

# NESSANA NECROPOLEIS: AN AERIAL AND GROUND SURVEY OF BYZANTINE ERA CEMETERIES IN THE ISRAELI NEGEV

PABLO BETZER

*pablo@israntique.org.il*

*Israel Antiquities Authority*

*The Hebrew University of Jerusalem*

*Jerusalem, Israel*

## **Summary: Nessana Necropoleis: An Aerial and Ground Survey of Byzantine Era Cemeteries in the Israeli Negev**

Using modern GIS and photogrammetry technologies, combined with traditional ground surveys, four ancient, previously unknown, cemeteries were found around the ancient site of Nessana, in the Negev desert. Comprising a total of 1,022 graves, these burial grounds were dated to the Byzantine period, although later burials, probably dated to the early twentieth century, were discern in two of them.

**Keywords:** Nessana – Byzantine – Cemetery – Surface Markers – Negev

## **Resumen: Necrópolis de Nessana: Una prospección área y terrestre de un cementerio bizantino en el Negev israelí**

Mediante el uso de tecnologías de información geográfica (GIS) y modelos fotogramétricos del terreno, combinados con metodologías arqueológicas tradicionales, cuatro antiguos cementerios previamente desconocidos fueron identificados en las inmediaciones del antiguo asentamiento de Nessana, en el desierto del Negev. Con un total de 1,022 tumbas, estas necrópolis, fueron datadas en el período Bizantino, si bien en dos de ellas fueron descubiertas tumbas modernas, probablemente construidas a inicios del siglo XX.

**Palabras clave:** Nessana – Bizantino – Cementerio – Marcas de Superficie – Negev

Article received: October 18, 2021; approved: February 25, 2022.

---

*Antiguo Oriente, volumen 19, 2021, pp. 277–300.*

## PREFACE

Despite the many archaeological excavations, surveys and researches carried out over the past 150 years in the Negev Desert in Southern Israel, less attention has been directed toward the burial grounds related to the main urban centers of the Byzantine period.

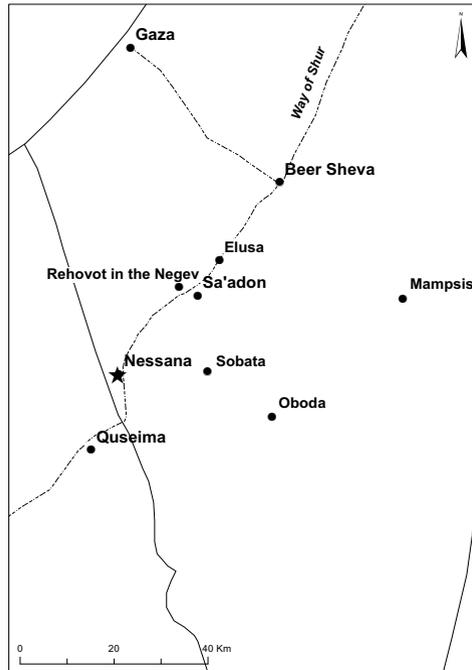
One of the key settlements in the central Negev in ancient times was Nessana, a town that was occupied in the Hellenistic, Roman, Byzantine and Early Islamic periods. Nessana was strategically situated along the biblical “Way of Shur” (Genesis 16:7), a road that connected the land of Israel and Egypt by way of the inland route through Quseima (ancient Kadesh Barnea), (**fig. 1**). The town flourished during the Byzantine era, between the 4<sup>th</sup> and the 7<sup>th</sup> centuries, during which four churches and a monastery were constructed. Nessana spread over a natural hill and the adjacent valley, to the south-east, between Nahal Azuz and Nahal Nessana. It was built in an area rich in high groundwaters, suitable for human consumption and agriculture making this desert town attractive for settlement. At its peak, the site covered a maximum area of 200 dunams (20 ha.).

The ancient name of the site was unknown in the 19<sup>th</sup> and early 20<sup>th</sup> centuries when it was referred to as Auja el-Hafir. Its remains were discovered by U.J. Seetzen in 1807, and thereafter the site was visited by travelers and scholars such as E. Robinson (1838), E. H. Palmer (1870), R. P. La Grange (1896), A. Musil (1902) and E. Huntington (1909). Musil provided documentation of many architectural features that were no longer extant due to Turkish construction there when C. L. Woolley and T. E. Lawrence visited in 1914.<sup>1</sup> Woolley and Lawrence were the first researchers (and the only ones to this date) to include one of the town’s ancient cemeteries in their map of the site.<sup>2</sup>

During World War I, Auja El Hafir, once a desolated and distant Turkish army outpost, became a major forward base for the Ottoman

<sup>1</sup> For a complete list of travelers and researchers who visited the site during the 19<sup>th</sup> century and the first half of the 20<sup>th</sup> century see Urman 2004: 2\*.

<sup>2</sup> Woolley and Lawrence 1914: 118, 12.



**Fig. 1.**

Main sites and roads in the Negev in classical and early Islamic periods.  
(Map design: Emil Aladgem, IAA).

Army, with a rail extension from Beer Sheva, a train station, a water tower, housing and administrative and public buildings, including a two-story hospital.<sup>3</sup> The Ottoman army withdrew from the town in 1917 as a consequence of the British army advance towards Beer Sheva and the rest of the land of Israel.

Between 1935 and 1937, archaeological excavations were carried out by H. Dunscombe Colt in two of the churches in which archives of papyri documents dated to the 5<sup>th</sup>-7<sup>th</sup> centuries were discovered and the ancient name of the town, Nessana, was revealed.<sup>4</sup>

<sup>3</sup> Kalbian 2015: 66.

<sup>4</sup> Colt 1962: 2.

Colt's expedition uncovered numerous gravestones bearing Greek inscriptions, some reused as building material in later constructions, which were collected from the town and its surroundings. The inscriptions were eventually published by G. E. Kirk and C. B. Welles in the first volume of the excavations report.<sup>5</sup> However, no mention of the city's cemeteries was made in this or any other publication submitted by the Colt expedition.

Further extensive excavations were carried out in Nessana between 1987 and 1995 by a team from Ben Gurion University in the Negev, under the direction of D. Urman and J. Shereshevski.<sup>6</sup> Two Greek epitaphs uncovered in the excavations were published by P. Figueras.<sup>7</sup> Like the previous expedition, the cemeteries around the town were not surveyed and therefore they were not included in the final report.

In December 2020, during development work initiated by the Israel Nature and Parks Authority in the area southeast of Nessana, three limestone gravestones bearing Greek inscriptions were found.<sup>8</sup> Following the discovery, an aerial survey was conducted over an area of about four-square km (400 ha.) around the site by P. Betzer, E. Aladgem and G. Fitoussi, on behalf of the Israel Antiquities Authority. The aims of this survey were: 1) to discover previously unknown burial grounds around Nessana, 2) to define the extension and distribution of all the town's cemeteries, and 3) to determine a new methodology for the identification of classical period (Hellenistic to Byzantine) as well as modern cemeteries in the Negev, based on a combination of ground and aerial surveys.

For the aerial survey, a Wingtra VTOL (Vertical Take Off and Landing) UAV with a high-resolution Sony Cybershot full frame 42 mg pixel camera was used. Following the field work, a photogrammetric model of the entire survey area was created using the BENTLEY

<sup>5</sup> Kirk and Welles 1962.

<sup>6</sup> Urman 2004.

<sup>7</sup> Figueras 2004.

<sup>8</sup> Ecker, Betzer and Di Segni 2021.

Context Capture program. The model was meticulously analyzed, marking every relevant element and noting its precise coordinates. The surface markers of burials<sup>9</sup> were catalogued as “Byzantine” or “Modern” (see below). Every surface marker measuring less than 1.5 m. long was considered as belonging to a child’s tomb.<sup>10</sup> Unclear built structures were marked as “Maybe a Tomb,” indicating that it could be Byzantine or Modern. Finally, a ground survey, based on the model analysis, was conducted.

Before the beginning the field work at Nessana, a small ground survey was carried out by the author in a Bedouin cemetery located near the modern settlement of Be’er Milka, ca. 8 km northwest of the site. The purpose of this preliminary field work was to determine a primary typology of late Bedouin surface markers that can be used as a dating tool to discern between early and late surface markers in the Nessana project.

### **BE’ER MILKA CEMETERY**

The Bedouin cemetery of Be’er Milka belongs to the Azazme tribe. It is a large burial ground (c. 40 dunam or 4 ha.) divided into three areas, situated along a north-south axis. Most of the graves in the two southern area appear to be recent, in view of the coloration of the earth covering them. In contrast, in the northernmost area it appears that there were no inhumations in later decades. All three burial areas were placed on higher platforms, raised above their surroundings by means of a low retaining wall, built of small pebbles (**fig. 2**).

<sup>9</sup> “Surface marker” is the denomination given by the author to any arrangement of earth and/or stones, built at surface level above a tomb. Its main purpose is to indicate the exact location of the tomb, ensuring that no later burial will be mistakenly dug in the same spot. It also may have been used by the family of the deceased as a tool to identify the tomb.

<sup>10</sup> Only in cases where four sides of the surface marker frame were visible.



**Fig. 2.**

Beer Milka cemetery- pebble wall, looking north.  
(Photographer: Pablo Betzer).

The following three types of surface markers were observed in this cemetery, all of them oriented east to west:

**BMI (fig. 3):** Narrow, elongated earth pile, usually crowned by



**Fig. 3.**

BM1 Type, looking north.  
(Photographer: Pablo Betzer).

standing stones on its eastern and western ends. The stones are unworked: fieldstones, pebbles from the nearby wadi or even broken modern building blocks. Two standing stones mark the position of head and feet of the deceased. In some cases, only a head stone was used.

**BM2 (fig. 4):** Narrow, elliptical earth pile, completely covered with round pebbles.

**BM3 (fig. 5):** Narrow, elliptical earth pile, outlined with round pebbles. Its center is either empty or covered with small stones. In some cases, two standing stones mark the eastern and western end of the surface marker.

All three of these types were used indistinctly for children and adult, indicated from their length, varying between 0.4 and 2 m.

Between the surface markers, mainly in the northernmost (probably earlier) area, were scattered sherds of modern Black Gaza Ware vessels (**fig. 6**). These are most likely body sherds of jugs, used for washing the body prior to inhumation. According to Bedouin tradition, these vessels, called *Abrick*, were filled with water and left on the earth pile above the graves.<sup>11</sup>

<sup>11</sup> Bar-Zvi, Abu Rabia and Kressel 1998: 30.



**Fig. 4.**  
BM2, looking east. (Photographer: Pablo Betzer).



**Fig. 5.**  
BM3, looking north. (Photographer: Pablo Betzer).

The same three types of late surface markers observed in this cemetery appear, together with ancient ones (below), in two of the *Antiguo Oriente*, volumen 19, 2021, pp. 277–300.



**Fig. 6.**

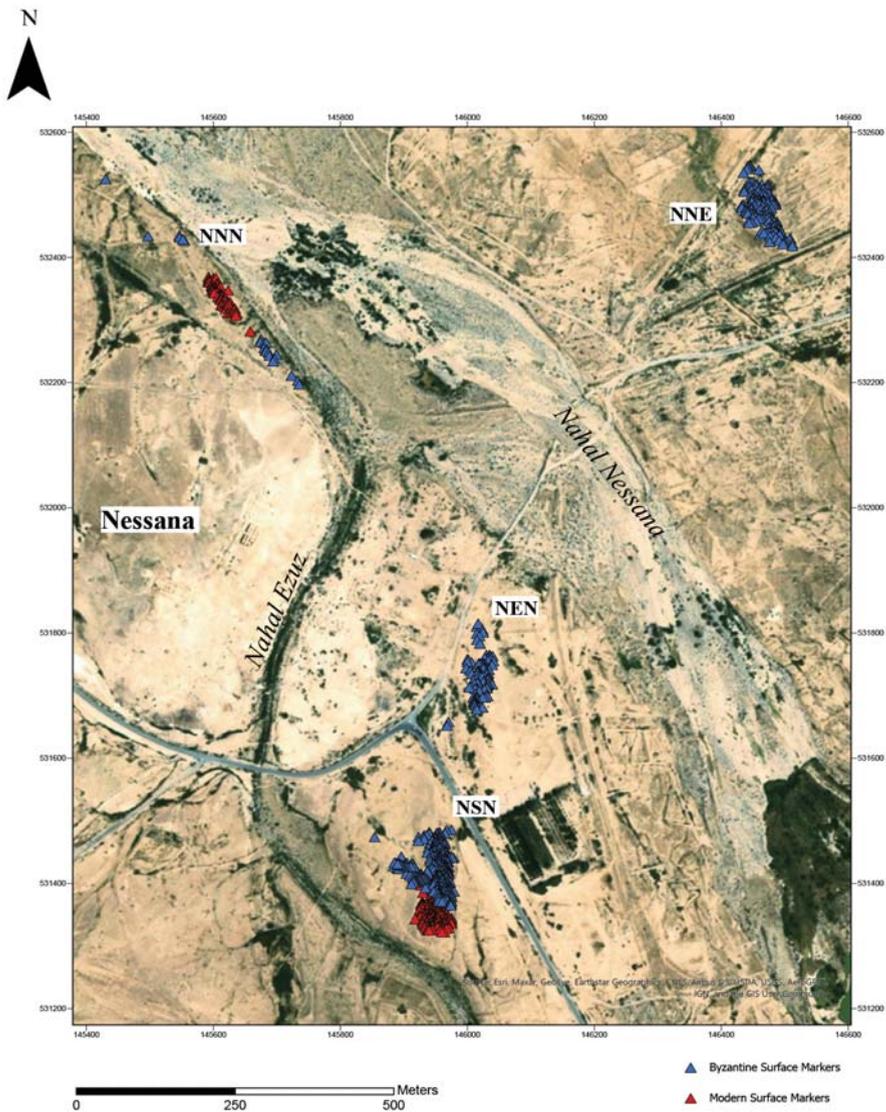
Black Gaza Ware sherds.  
(Photographer: Pablo Betzer).

Nessana cemeteries. In addition, the ruins of a sheikh's tomb or *Maqām*<sup>12</sup> were surveyed in Nessana South Necropolis (see below).

### THE NESSANA NECROPOLEIS

Four cemeteries were discovered and surveyed around the ancient site of Nessana, including a total of 1,022 surface markers. They were named according to their position in relation to the site: North, North-East, East and South (**fig. 7**). All four cemeteries were first used in antiquity, probably during the Byzantine period, as can be learned from the presence of early surface marker types (see below) and from the pottery identified in the areas surrounding them (**fig. 8**). Moreover, the same two indicators, namely surface markers and pottery, allow us to determine that large parts of the North and South cemeteries were also used as burial grounds as late as the Late Ottoman and British Mandate periods, and possibly even later.

<sup>12</sup> A *Maqām* is a shrine associated with a Muslim saint or religious figure, usually, but not always, his or her tomb.



**Fig. 7.**  
Location of the Nessana cemeteries.  
(Map design: Yaakov Shmidov, IAA).



**Fig. 8.**

Byzantine sherds from the Northeast necropolis.  
(Photographer: Pablo Betzer).

### Typology of Early Surface Markers

In contrast with the modern ones, most of the early surface markers are partly, sometimes almost entirely, covered with earth, making their classification difficult. These early markers can be divided into four types:

*Type “a”* (**fig. 9**): The most common type in Nessana Necropoleis. A total of 523 (51%) surveyed markers belonged to this type. These markers include elliptical or rectangular frames, made of re-used building stones and/or elongated wadi pebbles, set mostly with their narrow face towards the center of the frame. These markers were built generally on an east-west axis (429-82%), but there are also some built in north-south direction (81-15%).<sup>13</sup> Some of Type “a” markers still include one standing (sometimes fallen) flat gravestone on the west side (**fig. 10**), a few of them still bear Greek inscriptions (**fig. 11**. See below). The size of most of the surface markers varies between 0.4 and 2 m in length and 0.65-0.9 m in width, although some were as large as 1.5x3 m. Markers measuring less than 1.5 m. long were classified as belonging to children’s tombs.<sup>14</sup>

<sup>13</sup> In addition, due to their preservation and surface deposition, the direction of 13 Type “a” surface marker could not be determined.

<sup>14</sup> As stated before, many of “Type a” markers are partly covered, making impossible to define



**Fig. 9.**  
Type “a” surface marker. Northeast necropolis, looking west.  
(Photographer: Pablo Betzer)



**Fig. 10.**  
Gravestone still standing *in situ*.  
Northeast necropolis, looking east. (Photographer: Pablo Betzer)

Type “b” (**fig. 12**): “Burial Complexes.” A total of 73 (7.1%) surface markers of this type were surveyed. They can be described as large rectangular or square stone-built frames, 3x2 m in average. The building stones used in this type are similar to those used in type “a.”

---

their original length. In these cases, they were classified as belonging to adults’ graves.



**Fig. 11.**

Gravestone with Greek inscription. Northeast necropolis, looking west.  
(Photographer: Pablo Betzer)



**Fig. 12.**

Type “b” surface marker. South necropolis, looking west.  
(Photographer: Pablo Betzer)

The majority of these markers (45-61%) were built in north-south direction. In some cases, one or a few stones were placed inside these markers, slightly to the west of the center of the frame, probably serving as gravestones.<sup>15</sup>

<sup>15</sup> In many cases one line of stones is the only visible remain of a surface marker, making impossible to discern between types “a” or “b.” In these cases, they were classified as the most



**Fig. 13.**

Type “c” surface marker. Northeast necropolis, looking west.  
(Photographer: Pablo Betzer)

*Type “c” (fig. 13):* Round or slightly elliptical stone piles, 0.5 m. long / diameter. A total of 42 examples (4.1%) of these markers were surveyed. This type probably marks children’s burials. If this is the case, the direction of the grave underneath is indiscernible without an archaeological excavation. Another explanation for these stone piles is that they are related to some kind of burial practice, such as offerings or cultic meals in the honor of the deceased.

*Type “d” (fig. 14):* Stone circles, 1-2 m. in diameter, frequently containing a single stone marking their center. This type appears only in Nessana South (29) and North-East (13) cemeteries (42-4.1%). the suggested dating to the Byzantine period is based on their complete absence from the modern cemeteries of Be’er Milka, and later areas of Nessana North and South cemeteries (see below). However, this assumption, as well as its classification as a grave, must be confirmed in an archaeological excavation.

---

common “Type a.”



**Fig. 14.**

Type “d” surface marker. South necropolis, looking south.  
(Photographer: Pablo Betzer)

### **The North Necropolis (fig.7: NNN)**

This cemetery is situated about 180 m from the ancient site of Nessana, on the western fringe of Nahal Nessana, between the wadi stream and a large trapezoidal, stone-built structure, probably a farm dated to the Late Ottoman or British Mandate periods.<sup>16</sup> A total of 107 surface markers were surveyed in this burial ground, spread in a long, narrow area (c. 280x30 m) of about 9 dunams (0.9 ha.). Among the surface markers, 26 (24%) were identified as Byzantine and 81 (75%) as Modern. Among the modern surface markers, 23 (28%) measure less than 1.5 m. long, possibly indicating children’s burials. No Byzantine children’s graves were surveyed in this cemetery. Another 36 built elements were classified as “probably graves’ surface markers,” either Byzantine (19) or Modern (17). The surface markers identified as Byzantine appear in the north and south ends of this necropolis, while the later ones fill the center of the strip. This later burial area is delimited on its east side by a long narrow embankment, possibly a low wall that was eventually covered by earth.

<sup>16</sup> T. Erickson-Gini, personal communication.

Type	Suggested dating	Number of surface markers		Age		Direction		
		Probable	Certain	Adult	Child (or "probable child")	NS	EW	Unclear
a	Byzantine	12	4	16		7	8	1
b	Byzantine	3	3	6		3	3	
c	Byzantine	1			1			1
Unknown	Byzantine	3		3			3	
BM1	Modern	10	7	13	4		17	
BM2	Modern		8	3	5	1	7	
BM3	Modern	3	48	37	14	1	50	
Unknown	Modern	4	1	5			5	
Total		36	71	83	24	12	93	1

**Table 1.**

Summary of surface markers distribution in North Necropolis.

### The South Necropolis (fig.7: NSN)

This cemetery spreads over two slightly elevated fringes, one running north-south and the other north-west-south-east, starting about 220 m from the southern city wall and covering an area of ca. 11 dunams (1.1 ha.). This is the largest and most populated of Nessana cemeteries. It contains 613 surface markers (including 53 possible markers), 364 (59.5%) of which were identified as Byzantine and 249 (40.5%) as Modern. As many as 43 (11.8%) of the Byzantine surface markers and 23 (9.2%) of the modern ones possibly belonged to children's tombs.

A clear separation between early and late surface markers was also observed in this necropolis. The Byzantine markers are concentrated mainly in the north and west areas, while the late cemetery covers the southern one-third of the main fringe. Moreover, the late cemetery may be divided into two sub-sections, north and south, being the later characterized by surface markers arranged in regular lines and rows (**fig.15** and see discussion below).



**Fig. 15.**

The South necropolis. Note the difference between the modern (center) and the early (right) cemeteries. (Photographer: Assaf Peretz, IAA).

In the north section of the late cemetery stand the ruins of a Sheik tomb (NSN 129). This monument includes an ashlar-built surface marker (actual measures: 1.35x1.13 m, 72.5 m. high) standing above ground. The structure was severely damaged in recent years. Several modern graves (nos. 120, 121, 128, 130, 136, 137) were dug in the area surrounding this monument, probably following the Bedouin custom of burying the death in the proximity of an important person's tomb or shrine.<sup>17</sup>

A pebble-built line, probably a retaining wall of at least 70 m long, was observed along the eastern side of the South Necropolis (**fig. 16**).

<sup>17</sup> Bar-Zvi, Abu Rabia and Kressel 1998: 15.

Type	Suggested dating	Number of surface markers		Age			Direction				
		Probable	Certain	Adult	Child (or probable child <sup>18</sup> )	Unknown age	NS	EW	NW-SE	NE-SW	Unclear
a	Byzantine	34	235	255	14		30	233			6
b	Byzantine	3	37	40			27	8			5
c	Byzantine	6	15		21		1	7			13
d	Byzantine	6	23	22	7		1	5			23
Unknown	Byzantine	4	1	4	1						5
BM1	Modern	46	72	106	12			115		3	
BM2	Modern	3	8		1	10		11			
BM3	Modern	4	114	107	11		6	108	2	2	
Unknown	Modern	2		1		1		1			1
Sheik Tomb	Modern		1	1							1
Total		108	506	536	67	11	65	488	2	5	54

**Table 2.**

Summary of surface markers distribution in South Necropolis.

### The East Necropolis (fig.7: NEN)

This is the closest and, apparently, the least crowded among the Nessana burial grounds.<sup>18</sup> It is situated on an artificial escarpment, about 80 m from the town wall, spreading over 9.4 dunams (0.94 ha.). This cemetery is the one recorded by Woolley and Lawrence,<sup>19</sup> and in this area, three Greek burial inscriptions were recently found.<sup>20</sup>

A total of 115 surface markers were recorded in the East Necropolis (including 36 possible markers), 113 of which are probably Byzantine and two couldn't be dated. In addition, 9 of the markers (7.9%) were classified as belonging to children.

<sup>18</sup> It should be stated that been the closest to the town, the East Necropolis was probably the most damaged by later constructions, some of them, such as an Ottoman watering system, are still visible today. This may be the reason of the relative low density of surviving markers.

<sup>19</sup> Woolley and Lawrence 1914: 118, 121 and see above.

<sup>20</sup> Ecker, Betzer and Di Segni, 2021.

**Fig. 16.**

Retaining wall in the South necropolis looking south. (Photographer: Pablo Betzer).

Although a large quantity of modern Black Gaza Ware sherds was found in several spots in this cemetery, these finds are not useful for dating the graves, as they were, in this author opinion, originally used by the early twentieth century habitants of Auja El-Hafir for collecting water from the nearby well, which is still extant in the eastern side of the burial ground. Also in the eastern side, a long double-faced retaining wall, ca. 70 m long, supports the artificial terrace on which the cemetery was built.

Type	Suggested dating	Number of surface markers		Age			Direction		
		Probable	Certain	Adult	Child (or "probable child")	Unknown age	NS	EW	Unclear
a	Byzantine	30	64	90	3	1	31	60	3
b	Byzantine	3	9	12			6	3	3
c	Byzantine	1	6		6	1	1		6
Unknown	Unknown	2				2	2		
Total		36	79	102	9	4	40	63	12

**Table 3.**

Summary of surface markers distribution in East Necropolis.

### The Northeast Necropolis (fig. 7: NNE)

This is the furthest cemetery from the town: about 700 m north-east of the site. At present, this cemetery extends over an area of 8.2 dunams (0.82 ha.), but it can be assumed that it was originally much larger. Infrastructure works related to the laying of the railway, constructed by the Ottoman regime in the early 20<sup>th</sup> century, together with much more recent illegal agricultural plowing, have damaged, or simply erased, an unknown number of tombs in the northwest and north-east borders of this burial ground. On the other hand, this cemetery, like the East Necropolis, was not disturbed by later burials. During the survey of the North-East Necropolis, a Greek inscribed tombstone was found *in situ*,<sup>21</sup> as well as many other anepigraphic or simply erased limestone tombstones, found either standing or laying on the ground next to a surface marker.

A total of 187 surface markers were recorded in this cemetery (including 22 possible markers), all dated to the Byzantine period. Among these finds, 27 probably belonged to children.

Type	Suggested dating	Number of surface markers		Age			Direction		
		Probable	Certain	Adult	Child (or "probably child")	Unknown age	NS	EW	Unclear
A	Byzantine	17	127	131	13		13	128	3
B	Byzantine	1	14	15			9	3	3
C	Byzantine	3	10		13			2	11
D	Byzantine	1	12	3		10		1	12
Unknown	Byzantine		2		1	1		1	1
Total		22	165	149	27	11	22	135	30

**Table 4.**

Summary of surface markers distribution in NE Necropolis.

<sup>21</sup> Ecker, Betzer and Di Segni 2021.

## DISCUSSION

The initial survey conducted in Be'er Milka together with the extensive work performed around the ancient site of Nessana provides, for the first time, a typology of early and late surface burial markers in the Negev. This is a first step towards a better understanding of ancient burial customs in arid regions. The typology created during the survey is complimented by a second project, currently being conducted, in a wide area around the Byzantine town of Sobata (Shivta), and eventually it will be used in other ancient towns and villages in the Negev as a part of a regional project directed by the author. Nevertheless, it should be pointed out that regardless the accuracy of this method, every conclusion will remain theoretical, and can only be verified by way of systematic archaeological excavation.

Some common features were observed in almost all the surveyed cemeteries. Three of the four cemeteries at Nessana as well as Be'er Milka, are delimited on their eastern boundaries by a low wall<sup>22</sup>. This may have served as a terrace wall, forming an artificial platform that consequently separated the sacred burial area from its surroundings.<sup>23</sup>

It is safe to assume that stones were probably looted from earlier surface markers in order to build new ones.

The state of some of the BM3 type markers (elliptical earth pile, outlined with pebbles) leads us to assume that they were originally built as BM2 type (elliptical earth pile, completely covered with pebbles) and most of their covering stones were re-used, leaving only the frame.

Child burials of the later periods were easily recognized. Their surface markers looked exactly like the adult ones, only smaller. In con-

<sup>22</sup> It is logical to propose that the NE Necropolis had a retaining wall, and the reason it cannot be seen today may be attributed to the damage this cemetery suffered in modern times.

<sup>23</sup> Several cemeteries in the Negev were placed on high ground in close proximity to water sources. This appears to be the case at Be'er Milka and Nessana North, East and South cemeteries, all of which were raised above their surroundings and close to either a well or a stream. According to Avni cemeteries of this kind were used over long periods of time by the nomadic desert population (Avni 2009: 58).

trast, in Byzantine areas it was difficult to determine if some of the surface markers were small, and thus belong to child burials, or they were partially covered or even partly destroyed. In addition, the definition of Byzantine type “c” markers as child burial markers is merely a suggestion, and it will remain one until this type can be properly checked.

Type “a” surface markers are the most common markers in the Negev. They were spotted by the author in other large urban Byzantine cemeteries in the Negev area, such as those surrounding the cities of Elusa (Halutza) and Sobata. The similarity between this type and Modern BM3 made their identification a challenging task. The use of elongated pebbles and square building stones is, when present, the best indicator. In many cases, though, their context and their surface deposition are the only available tools for their dating. Again, only an archaeological excavation will provide clarification.

Among the Byzantine surface markers, Type “b” is undoubtedly the most intriguing. This type has been seen in the Elusa and Sobata cemeteries. To this date no Type “b” surface marker have been excavated anywhere in the Negev, making their nature a mystery. Does this type mark the graves of husbands and wives or families? If this is the case, were the deceased interred under type “b” laid at the same time? Does Type “b” mark a monumental tomb, perhaps a kind of hypogeum similar to Roman and Byzantine burial underground chambers found in Syria, Jordan, Sinai and Israel?<sup>24</sup>

Another interesting feature is the disposition of surface markers in the southern half of the South necropolis. As stated above, this area is characterized by surface markers arranged in a regular fashion, probably indicating advance planning and/or the existence of an organization in charge of the inhumations. This, and the lack of modern Black Gaza

<sup>24</sup> For several examples of hypogea in Syria see de Jong 2017. For Jordan see Wadeson and Abudanah 2016; for Sinai see Oren and Netzer 1977, for Israel see Negev 1971, Hirshfeld and Tepper 2006.

<sup>25</sup> Kirk and Welles 1962: 183. Kirk and Welles placed the War Cemetery at one kilometer South-east of Nessana. During the present survey no traces of a late cemetery were found at that distance. Instead, the area proposed above spreads ca. 650 m from the site.

Ware sherds around the markers in this segment of the late cemetery may suggest that this area served as the Ottoman military cemetery of Auja El-Hafir during the World War I. If this is correct this may be the war cemetery mentioned by G. E. Kirk and G. B. Welles, in their catalogue of Greek inscriptions in the Colt expedition publication of Nessana, as the place where a Greek epitaph was discovered in secondary use.<sup>25</sup>

The amount of data collected during the present survey has proven the value of combining aerial footage and photogrammetry models with limited ground examinations for the identification of classical and post classical cemeteries in the Negev desert. Moreover, this method allows the comprehensive study of large, occasionally inaccessible areas in relatively short periods of time using minimum resources. These qualities make it suitable not only for ancient burial research but also for other areas of field archaeology.

## BIBLIOGRAPHY

- AVNI, G. 2009. "Who Were Interred in the Qumran Cemetery? The Ethnic Identity of Ancient Populations in Light of Archaeological Findings in Burial Sites." In: *Cathedra* 131, 43-64. (Hebrew).
- BAR-ZVI, S., ABU RABIA, A. and KRESSEL, G.M. 1998. *The Charm of Graves, Mourning Rituals and Tomb Worshipping Among the Negev Bedouin*. Beer Sheva, Ministry of Defense. (Hebrew).
- COLT, H.D. 1962. *Excavations at Nessana (Auja Hafir, Palestine)*. Vol. 1. London, British School of Archaeology in Jerusalem.
- DE JONG, L. 2017. *The Archaeology of Death in Roman Syria: Burial, Commemoration, and Empire*. Cambridge, Cambridge University Press.
- ECKER, A., BETZER, P. and DI SEGNI L. 2021. "Four New Burial Inscriptions and a Survey of the Nessana Necropolis." In: *Liber Annus* 71, 425-440.
- FIGUERAS, P. 2004. "Greek Inscriptions from Nessana." In: URMAN, D (ed.), *Nessana: Excavations and Studies I. Beer Sheva XVII*. Beer Sheva, Ben-Gurion University of the Negev Press, 235-242.
- HIRSHFELD Y. and TEPPER Y. 2006. "Columbarium Towers and Other Structures in the Environs of Shivta." In: *Tel Aviv* 33, 83-116.

- KALBIAN, V.V. 2015. "Photographic Memories: The Field Hospital of Hafir-el-Auja and US Ottoman Relations." In: *Jerusalem Quarterly* 63/64, 54-71.
- KIRK, G.E. and WELLES, C.B. 1962. "The Inscriptions." In: COLT, H.D. (ed.), *Excavations at Nessana I*. London, British School of Archaeology in Jerusalem, 131-197.
- NEGEV, A. 1971. "The Nabatean Necropolis of Mampsis (Kurnub)." In: *Israel Exploration Journal* 21,111-129.
- OREN, E. and NETZER, E. 1977. "Settlements of the Roman Period at Qasarweit in Northern Sinai." In: *Qadmoniot* 4/40, 94-107. (Hebrew).
- SCHÖNE, C.A., JORDAN, F., ERICKSON-GINI, T. and HEINZELMANN, M. 2018. "Elusa (I). Vorbericht zur Grabungs- und Surveykampagne 2019." In: *Kölner und Bonner Archaeologica* 8, 125-144.
- URMAN, D. 2004. *Nessana: Excavations and Studies I. Beer Sheva XVII*. Beer Sheva, Ben-Gurion University of the Negev Press.
- WOOLLEY C.L. and LAWRENCE T.E. 1914. *The Wilderness of Zin*. London, Palestine Exploration Fund Annual 3.
- WADESON, L. and ABUDANAH, F. 2016. "Newly Discovered Tombs in the Hinterland of Petra." In: *Studies in the History and Archaeology of Jordan* 12 <<http://publication.doa.gov.jo/Publications/ViewChapterPublic/32>> Accessed 01/10/2021.