

# ABSTRACT

The focus of this study is the changes in settlement patterns, including political, social, economic, and environmental trends of the northern Negev, from the Hellenistic through the Early Islamic periods. This interval is also generally known as the “Classical” period and “Late Antiquity”, which began with the conquest of the area by Alexander the Great (332 BCE) and ended after the Muslim conquest (~640 CE) sometime in the 10<sup>th</sup>/11<sup>th</sup> centuries CE. The archaeology of both the Classical period and Late Antiquity are referred to as ‘Classical’ in this research.

This Abstract begins with an overview of the geographic location at the center of the research, introducing the study area and the survey samples. Then the Environmental and Sociocultural Background to the research is reviewed, followed by the Statement of the Problem, including the Significance of the Study and Research Questions. After the methodology is described, the findings are presented, both for the study area and then for the Northern Negev as a whole. Finally, the Conclusions and the Recommendations for future studies are provided.

## **Geographical scope**

This research focused on the northern Negev. The geographic borders of the study area are roughly defined as follows: to the north, the foothills of the Judean Mountains; to the east, the watershed of the Be’er Sheva–Arad Basin and the Arava; to the south, the Negev Highlands; and to the west, Nahal Besor (Wadi Gaza). In this research, three different geographical areas of the northern Negev have been analyzed: 1) the western part, centered on Nahal Besor, close to Gaza (400 square km); 2) the central part, centered on the city of Be’er Sheva (400 square km); and 3) the eastern part (400 square km).

### **Environmental and sociocultural background**

The three study areas, all located within the northern Negev, differ in several aspects, including altitude, access to water, rainfall per year, and flora and fauna. In the western study area, elevations are relatively low, up to 150 m above sea level. The study area is located close to Gaza and the Mediterranean Sea. Nahal Besor is a stream with deep wadis that runs through the whole study area, and its springs are the only perennial water sources in the northern Negev. The central study area is part of the Be'er Sheva–Arad basin, which is mostly flat and to the north and south of it are low hills that reach up to 450 m above sea level. The basin is covered by windblown loess, and there are no perennial rivers, but its structure allows for the collection of large quantities of groundwater. The eastern study area is located to the east of the central study area and comprises the eastern part of the Be'er Sheva–Arad basin. It is mainly flat. To its north are the slopes of the southern Hebron hills and, to its south, are the Northern ridges of the Negev Highlands. The altitude of the area is between 300 and 720 m above sea level.

Although there are several studies that point to climatic fluctuations and environmental shifts, but others claim that the climate has not changed significantly over the last couple of thousand years in the northern Negev. It is unclear what kind of influence such climatic shifts could have had on settlement patterns and populations during the Classical period. The settlements and population of the northern Negev expanded and declined several times during the Classical period, and some scholars have argued that climate change was the main factor in the expansion and decline of settlements and population in the area.

The northern Negev was chosen as a case study to analyze the settlement patterns as the area is environmentally sensitive. The region constitutes a transitional steppe zone, the edge of subsistence dry-farming practicability, with regions farther south requiring runoff irrigation systems and those farther north falling well within the Mediterranean zone. Therefore, the northern Negev is the ideal area for analyzing patterns and the forces of change (environmental, political, economic, and social).

### **Methodology**

The analyses presented here were based mainly on the results of systematic surveys conducted by the Archaeological Survey of Israel (ASI) and the Israel Antiquities Authority (IAA). These surveys have been conducted over the last five decades and have produced a large number of archaeological legacy survey data. In order to analyze the northern Negev, the spatial and temporal distribution of sites from 12 selected archaeological surveys were analyzed, reconstructing the settlement patterns and site hierarchies throughout the northern Negev. Each study area consists of a block of four archaeological surveys (each 10 × 10 km;

x = 20 km, y = 20 km) covering an area of 400 square km. These (legacy) survey data were obtained by different survey teams, working with different methods and definitions. Therefore, in order to analyze the settlement patterns each archaeological site was defined according to its different attributes, such as site type, size, number of structures, dating, permanent/non-permanent site, etc. The synthesized survey data were then considered chronologically by reference to key excavations in the region as well as numismatic evidence. These data were compiled in a spatial database that contains several thousand entries (over 1500 sites, many multi-period sites).

The proximate goal was to construct areal maps showing settlement patterns for each period (and subperiods) with the finest chronological resolution possible. GIS technologies were used in the actual construction of the maps, which served as a basis for understanding the structures of each settlement system (social, political, economic, etc.). These structures were examined at three different scales. The region has been examined holistically as the northern Negev, according to the three study areas, west (Nahal Besor region), central (Be'er Sheva and surroundings) and east (eastern Be'er Sheva–Arad Basin), and finally, individual survey squares (10 × 10 km) were also examined. Furthermore, large settlements and their connections to the hinterland were analyzed. Graphs of site frequencies, sorted by site size and function, were constructed for the entire period (and at different scales), offering long time perspectives on settlement trends

## **Analysis of the three study areas**

### *Western Study Area*

In the western study area, 415 identified sites were added to the database. The sites had been discovered during surveys, excavations, inspections, and trial trenching in the past. Of these sites, 77 were multi-period sites, however, it is likely that the majority of the sites were not continuously settled, but rather resettled in several periods. The vast majority of settlements in the western study area during the Classical periods were rural sites. The study area shows the following general trends during the Classical period: low activity in the Hellenistic, Early Roman, and Late Roman periods, with a gradual rise in sites during these periods; a sharp rise in settlement activity during the early fourth century CE; a drop in the fifth century followed by a peak during the sixth to seventh century CE; and a gradual decline during the Early Islamic period.

During the Hellenistic period, most sites were strategically placed, many near a water source or along essential roads. A few settlements were occupied during the entire Hellenistic period, and those settlements were all tells that were also settled in previous periods. Sites were relatively small, consisting of one or a few structures and possibly installations. There are indications of commercial ties

with western Mediterranean locations, as indicated by imported pottery wares. However, this seems only to be the case for the Early Hellenistic period. During the Late Hellenistic period, only a few sites were settled, and there may be a settlement gap between the Late Hellenistic and the Early Roman period. During the Early Roman period, the most important site was Tell el-Far'ah (south). The majority of sites were clustered around it. Based on coin finds, there was a settlement gap between the early second century and the late-third century CE. Based on the settlement analysis many of the Late Roman sites actually date to the Byzantine period. This fact is supported further with the coin finds, which date to the early fourth century, and after 324 CE a strong rise in those finds is evident. However, it seems that Ma'on and Be'er Shema were larger settlements (large villages) during the Late Roman period.

From an analysis of the Byzantine settlements, it becomes evident that several large settlements were located close to the trade routes, the Elusa–Gaza Road (formerly part of the Incense Road), and the Gaza/Ashkelon–Ma'on–Central Negev Road. Several smaller sites are also located alongside. Based on the findings, it seems that many settlements were founded in the late fourth/fifth centuries CE. In the early to mid-sixth century CE, many public buildings (e.g., churches, monasteries) were built, as proven by the numerous mosaic floors found within the structures dating to this era. Coin finds indicate two peaks during the Byzantine period, during the fourth century CE and the sixth/seventh centuries CE, which is consistent with the other findings. After the Arab conquest, settlement activity slowly declined, however, most settlements continued to function, especially larger ones like Ma'on. Much of the pottery dates to the seventh century CE, the beginning of the Umayyad period, with a few sites continuing to be settled until the Mamluk period.

### *Central Study Area*

Most sites were found in the central study area. For this study, 951 identified sites were added to the database. Those sites have been discovered during past surveys, excavations, inspections, and trial trenching. About 200 sites (mainly burial sites) have been recorded in surveys conducted for this research in Be'er Sheva and its environs. Of these sites, 183 were multi-period sites, and 17 sites date over three archaeological periods, including three which were settled from the Hellenistic through the Early Islamic period. Two of the larger sites that date from the Hellenistic through the Early Islamic periods are Khirbat Amra and Tel Sheva. However, the settlement at Tel Sheva is divided between a settlement on top of the tell (Hellenistic to Roman, Early Islamic) and a settlement at the foot of the tell (Late Roman to Early Islamic). The settlement at Khirbat Amra was abandoned and re-settled several times during the Classical period. The overwhelming majority of

settlements in the central study area were rural sites. Only Be'er Sheva was a large urban center, settled from the Late Roman through the Early Islamic period. In the area of modern Be'er Sheva, some small Hellenistic period sites were discovered, however in the location of Byzantine Be'er Sheva, no Hellenistic or Early Roman architectural find were discovered so far. The study area shows the following general trends during the Classical period: low activity in the Hellenistic and Early Roman period, a sharp rise in settlement activity during the late third to early fourth centuries CE, a small drop in the fifth century followed by a sharp rise in the sixth century, and a gradual decline during the Early Islamic period.

In the Hellenistic period, Tel Sheva was clearly the most prominent site. The temple, as well as the Hellenistic period fortress, demonstrate its importance. Furthermore, the large number of Nabatean coins prove the existence of trade ties with the neighboring Nabataean kingdom. The rural settlements at Khirbat Amra and near Nahal Beersheva were probably somehow connected to Tel Sheva. It seems that only Tel Sheva was occupied from the third to the first century BCE without interruption. During the Early Roman period, few settlements existed in the study area. The two larger settlements of Tel Sheva and Rakafot 54 were probably connected by a road, which most likely led to the southern coastal plain. Coin finds indicate very low activity in the area during the Early Roman period. After the Bar Kokhba revolt, it is probable that no other settlement existed in the study area in addition to Tel Sheva. During the Hellenistic and Early Roman periods, no settlements were established south of Nahal Beersheva within the study area. Nabatean settlements were built along their trade routes, therefore the area south of Nahal Be'er Sheva up to the Nabatean trade route was empty of permanent settlements.

In the Late Roman period, settlement activities started to increase. The coin finds, as well as the results from excavations, show that there was low settlement activity until the final quarter of the third century CE. Probably the foundation of Be'er Sheva was laid in the late third century, which was most likely connected to the reforms of Diocletian (284–305 CE). Based on the findings at Be'er Sheva, which included public buildings, possibly a large army camp, and several structures, and taking into consideration the historical sources, one can conclude that Be'er Sheva was a large village during the Late Roman period. If coin finds are also considered, the foundations of Be'er Sheva were laid in the mid-to-late third century CE, and building activities strongly increased until the early fourth century CE. As the excavation results of the area of the army camp revealed, there were only meager finds dating to the Late Roman period. The Late Roman period in the central study area can be classified as following: (1) a substantial rise in settlement activities in the northern Negev started after 250 CE; (2) the foundations of Be'er Sheva were laid in the late third century, possibly connected to the re-

forms of Diocletian; (3) an army camp existed in Be'er Sheva that, based on current findings, dates to the Early Byzantine period rather than the Late Roman or earlier periods; (4) a garrison is already mentioned by Eusebius, *Onomasticon*, at the end of the third century, beginning of the fourth century. Therefore, it is possible that the army camp was smaller than previously thought, and no excavations were conducted there; the Late Roman period army camp was in another location, or, in the mid-fourth century, the Late Roman army camp had been rebuilt, and (5) the area south of Nahal Beersheva was settled for the first time during the Late Roman period, and several rural villages and farmsteads were built.

During the Byzantine period the area showed the highest density of sites, as well as in terms of population. Christianity became the main religion in the area, as evidenced by the large number of churches and monasteries, especially in the city of Be'er Sheva ( $n=6$ ). However, most likely the majority of the population was polytheist until the fifth century CE. Only in the late fifth, beginning of sixth century CE, did the full Christianization of the area take place, when it is assumed that large parts of the population converted to Christianity. Several excavated churches with a *baptisterium* were found in the northern Negev. Several large villages, some with churches, were founded. Be'er Sheva became the largest and most important urban center of the region, with a monumental church, additional churches and monasteries, an army camp, bathhouses, and houses and villas with mosaic floors. The city, which was located at an important crossroads, to Gaza/Ashkelon to the northwest, Hebron/Jerusalem to the northeast, Elusa to the southwest, and to Tel Malhata and the Dead Sea to the southeast, had no city wall. The city was surrounded by industrial areas: a pottery workshop, winepresses, dovecote towers, and fish-farming pools, as well as tombs and cemeteries. Be'er Sheva grew sharply at the end of the third and during the fourth centuries and reached its peak during the sixth to seventh centuries CE, where it probably reached its largest area at 90 to 140 ha. There is no evidence of destruction or abandonment at the end of the Byzantine period in Be'er Sheva, as many structures also showed large quantities of Early Islamic pottery. Furthermore, in most cases, it is not possible to distinguish between Late Byzantine and Early Islamic pottery as the same pottery continued to be used in the second half of the seventh century CE. There is evidence that several of the churches and other public buildings continued to function during the Early Islamic period.

The Byzantine and Early Islamic periods in the central study area can be characterized as following: (1) most Byzantine period farmhouses and villages, as well as the city of Be'er Sheva, remained uninterrupted into the Early Islamic period—there are no signs of destruction or abandonment at the end of the Byzantine period. (2) Several large rural estates were built in the hinterland of Be'er Sheva, as well as throughout the northern Negev during the Early Islamic period.

(3) many structures show a new construction phase at the end of the eighth century, when rooms were made smaller or added and other changes to the structure were conducted. Most of these additions included dressed stones and architectural elements in secondary use. Additionally, (4) these changes seem to join with the end of the Umayyad period and the beginning of the Abbasid period in the mid-eighth century CE. (5) Settlements were either abandoned during the mid-to-late eighth century CE or continued to be settlements until the late ninth/early tenth century CE. (6) By the late ninth/early tenth century CE, most settlements in the central study area were abandoned. (7) The majority of churches continued to be in use at least until the early eighth century, some longer, either as a church or for secular usage, and (8) socio-political changes were gradually introduced during the Early Islamic period. Mosques were built first in urban centers, such as Jerusalem or Ramle. Early Islamic mosques in rural environments such as the northern Negev were rare. In the three study areas, only two possible mosques were discovered in the eastern study area, as well as two outside the central study area near Rahat. It seems that the city of Be'er Sheva was populated until the late ninth or early tenth century CE. However, by the mid-eighth century, its size must have been smaller than in the previous period.

#### *Eastern Study Area*

In the eastern study area, 438 identified sites were added to the database. These sites had been discovered and recorded during past surveys, inspections, trial trenching, and excavations. Of these sites, 371 were single-period sites, and 67 were multi-period sites. Four sites were occupied during the Hellenistic through Early Islamic periods. However, none of the sites were inhabited without interruption. The majority of multi-period sites were settled during three periods, either Hellenistic–Early Roman, Late Roman–Byzantine, or Byzantine–Early Islamic. It seems that all sites that were settled during the Hellenistic period were abandoned and, in the Early Roman period, resettled. As in the central study area, Tel Malhata shows a similar occupation history to Tel Sheva. Both Iron Age tells have Roman and Early Islamic fortresses on top of them and a civil settlement at the foot of the tell. They are located close to the main route connecting Gaza with the Dead Sea during the Classical period.

The study area shows the following general trends during the timespan of the Classical period. First, there was relatively low settlement activity in the Hellenistic and Early Roman period. The settlement history during the Hellenistic period can be divided between the Ptolemaic/Seleucid rule and the Hasmonean period. The largest site was Tel Ira during the Hellenistic period, and some of the Hellenistic sites were settled continuously during the Hasmonean period and abandoned afterwards. Most of these sites were resettled in the Early Roman period.

In contrast to the other two study areas, many sites contain fortifications. This might be due to the border with the Nabatean kingdom, or perhaps because many sites were located in more isolated spots and needed, therefore, greater protection. However, many fortresses and fortified manor houses with towers have been discovered during surveys or excavations in the eastern study area that date both to the Hasmonean period and later the Early Islamic period. During the Late Hellenistic/Early Roman period, many sites show “Jewish” occupation. Most of these sites were abandoned at the latest by the Second Jewish revolt (135 CE). After the Second Jewish Revolt, a few sites were occupied during the second and early third century CE, as for example, the fortress on top of Tel Malhata.

In the Late Roman period, toward the late third and early fourth centuries, settlement activities started to rise again. Based on the coin-finds, a rise is particularly visible during the final quarter of the third century CE. This might be connected to the reforms by Diocletian (284–305 CE). Larger sites like Tel Ira and Tel Malhata/Moleatha were resettled, and new settlements were constructed. The highest site density during the Classical period was during the Byzantine period. During the Islamic period, the number of sites dropped to 49. However, Late Byzantine pottery continued to be used at the beginning of the Early Islamic period, meaning that most sites were not abandoned right after the Arab conquest, but rather continued to be settled, and over time were gradually abandoned. This is shown by churches and monasteries, most of which continued into the Early Islamic period, but were then abandoned at some point during the late seventh–early eighth centuries CE. The same might be true for settlements. However, about one-fifth of the sites persisted into the late eighth/ninth centuries CE, if not longer.

### **Significance of the study and contribution to new knowledge**

The northern Negev shows a long settlement history. As the region is a transitional steppe zone, which allows still dry-farming practicability, factors such as climate, politics, economic or social can strongly influence the settlement patterns. The thesis analyzes the dynamics of the settlement patterns and its changes and ties the changes to different factors behind the changes.

The importance of the research lies in the synthesis of a large dataset, using new tools that have not previously been applied, thus offering both a more detailed perspective on settlement change and testing these methods in an environmentally sensitive zone. This has general implications for understanding how peripheral zones operate historically. Beyond examining historically specific trends, broad conceptualizations of how arid peripheries work on the edge of empires will be developed.

Analyses of the three study areas show that relative settlement density in all three areas is similar. After the early second century CE, only a handful of set-



tlements existed in the northern Negev, with a strong rise towards the end of the third century CE, which is most likely connected to the reforms by Diocletian. Over 60% of all sites date to the Byzantine period. The growth of population and settlements during the Byzantine period is impressive. Research suggests that the population of Palestine was between one and several millions, reaching its peak in the mid-sixth century CE. Based on the analyzed data, the population of the northern Negev in the mid-sixth century probably exceeded 100,000 people. Large urban centers only existed during the Byzantine and Early Islamic period in the northern Negev. All larger urban centers in the northern Negev had their foundation in the Late Roman–Early Byzantine period, most in the mid-to-late Roman period. The date of abandonment of urban settlements varies. But, within the three study areas, no difference according to area is evident, showing that those urban sites were abandoned between the seventh and 10th/11th century CE. In the northern Negev, most sites were abandoned during the eight/ninth centuries CE ( $n = 46\%$ ), but about 30% of the sites continued beyond the ninth/tenth century. Only 16% ( $n = 2$ ) of sites were abandoned in the late seventh century CE. In general, one can say that over 75% of all large sites continued at least until the eight/ninth centuries CE. The largest site in the study area, the city of Be'er Sheva, was probably abandoned in the ninth/tenth century CE. By analyzing cult sites over these periods, it is evident that religion and probably also parts of the population changed several times during the Classical period. Based on the establishment of churches, most of the population did not become Christian before the fifth century CE. Christianity then became the main religion, most likely until the eighth century CE. The earliest churches were built in the northern Negev in the fifth century CE, and the majority of churches were built in the sixth century. Most churches were abandoned in the eighth century and the same is true for the monasteries found in the study areas.

The thesis reports on the dynamics of settlement patterns and changes as well as the different catalysts for change. Furthermore, it shows changes in population and culture of the inhabitants of the northern Negev over a long-time span. As the study shows, the influence of the different catalysts of change, the urban centers of the entire Negev, could be analyzed in a future study, applying the different factors outlined in this thesis to reach a final conclusion on the reasons for the rise and fall of the settlements in a desert environment. The thesis has also documented ways to incorporate legacy survey data into archaeological research, as well as noting limitations of the use of such data for this kind of research. Legacy survey data have become more and more important, as many archaeological sites are being destroyed, through construction, agriculture, erosion etc. In many cases, only legacy survey data of settlements exist, therefore working with such data is essential for future archaeological research.

**Keywords:** settlement patterns, settlement history and shifts, Classical period, Late Antiquity, northern Negev, spatial analysis, GIS, archaeology of the Be'er Sheva–Arad valley, Be'er Sheva, population, forces of change