46. The difference comes, however, with Politis' Chalcolithic and EB I findings at the site. The survey failed to turn up such evidence.

The SGNAS explorers initially reported Site 141 as a habitation site. The EDSP team, however, showed this to be wrong since the site is, on the basis of excavation, a cemetery. Thus, agreement on dating, namely, EB IV; there is initial disagreement on the type of site.

There is little variance between the SGNAS and the WFP teams' findings. Whereas the former generally stressed the Chalcolithic/Early Bronze dating of Sites 10, 14, 20, and 30, the latter emphasized, due to recent opinions relative to the beginning of the Early Bronze period, the Early Bronze Age date of these sites. There is agreement between both teams' findings at SGNAS Site 12/WFP Site 008.

The results of soundings at SGNAS Site 159 are not yet fully known. The radiocarbon dates from the site, however, support the SGNAS team's findings.

The WHS and SGNAS teams have focused attention on a segment of west-central

5. See n. 2.

Jordan for further and fruitful exploration. The results of work at the sites discussed in this paper have gone a long way towards drawing a more complete picture of the archaeological history of this segment of Jordan.

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