

# **Elusa – Urban Development and Economy of a City in the Desert**

**Christian Schöne – Michael Heinzelmann –  
Tali Erickson-Gini – Diana Wozniok**

Elusa was the most important urban center in the northern Negev during the Roman and Byzantine periods. Situated on a rock plateau at the confluence of two wadis, Nahal Besor and Nahal Atadim, ca. 45 km south-east of Gaza, the site provided year-round availability of groundwater that was made accessible by deep wells. Elusa was also located on a significant intersection of two important trade routes: the Incense Route, also called the Petra-Gaza Road, which led from the Arabian Peninsula via Petra to Gaza, and an older inland route running parallel to the Mediterranean coast, referred to as the Way of Shur (fig. 1). The site was originally founded by the Nabataeans during the 3<sup>rd</sup>/2<sup>nd</sup> centuries BCE as a caravan station. From the Early Roman period, this well-situated station developed into the administrative, economic and cultural center of the entire region. However, the decline of Nabatean long-distance trade in the Middle Roman period brought about an economic realignment in which the intensive agricultural exploitation of the area took place, possibly aided by improved climatic conditions with slightly higher precipitation and the development of a sophisticated system of water management. The latter included the development of run-off farming, spread over an area of 2000 km<sup>2</sup> with high yields, created in a semi-arid environment. One of the most profitable products was wine that was exported throughout the eastern Mediterranean in significant quantities even reaching Italy, Gaul and Britain.<sup>1</sup> Several of the former caravan outposts in the region such as Shivta, Mamphis, Oboda, Nessana and Rehovot-in-the-Negev, turned into prosperous agrarian settlements with spacious homes and richly-endowed churches, but remained at a village or proto-urban development status. Elusa was the only site that emerged as a veritable *polis*, eventually covering ca. 45 hectares of an urban area with approximately 5,000 inhabitants (fig. 2). Its urban character is emphasized by the existence of the only theater in the region, probably constructed in the 2<sup>nd</sup> century CE, large thermal baths, and lavishly paved streets partially flanked by porticoes. The role of Elusa as an administrative center in Late Antique sources corresponds to the fact that from the 4<sup>th</sup> century CE it became a bishop's see and was home to a well-known school of rhetoric. In addition, in this period it became an important station on the major Christian pilgrimage route to the Sinai.<sup>2</sup>

Against the background of the precarious situation of a city on the semi-arid fringe of a desert, the large population and urban dynamics of Elusa are remarkable, especially in a period of increasingly difficult political and economic conditions. Only later in the 6<sup>th</sup> century CE a gradual process of degradation became apparent, possibly reinforced by a decline in population as a result of the so-called "Justinian Plague" and changes in climate. The Islamic conquest of the region in the 7<sup>th</sup> century CE took place when Elusa

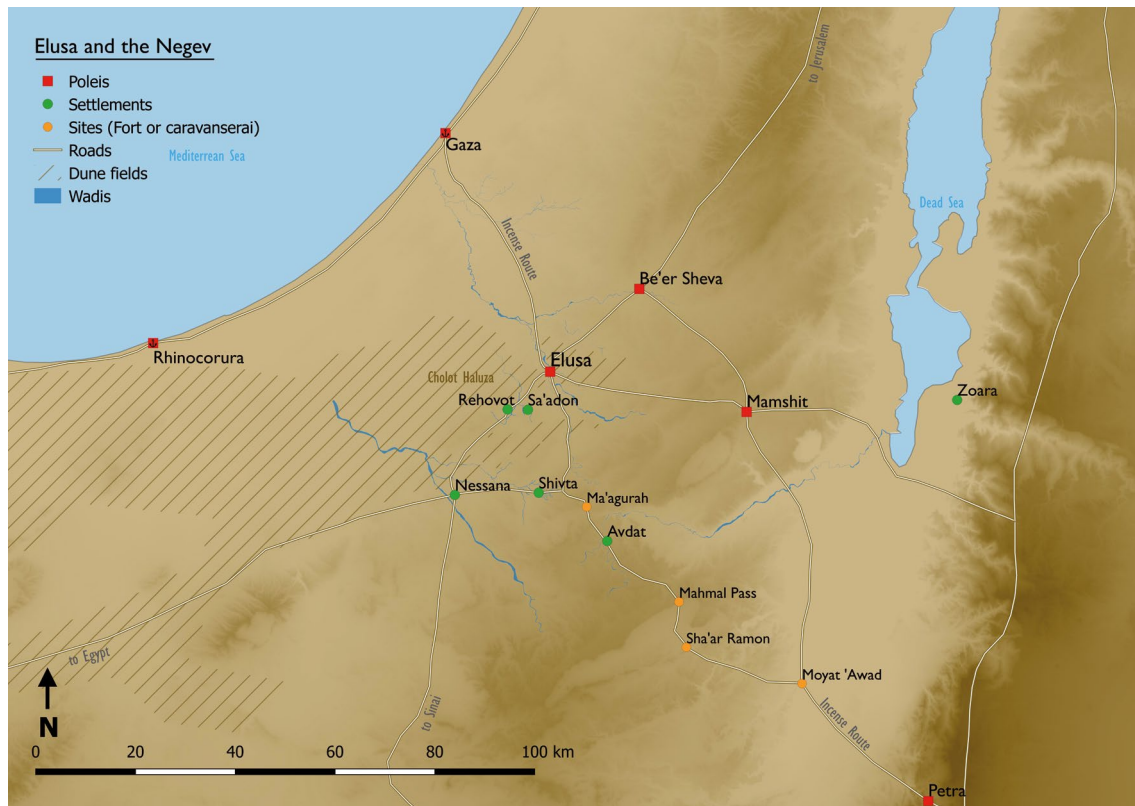


Fig. 1: Sites and routes in the Negev.

was in a phase of ruralisation and urban decline. The city was apparently abandoned by the second half of the 8<sup>th</sup> century CE.

### Archaeological Exploration of the Site

Investigations in Elusa, identified as early as 1838 by E. Robinson, have been infrequent until recent years.<sup>3</sup> The most important findings were those of A. Negev,<sup>4</sup> who was able to detect and excavate the theater and the supposed cathedral of the city. However, a systematic and diachronic study of the city was not carried out until recently. Thus, the aim of this project is to understand the structure and long-term development of the city against the background of the historical and economic conditions of the Hellenistic, Roman, Byzantine and Early Islamic periods. To investigate the site, a multi-disciplinary approach was followed that included a combination of extensive geophysical prospections, a systematic archaeological survey, the evaluation of aerial and satellite images and the creation of a high-resolution digital terrain model (DTM). In addition, targeted stratigraphic excavations were carried out at selected points



Fig. 2: Elusa. Aerial overview from South.

in the city in order to verify the results of the geophysical prospections in order to gain chronological information. All find categories are systematically being analyzed with a special interest in the economic development of the city. Furthermore, a geo-archaeological component is dedicated to the question of land use in the surrounding area. A total of four seasons have been conducted in the site between 2015 and 2018.

In 2018, the geophysical prospection of the city, conducted since 2015, was completed, covering the entire 45 hectares of the city (fig. 3). The processing of the resulting data is as yet incomplete, but some preliminary assertions about the urban layout can be made. The city measures approximately  $800 \times 600$  m. Structures and streets cover the entire area without a gap with only a few visible open spaces. One of these is a square in front of the atrium of the presumed cathedral of the city.<sup>5</sup> Interestingly, the other spaces are in the urban fringes, situated at the termination of main streets and marked by gaps in the waste mounds surrounding the city. They may be connected to trade and caravan activities that served as areas for loading and unloading goods. The preliminary map of Elusa (fig. 4) shows an irregular layout. There is no orthogonal street system, but some level of organization can be observed: long streets are oriented south-east to north-west, connected by smaller alleys, forming more or less rectangular *insulae*. Along some of the main streets porticoes are present, as have been ascertained by a number of sondages. All the streets are contorted and change direction and width. Additionally, many streets are cul-de-sacs, ending in residential quarters. This feature has been revealed in other, smaller settlements in the Negev and has been interpreted as indicator for clan based social structures with one extended family inhabiting a whole quarter.<sup>6</sup> Thus, the structure and layout of the city may be a hybrid of Mediterranean influences and local rural traditions.



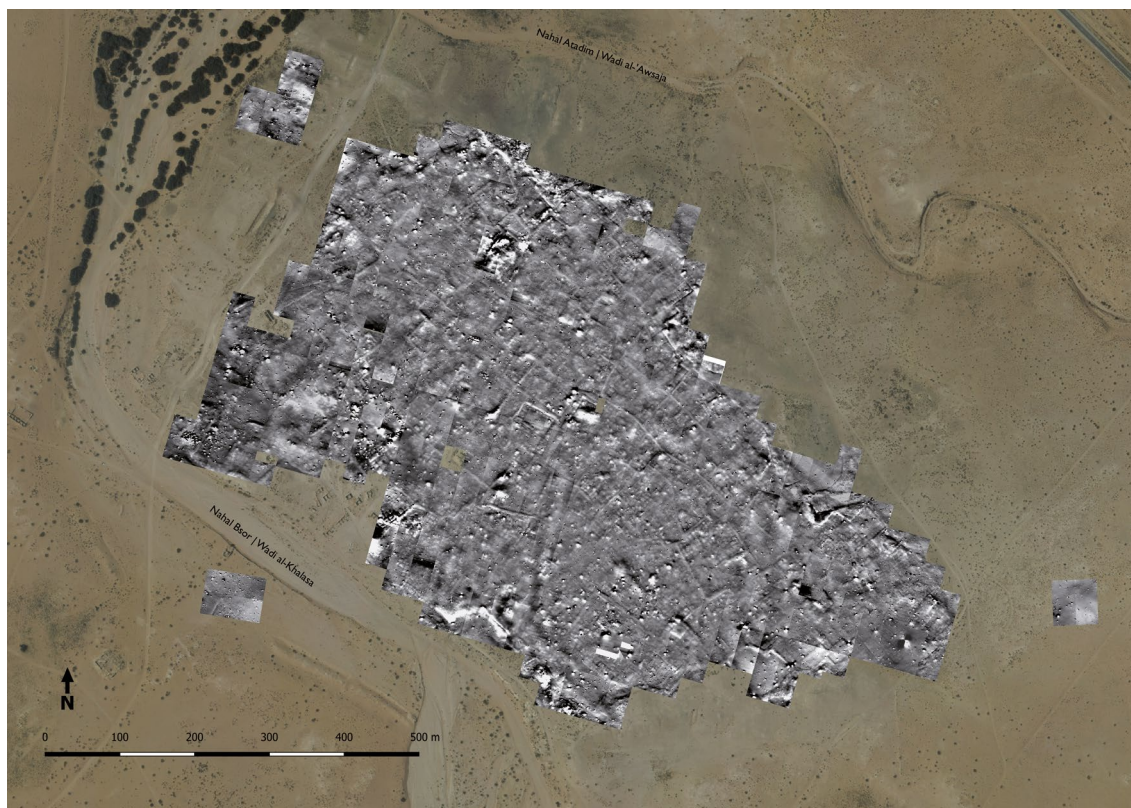


Fig. 3: Preliminary results of magnetometry mapped on aerial photo.

Another approach implemented is archaeological survey. Instead of an intensive ceramic survey, our survey focuses on the collection of several groups of indicative materials (fig. 5). For example, bricks seem to occur solely in relation to furnaces, kilns or bathhouses. Roof tiles always seem to be related to churches while the secular buildings in Elusa had flat roofing. The appearance of a large number of glass-tesserae in the survey is striking. These may be ascribed to mosaic decoration inside churches and their provenance together with tiles and fragmented marble is a very strong indicator for extant churches. These findings have enabled us to identify several additional churches and at present, at least nine churches are indicated. Both geophysical and archaeological survey benefited greatly from today's flat surface of the city due to the previous spoliation.

Our research at Elusa has benefited from the ancient and early modern spoliation of the site. Based on both the geophysical and archaeological survey, several small-scale stratigraphical sondages were conducted to investigate selected points to get information about emergence and chronology of the site. Where the virgin soil or bedrock was reached, the stratigraphy from ancient times to modern surface is approximately 4.5 m in height.

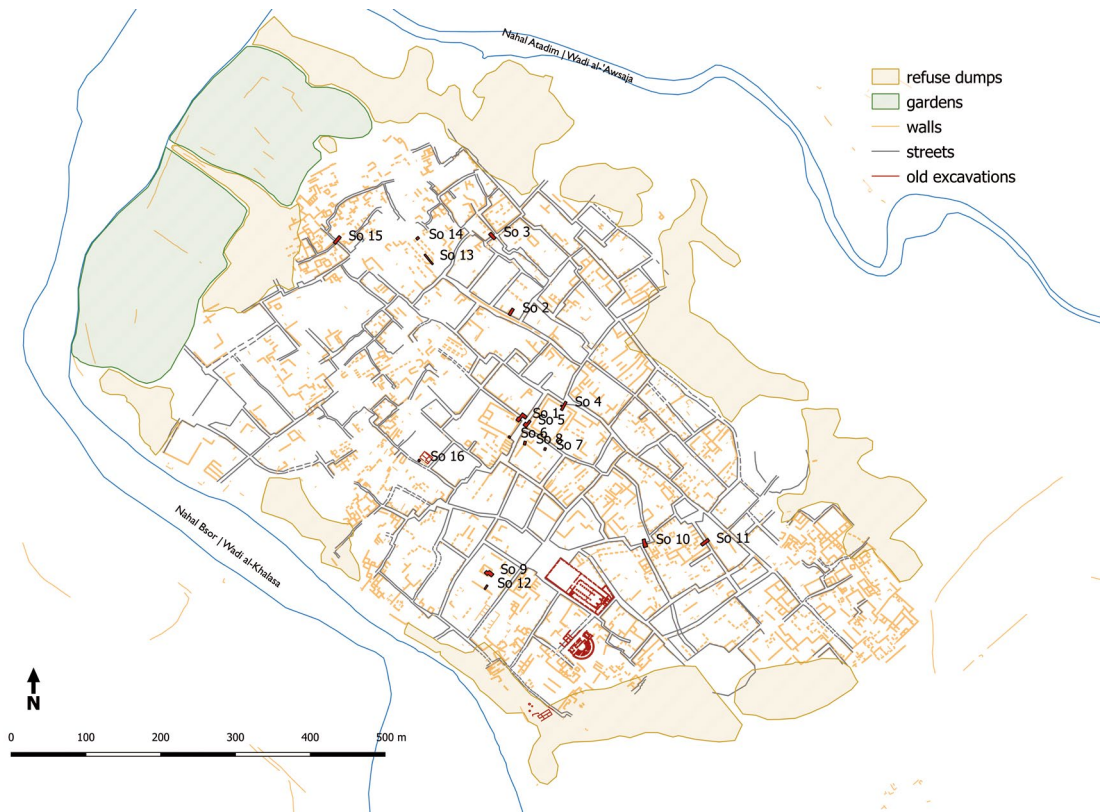


Fig. 4: Preliminary layout of the city.

### Development of the city

The earliest ceramic evidence found in Elusa dates to the 3<sup>rd</sup> century BCE. An inscription found by L. Woolley and T. E. Lawrence was dated to the 2<sup>nd</sup> century BCE.<sup>7</sup> These early traces may underline the establishment of a trade outpost at the site in this early period but hard evidence for the beginning of settlement activity is still missing.

The first settlement phase with clear evidence dates to the 1<sup>st</sup> and 2<sup>nd</sup> centuries CE. At this time, massive building activity started with the construction of streets. These early streets mostly consisted of compressed limestone-chips that created a very hard surface. Typically, brownish layers of waste are deposited over them, followed by the next street layer made of the same limestone-chip technique. In combination with the dated pottery finds, this clearly documents periodic street-renewals every 20 to 25 years creating a stratigraphy of several dozens of layers of use on top of one another. In the 1<sup>st</sup> and 2<sup>nd</sup> centuries CE, the first known buildings were erected. The excavations prove a distinct phase of the city's prosperity in the 4<sup>th</sup> to 6<sup>th</sup> centuries CE. In this period, several spacious buildings, some public and some private, were erected, renovated or replaced. These include a structure with a central courtyard surrounded by a peristyle



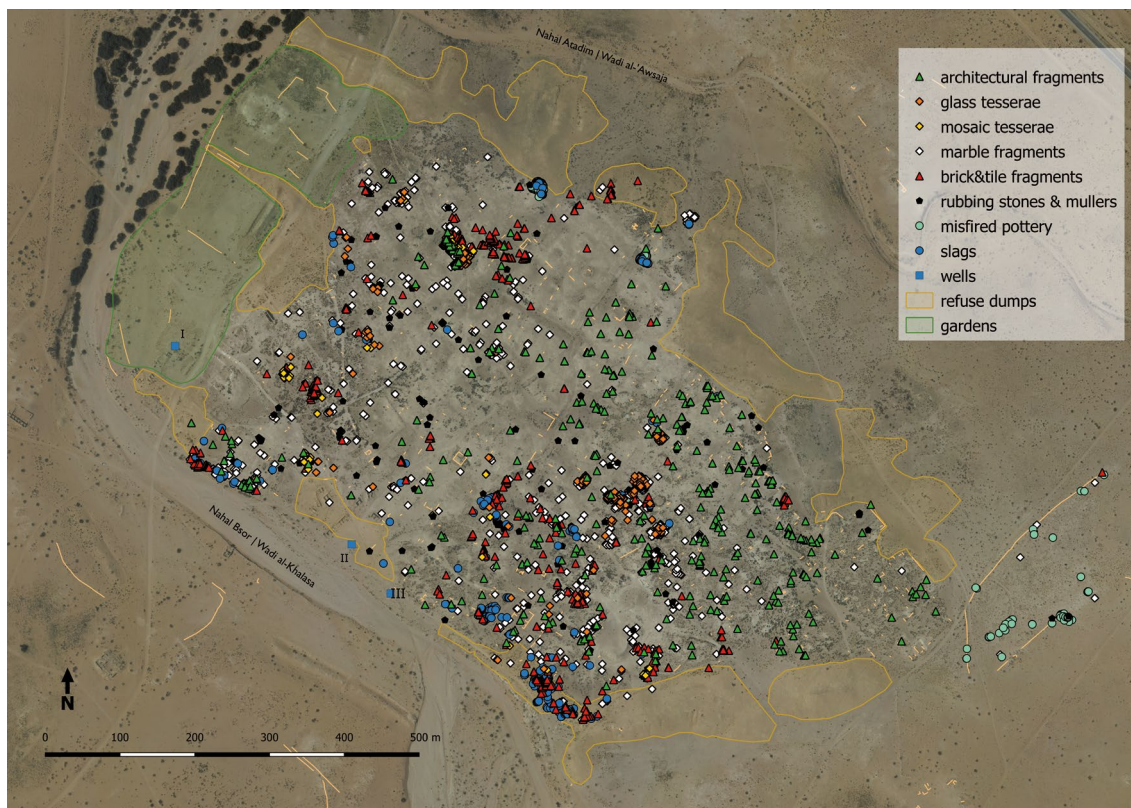


Fig. 5: Mapping of survey data.

and several uniform rooms, investigated in Sondages 4 and 5. The courtyard was paved and contained a large cistern, as indicated by magnetometry. A portico was added along the main street during a later phase of renovation. The large quantities of amphora sherds found may indicate some connection to trade activities, possibly as an emporium.

Two other structures are tower-houses: rectangular multistory buildings with massive stone walls with blocks up to 1.77 m in length. They are incorporated into large building complexes and appear to lie adjacent to courtyards, as magnetometry points out. The first excavation of a tower-house was completed by Sondage 9. Surprisingly, ceramic finds dated its construction to the 5<sup>th</sup> century CE, later than expected. To prove these results, another investigation of a tower-house was conducted in a later campaign. This second tower-house was previously excavated by A. Negev in the 1980s but was never published. Here, Sondage 16 revealed an undisturbed stratigraphy. Ceramic finds from the foundation trenches dated to the 4<sup>th</sup> century CE.

A particularly remarkable feature is the extensive street pavement (fig. 6), which was discovered in trenches at several points of the city (Sondages 1, 2, 3 and 5). It appears to be extant throughout the city and was also constructed in the mid-5<sup>th</sup> century CE. A number of sondages revealed that some of the larger paved streets were adorned with



Fig. 6: Sondage 1. Example for the city-wide street pavement.

porticoes. This type of high-quality street construction found throughout the city is a strong indicator for the economic strength of Elusa. It also attests to the necessity of a high level of public administration in which the streets were periodically renewed. Consequently, some sort of organized waste-management and street cleaning must have taken place in ancient Elusa that prevented the accumulation of new layers of waste. This evinced by the presence of several waste mounds on the urban periphery. They are clearly visible in the DTM and at present they cover over 14 hectares, reaching heights of up to 12 m. The mounds contain mostly sand, ashes and pottery, forming a fine, undisturbed stratigraphy. They also contain organic remains including bones, seeds and coprolites. Thus, they are archaeological archives with enormous potential as





Fig. 7: Sondage 3. View inside the open sewer and onto the complex street stratigraphy.

can be seen in recent investigations carried out by Bar-Oz, Weissbrod and Erickson-Gini (2016).

A related element is the elaborate water collection system in the site. This includes the inclination of the street pavement towards the center of the city, creating a gigantic surface that collected rain water and conducted it towards several cisterns. Additionally, the basic water needs were supplied by a number of wells that tapped the ground water accessible only a few meters below the surface. This source appears to have been brackish water used for animal husbandry and agricultural purposes.



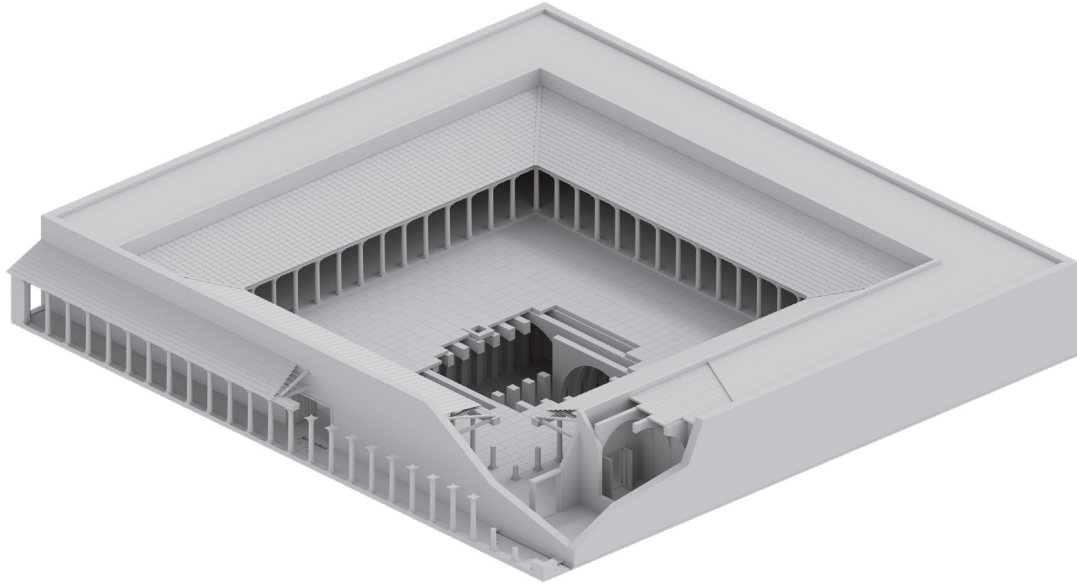


Fig. 8: Peristyle building. 3D-visualisation.

Another significant element was a massive sewer-system constructed in the later phases below the streets. The first evidence for this was detected in Sondage 3 (fig. 7), where a well-maintained sewer channel was discovered that was fully accessible to a length of at least 85 m. Several buildings on both sides of the street drained into it. The construction of this sewer channel is apparently related to the large public bathhouse along the same street. It conducted water to garden areas in the periphery of the city where it was used for agricultural purposes. The scale of the sewer channel may also indicate heavy rains. A second sewer channel was uncovered during the most recent field season. There is a distance of 500 m between these two channels and it is not yet clear as to whether there was a city-wide system or two local channels. However, this will be investigated further in the following campaigns.

Our excavations show clear signs of transformation processes later, during the 7<sup>th</sup> century CE. All of the excavation trenches revealed traces of the destruction of buildings and wall collapse are common. Often spoliation took place. The occurrence of thick layers of aeolian sands in between the collapses of the 7<sup>th</sup> century CE, indicate a huge input of sand during this period that is a very interesting feature during these late phases. In between the collapsed structures there is clear evidence for continued settlement activity. For example, two olive presses were revealed on top of streets, indicating the relocation of agricultural installations into the urban space, a feature that may indicate ruralization. Apparently, by the second half of the 8<sup>th</sup> century CE, the city was completely abandoned.

Based on these approaches, several conclusions can be drawn which are related

to the settlement's infrastructure or its relationship to its surroundings including the production of goods, the supply of services and trade.

### **Craft production**

There are several instances of craftsmanship inside the city. One pottery workshop was excavated and investigated in detail in the late 1990s.<sup>8</sup> Seven additional pottery kilns were discovered in the recent archaeological survey. These were all situated in the periphery of the city, often on the slopes of the waste mounds. Several additional findspots with misfired pottery in the near suburban surrounding of Elusa may indicate further pottery workshops, something which has yet to be verified. Furthermore, there is clear evidence for ironworking in Sondage 2. Glass processing is also indicated although as of yet no workshop has been identified. Both milling stones and mullers occur ubiquitously on the site, indicating both domestic grinding in all households as well as specialized mills that point to the existence of commercial bakeries.

### **Trade**

Trade played a major role during the early phases of the settlement and it certainly continued throughout the history of the site, albeit at a reduced scale. International trade was eventually replaced by local production that became the object of trade. Marble was imported in high amounts to the city. Probably the most valuable export was wine, which was exported in high quantities throughout the eastern Mediterranean, even reaching Italy, Gaul and Britain.<sup>9</sup>

Similar to the peristyle building (fig. 8), many structures probably had mercantile functions. Several similar structures lie along the periphery of the city, often next to the open spaces. These are most probably closely related to trade. Two levels of trade can be assumed, first: the local interaction between the city of Elusa and its surroundings. Locally produced crafts were traded for rural goods, that were mostly agricultural in character. Husbandry may have also played an important role. The second level is long-distance trade, for example, there is clear evidence for imported fish from the Mediterranean and the Red Sea.<sup>10</sup>

Interestingly, there is no evidence for *tabernae* inside the city. This may be related to the small scale of the archaeological investigations but also may indicate other forms of organization of trade. Most of the streets are 7.5–8 m wide, a width that permits for spaces that could have been used for crafts, exchange and social interaction while also providing shade. Multi-functional use of exterior urban space is known in many arid regions.<sup>11</sup> Special or high-quality goods may have been traded in buildings like the peristyle building.

### Services

The provision of services for both its citizens and the surrounding population is a typical urban feature. The high level of cultural services is well represented by the theater, the only structure of its kind in the Negev. Elusa was famous for its school of rhetoric, something that indicates a high level of local education, as antique sources evince.<sup>12</sup> Furthermore, the city became a regional center of administration and jurisdiction, as can be seen in the Nessana papyri.<sup>13</sup> A courthouse is historically verified to have been located in the city,<sup>14</sup> and a professional lawyer was resident of the city.<sup>15</sup>

The city also became a religious focal point, with as many as nine churches inside the settlement, one of which was a cathedral. The city was known to have been a bishop's see from at least the first half of the 5<sup>th</sup> century CE.<sup>16</sup> It also provided lodging for the many pilgrims travelling to and from Sinai.

Further professional services, such as medical care, have yet to be found but can be assumed with a high probability.

### Agricultural production

In the near vicinity of the city land was used for agricultural production. Several hectares of gardening areas have been identified next to the wadis, and flood and waste water was used to farm grain, vegetables and fruits on the fertile loess soil. Household wastes were used to manure these gardens. In the wider suburban terrain, several dozens of small sites were identified in the survey that may have been farms. Often, cisterns were found at these locations that will be investigated further in upcoming campaigns. Interestingly, many of these areas with presumed farms are not suited for run-off farming. A high quantity of large swine bones found inside the city point to swine raising within or next to the city. Because pigs consume high amounts of water, this seems rather extraordinary.<sup>17</sup>

In the Early Islamic period transformation processes took place and agricultural production moved into the city, as proven by the wine presses in Sondages 3 and 11, an indication of a change towards a more rural character of the site.

### Conclusions

The multi-disciplinary approach with a combination of geophysical prospections, archaeological survey and small-scale stratigraphical excavations provides a wide spectrum of information regarding the structure and development of Elusa,<sup>18</sup> covering the complete period from its foundation in the 3<sup>rd</sup>/2<sup>nd</sup> centuries BCE until its final abandonment in the 8<sup>th</sup> century CE. However, past investigations have already proven



the importance of Elusa as a significant economic hub in an arid region. In order to further verify these conclusions and gain deeper understanding of the interactions of the city, further investigations of suburban and supraregional areas are scheduled for upcoming seasons.

### Notes

<sup>1</sup> cf. Evenari et al. 1955, 231–268; Negev 1983, 208–214; Erickson-Gini 2010, 51–53. 65–77; Röhl 2011, 258–275; regarding the climate McCormick et al. 2012, 185–199; Enzel – Bar-Yosef 2017.

<sup>2</sup> Mayerson 1983, 47.

<sup>3</sup> Robinson – Smith 1860, 201 f. Cf. also Elliot 1982.

<sup>4</sup> Negev 1976; Negev 1983; Negev 1993.

<sup>5</sup> Basilica A was investigated by A. Negev as well as H. Goldfus, B. Arubas and P. Fabian: Negev 1993, 379–383; Arubas – Goldfus 2008, 1713–1715.

<sup>6</sup> Röhl 2011, 89. 145.

<sup>7</sup> Woolley – Lawrence 1914/1915, 138 f.; Negev 1993, 1715; Hackl – Jenni – Schneider 2003, 379 f.

<sup>8</sup> Arubas – Goldfus 2008, 1713–1715; Goldfus – Arubas – Bowes 2000.

<sup>9</sup> cf. note 1.

<sup>10</sup> For a more detailed report on the archaeozoological finds see also S. Lehnigs contribution: Heinzelmann et al. 2017.

<sup>11</sup> Shepperson 2017, 91.

<sup>12</sup> Keel – Kuchler 1982, 151.

<sup>13</sup> Kraemer 1958.

<sup>14</sup> Kraemer 1958, 89.

<sup>15</sup> Seeck 1906, 131.

<sup>16</sup> Keel – Kuchler 1982, 152.

<sup>17</sup> For a more detailed report on the archaeozoological finds see also S. Lehnigs contribution: Heinzelmann et al. 2017 (in print).

<sup>18</sup> For more detailed reports on the project: Pickartz – Tezkan – Heinzelmann 2015; Heinzelmann – Erickson-Gini 2015; Heinzelmann et al. 2017.

### Image Credits

Fig. 1–7: Elusa Project Archive. – Fig. 8: D. Hinz.

## References

### **Arubas – Goldfus 2008**

The New Encyclopedia of Archaeological Excavations in the Holy Land V (2008) 1713–1715 s. v. Elusa (B. Arubas – H. Goldfus).

### **Bar-Oz – Weissbrod – Erickson-Gini 2016**

G. Bar-Oz, L. Weissbrod and T. Erickson-Gini, *Haluza. Excavations and Surveys in Israel* 128. [http://www.hadashot-esi.org.il/report\\_detail\\_eng.aspx?id=24991&mag\\_id=124](http://www.hadashot-esi.org.il/report_detail_eng.aspx?id=24991&mag_id=124). Accessed July 21, 2019.

### **Elliot 1982**

J. D. Elliot, *The Elusa Oikoumene. A Geographical Analysis of an Ancient Desert Ecosystem Based on Archaeological, Environmental, Ethnographic, and Historical Data*, Occasional Papers of the Mississippi State University 82, 1 (Starkville 1982).

### **Enzel – Bar-Yosef 2017**

Y. Enzel – O. Bar-Yosef (eds.), *The Quaternary of the Levant. Environments, Climate Change and Humans* (Cambridge 2017).

### **Erickson-Gini 2010**

T. Erickson-Gini, *Nabatean Settlement and Self-Organized Economy in the Central Negev. Crisis and Renewal*, BARIntSer 2054 (Oxford 2010).

### **Evenari et al. 1955**

M. Evenari et al., *The Ancient Desert Agriculture in the Negev*, IEJ 8, 1955, 231–268.

### **Goldfus – Arubas – Bowes 2000**

H. Goldfus – B. Arubas – K. Bowes, *New excavations in the East Church at Halutza (Elusa)*. Preliminary report, JRA 13, 2000, 331–342.

### **Hackl – Jenni – Schneider 2003**

U. Hackl – H. Jenni – Ch. Schneider, *Quellen zur Geschichte der Nabatäer* (Freiburg 2003).

### **Heinzelmann – Erickson-Gini 2015**

M. Heinzelmann – T. Erickson-Gini, *Elusa. Eine nabatäische Metropole im nördlichen Negev*. Vorbericht zu den Kampagnen 2015 und 2016, KuBA 5, 2015, 111–136.

### **Heinzelmann et al. 2017**

M. Heinzelmann – T. Erickson-Gini – Ch. A. Schöne – F. Jordan, *Elusa*. Vorbericht zu den Kampagnen 2017 und 2018, KuBA 7, 2017 (in print).

### **Keel – Kuchler 1982**

O. Keel – M. Kuchler, *Orte und Landschaften der Bibel. Ein Handbuch und Studien-Reiseführer zum Heiligen Land* (Zürich 1982).

### **Kraemer 1958**

C. J. Kraemer, *Excavations at Nessana III. Non-Literary Papyri* (Princeton 1958).

### **McCormick et al. 2012**

M. McCormick et al., *Climate Change during and after the Roman Empire. Reconstructing the Past from Scientific and Historical Evidence*, Journal of Interdisciplinary History 43, 2, 2012, 169–220.

**Mayerson 1983**

P. Mayerson, The city of Elusa in the literary sources of the fourth to sixth centuries, IEJ 33, 1983, 247–253.

**Negev 1976**

A. Negev, Survey and Trial Excavations at Haluza (Elusa), IEJ 26, 1976, 89–95.

**Negev 1983**

A. Negev, Tempel, Kirchen und Zisternen (Stuttgart 1983).

**Negev 1993**

The New Encyclopedia of Archaeological Excavations in the Holy Land I (1993) 379–383 s. v. Elusa (A. Negev).

**Pickartz – Tezkan – Heinzelmann 2015**

N. Pickartz – B. Tezkan – M. Heinzelmann, Geophysikalische Multimethodenprospektion des archäologischen Fundorts Elusa (Israel). Vorbericht zu den Kampagnen 2015 und 2016, KuBA 5, 2015, 137–151.

**Robinson – Smith 1860**

E. Robinson – E. Smith, Biblical Researches in Palestine, and in the adjacent regions. A Journal of travels in the year 1838 (Boston 1860).

**Röhl 2011**

C. Röhl, Shivta. Architektur und Gesellschaft einer byzantinischen Siedlung im Negev, KölnJb 44, 2011, 233–358.

**Seeck 1906**

O. Seeck, Die Briefe des Libanius zeitlich geordnet (Leipzig 1906).

**Shepperson 2017**

M. Shepperson, Sunlight and Shade in the First Cities. A Sensory Archaeology of the Early Iraq (Göttingen 2017).

**Woolley – Lawrence 1914/1915**

C. L. Woolley – T. E. Lawrence, The Wilderness of Zin, Palestine Exploration Fund Annual 3, 3 (London 2003).