

# Zoara, the Southern Ghor of Jordan:

A Guide to the Landscape and Heritage of  
the Lowest Place on Earth

*by Konstantinos D. Politis*



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## Zoara, the Southern Ghor of Jordan:

### A Guide to the Landscape and Heritage of the Lowest Place on Earth

*By Konstantinos D. Politis*

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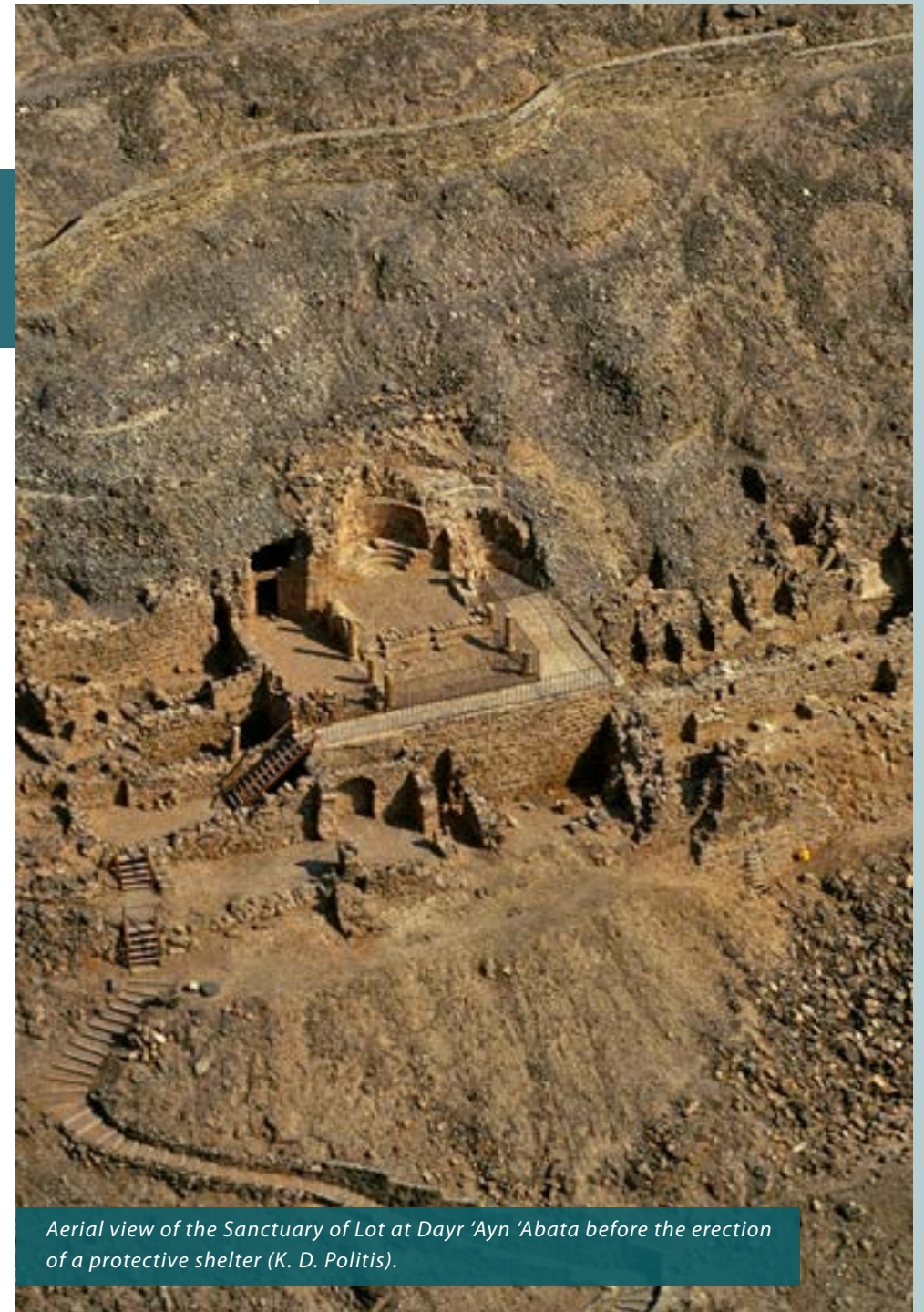
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# 1. Introduction

“Zoara” is the biblical and ancient name for the city and center of an area today called the Southern Ghor. This region comprises a number of wadis (valleys with seasonal watercourses) that run from east to west and have created alluvial fans (ghors) at the southeastern shore of the Dead Sea. This is the deepest part of the Great Rift Valley, which stretches from northwestern Syria to East Africa. It was in one of those ghors, as-Safi, that Zoara was founded, precisely at the lowest place on the Earth’s surface.

The environment of the Southern Ghor is unique. Lying on major geological vault lines and arid most of the year, it offers a wealth of natural resources such as mineral salts, bitumen, and sulfur. Furthermore, the exceptional climate allows for the cultivation of valuable plants. Wheat, dates, balsam, indigo, and sugarcane were prevalent cash crops in the past. Its geographic position, on a major crossroads of the Near East, facilitated trade in antiquity. Consequently, it flourished, creating its own rich cultural heritage that has spanned more than 10,000 years.

A similar situation still exists today, with the extraction, processing, and trade of potash, bromine, and magnesium. Likewise, farmers can easily grow and export agricultural products such as tomatoes, cucumbers, melons, and other summer crops. The weather is mild in the winter and warm and sunny during the rest of the year. Perennial springs guarantee a constant supply of freshwater. The diligent and innovative population of the Southern Ghor greatly contributes to its prosperity.



*Aerial view of the Sanctuary of Lot at Dayr 'Ayn 'Abata before the erection of a protective shelter (K. D. Politis).*

## 2. Location, Topography, Geology, and Climate

### Location and Topography

The Southern Ghor in modern Jordan features a series of wadis at the southeastern region of the Dead Sea, in the southern part of the Jordan Rift Valley, which is the lowest place on dry land in the world (Figs. 1.1, 1.2). This region is about 45 km long and varies in width from 1 km to 7 km, extending from the Wadi Ibn Hammad in the north to 18 km in the south at the Wadi Khunayzir. The eastern boundary of the area is the escarpment and rough landscape that forms the eastern edge of the Rift Valley and part of the structural trough bounded by mountains and filled with alluvial sediments derived from the bordering highlands. The highlands of the east side, as in the west, extend approximately 1,000 m above the valley and have a different environment from that of the valley floor where the Southern Ghor is situated.

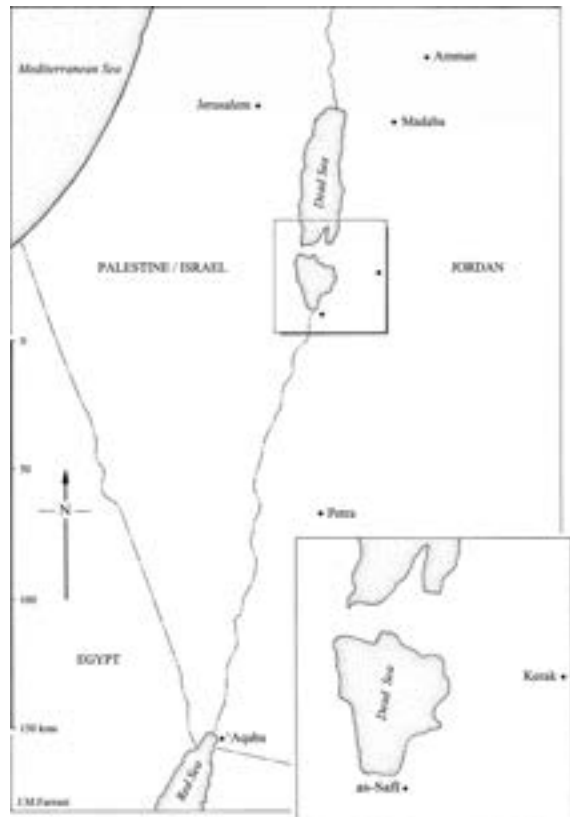


Figure 1.1. Map showing the Southern Ghor (inset) in modern Jordan (J. M. Farrant).



Figure 1.2. Satellite image of the southern end of the Dead Sea showing the Southern Ghor. The arrow marks the alluvial fan of the Wadi al-Hasa, flourishing with green vegetation in relatively arid environs (Landsat 4 path/row 174/38, 30 August 1990).



*Figure 1.3. Aerial digital image taken in 2000 of as-Safi, showing agricultural lands in the alluvial fan created by the Wadi al-Hasa, which runs southeast-northwest across the center of the photograph. The modern city of as-Safi is in the upper right (Royal Jordanian Geographic Centre no. 13260 153.20. 2859).*



*Figure 1.4. View from the west of the Wadi al-Hasa, which brings rich alluvial soils from the highlands down to the as-Safi plain, facilitating agriculture (J. Taylor).*

Ancient Zoara is centered in modern as-Safi (Palestine grid reference E 195, N 048), along the southeastern shore of the Dead Sea at about 300 m below mean sea level. It sits at the mouth of the Wadi al-Hasa, along the westward cuts in the earth's surface that result from erosion of the eastern highlands, intensified by increased water outflows from perennial springs that carry rich alluvial soils onto the valley floor. These two elements (water and soil) are fundamental to understanding the success of human settlements in the Southern Ghor for over 12,000 years.

The topography of the Southern Ghor is typical of the entire Dead Sea Rift Valley, formed by wadis. The Wadi al-Hasa, a major wadi on the eastern side of the Dead Sea littoral with the largest alluvial fan fed by the most constant and reliable water source, has formed the as-Safi plain (Fig. 1.3). The availability of water facilitated agriculture through the ages (Fig. 1.4). The average yearly base outflows of the Wadi al-Hasa into as-Safi have been graded at 810 liters per second, the highest in the region.



Figure 1.5. (left) View northeast across the Wadi al-Hasa and the Wadi Sarmuj to the Dead Sea Rift escarpment, with indications of geological and geomorphological formations (K. D. Politis).



Figure 1.7.a. (right) Late Cenozoic era fossilized sea urchin (K. D. Politis).



Figure 1.6. Main geological fault lines of the Dead Sea basin.

## Geology

The Southern Ghor lies at the lowest part of the Jordan Rift Valley, south of the Dead Sea, which the Bible refers to as the "Salt Sea" (Deuteronomy 3: 17; Joshua 3:16; Numbers 34: 12) and Arab writers call the "Sea of Lot." Because the region lies on major fault lines (Fig. 1.6), a deep rift manifests there and the geological formations can be clearly seen (Fig. 1.5). They represent all the major geological phases in Jordan. The oldest are Precambrian conglomerates and Nubian sandstones formed some 600 million years ago, sedimentary limestone and marl layers with flint bands created 150 million years ago, Late Cenozoic era colluvium laid down from 65 million years ago until today (Fig. 1.7a, b), Lisan marl deposited 70,000–12,000 years ago, and the modern alluvial riverbed sediments.



Figure 1.7.b Fossilized *Melanopsis* sp. shells found on shores of the Dead Sea, indicating ancient freshwater (K. D. Politis).

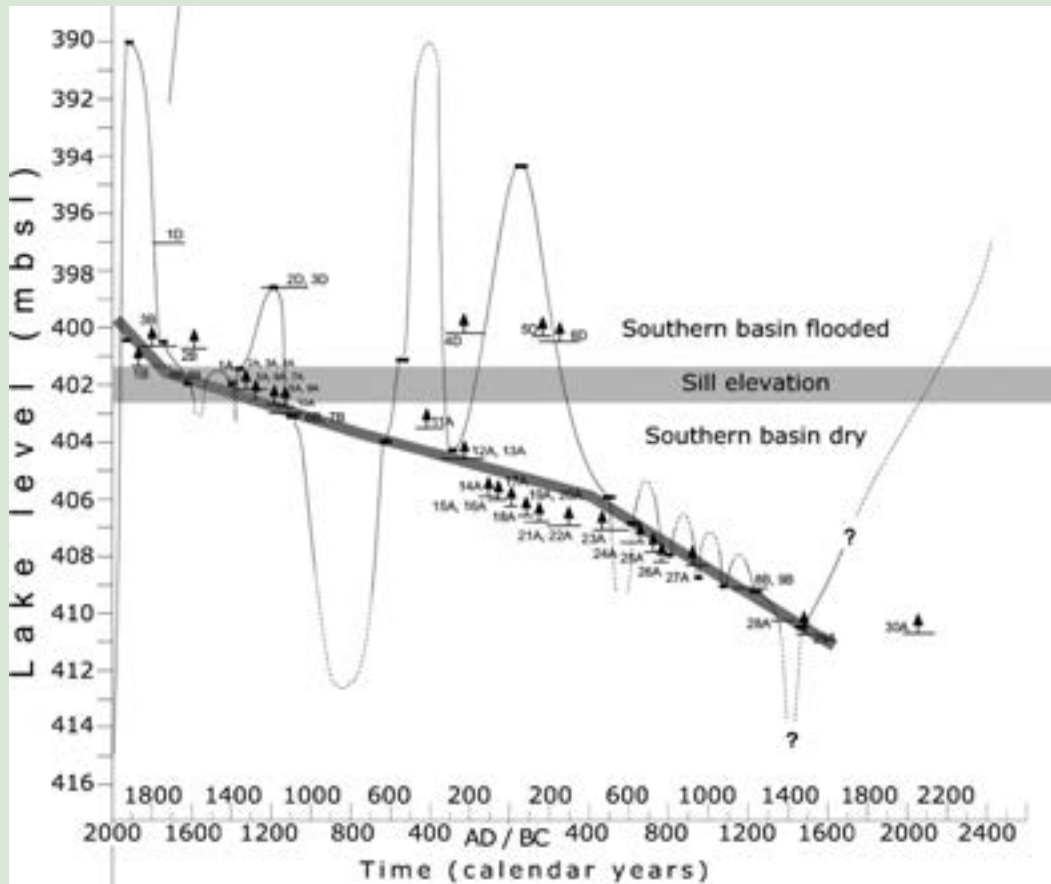


Figure 1.8. Graph charting levels of the Dead Sea in relation to historic years (Bookman et al. 2004, 561, fig. 5).

### Climate

During the last 5,000 years, climate fluctuated greatly in the southern Dead Sea basin, where the Southern Ghor lies. A discerning study has shown that an increase in precipitation corresponded to a rise in the level of the Dead Sea (Fig. 1.8). This wetter climate enabled human communities to develop, leaving behind more archaeological remains. This is clearly evident by high levels of rainfall during the Early Bronze Age (over 4,500 years ago), the Late Hellenistic to Early Roman periods (1st century B.C.–2nd century A.D.), and early Byzantine times (5th–6th centuries A.D.), when they peaked. The Middle Islamic archaeological record also reflects a rise in rainfall, during the 13th–15th centuries.

Today the Southern Ghor has an arid climate with very hot summers and relatively warm, dry winters. The average rainfall is 65 mm annually, occurring from mid-October to April (25–130 mm yearly\*). Midday summer temperatures are daily over 43 degrees C. Annual monthly mean maximum temperatures range from 30 degrees C to 32 degrees C, and minimum from 18 degrees C to over 20 degrees C.\* The high temperatures are often with a relatively low 54–45 percent mean annual relative humidity,\* which rapidly evaporates water in the soils. Aridity is further exacerbated by the direction of the annual prevailing winds, from 330 to 294 degrees (north-northwest to west-northwest).\*

\* Jordanian Meteorological Department, Climate Division, Ghor Safi station, 1977–1996 data.

### 3. Prehistory

#### The Paleolithic Period (Old Stone Age)

Hundreds of thousands of years ago, the Southern Ghor formed part of the so-called Great Rift Valley, which extends from what is now northern Syria all the way to eastern Africa. Along this enormous stretch, early humans roamed, hunted, and gathered food. Although these people lacked permanent settlements, their stone tools have survived and give evidence of their presence. Such tools have been discovered in the Southern Ghor (Fig. 3.2), attesting to people at places such as Dhra', where the artifacts lay within reddish-colored soils that eroded out of the ancient Paleolithic landscape (Fig. 3.1).

#### The Neolithic Period (New Stone Age)

The Dead Sea region, along with the Jordan River Valley and the Sea of Galilee to the north, formed Lake Lisan during the Pleistocene epoch, between 70,000 and 12,000 years ago. At that time the climate gradually became more arid and the lake began to dry up, creating the Dead Sea that we know today (Fig. 3.3). It was near the shores of this shrinking lake, and always next to freshwater springs, that early human settlements emerged. Archaeologists have termed this period the "Neolithic," based on its "new stone" technology. At this same time, architecture and agriculture were developing as adaptations to the changing climate. Numerous Neolithic sites have been discovered in the Jordan River Valley and the Dead Sea basin littorals, including the Southern Ghor.



Figure 3.1. Red soils dating their deposition to the Palaeolithic period at Dhra', which have eroded from land hundreds of thousands of years old (K. D. Politis).

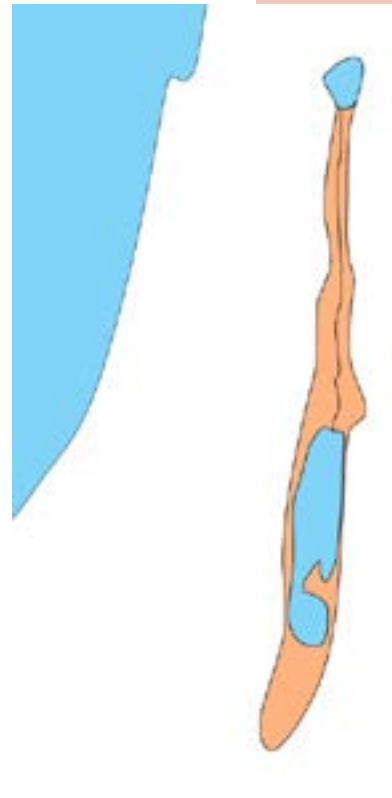


Figure 3.2. Chipped flint hand tools dating to the Paleolithic period from Dhra' (K. D. Politis).

Figure 3.3. Extent of the Pleistocene Lake Lisan (tan) and the current Dead Sea (blue).

East of Mazra'a are two significant Pre-Pottery Neolithic A (PPNA) sites dating to about 12,500–10,500 years ago. One was unearthed at the mouth of 'Ayn Dhra', and another, at Zahrat Adh- Dhra' 2, has also been excavated (Figs. 3.4, 3.5, 3.9, 3.10).



Figure 3.4. Location of the PPNA settlement at 'Ayn Dhra' (K. D. Politis).



Figure 3.5. Artist's rendition of the PPNA village at Wadi Adh-Dhra' (E. Carlson).

Houses with oval and round floor plans were discovered along with grinding stones used to pulverize locally grown cereal grains into flour for making bread (Figs. 3.6, 3.8–10). Although there is evidence that the inhabitants hunted animals (such as ibex) (Fig. 3.7), the remains of domesticated sheep and goats verify that these were farming communities. These formed the first villages in the Southern Ghor.



Figure 3.6. Excavation of a PPNA round house at Dhra' (B. Finlayson).



Figures 3.7 and 3.8. Artist's rendition of collecting (left) and processing (right) cereals at Dhra' (E. Carlson).



Figure 3.9. Excavation of the PPNA settlement at Zahrat Adh-Dhra' 2 (P. C. Edwards).



Figure 3.10. Flint tools found at the PPNA settlement at Zahrat Adh-Dhra' 2 (P. C. Edwards).



Figure 3.11. Location of WHS-1, east of the Wadi al-Hasa (A. Sampson).



Figure 3.12. Plan of WHS-1, showing rectangular buildings adjoining each other (A. Sampson).

Pre-Pottery Neolithic B (PPNB) settlements dating to around 10,000–8,000 years ago were recently discovered east of as-Safi. The most significant of these, WHS-1, occupied the intersection of the Wadi al-Hasa and the Wadi Hamrash-Suwayf, near steep mountain cliffs (Fig. 3.11).

The buildings at WHS-1 are well-made rectangular structures that adjoin each other (Fig. 3.12). Some are well preserved, standing over a meter tall, with stone steps and walls with openings (Fig. 3.13). The overall impression is of a nucleated village with houses arranged around a large rectangular building in the center (Fig. 3.14).

Characteristic flint tools (Fig. 3.15) and ground stone objects date the site to the PPNB period.

Of particular interest was the discovery of a stone slab with cup marks and what seem to be wheat sheaths (Fig. 3.16). Other Neolithic sites in Jordan have yielded similar slabs.

The Pre-Pottery Neolithic sites discovered in the Southern Ghor have contributed significantly to our understanding of the scope of early human settlements about 13,000–8,000 years ago in Jordan and elsewhere in the Near East. They demonstrate that, with innovation, the peoples of this period adapted successfully to changing climatic conditions.



Figure 3.13. Well-preserved building, over 1 m tall, with a window, at WHS-1.5 (A. Sampson).



Figure 3.14. Hypothetical reconstruction of WHS-1 settlement with houses around a larger building in the center (A. Sampson).



Figure 3.15. Characteristic PPNB flint tools from WHS-1 (K. D. Politis).



Figure 3.16. A stone slab with cup marks surrounded by what seem to be wheat sheaths (A. Sampson).

# 4.1. Protohistory: The Bronze Age

Archaeologists call the period that spans from 5,000 to 3,000 years ago “the Bronze Age” because of the copper-alloy tool technologies that largely superseded the stone tools of previous eras, and with the advent of writing this period is called “protohistory.” It is divided into three phases: early, middle, and late. The first two are represented in the Southern Ghor, but the Late Bronze Age is absent from the archaeological record. The Bronze Age as a whole seems to have been a period of cultural change and discontinuity even as the region developed some of the largest and most materially wealthy ancient sites in the Near East. Thus it is not an overstatement to call the Bronze Age in the Southern Ghor enigmatic.

Visitors today can reach Bronze Age sites in the Southern Ghor, but because they are badly eroded and lack signs, you must study the archaeological reports beforehand.

## The Early Bronze Age

Archaeologists overlooked the Early Bronze Age (EBA) on the southeastern shores of the Dead Sea until the latter half of the 20th century, when the Expedition to the Dead Sea Plain and the Southern Ghors and Northeast ‘Arabah Survey conducted a series of surveys and excavations. As a result of these projects, the extent of the EBA (3100–2100 B.C.) occupation in the Southern Ghor came to light.

As a consequence of the settled farming communities established during the preceding Neolithic period, populations grew and subsequently required a more complex social organization. As these villages expanded from their centers, their inhabitants built new houses along lanes and enclosed them by defensive walls. More people living together required formalization of societal rules, and they accomplished this through writing. It is also evident that burial practices became ceremonial. This process of simple villages transforming into complex cities is called “urbanization.”

The proximity of the EBA cities of the Southern Ghor to Early Dynastic Egypt may also have influenced their remarkable development. Relative geographic seclusion with unique and valuable natural resources must also have contributed to the region’s prosperity.

## The Biblical “Cities of the Plain”

Five major EBA sites have been identified and studied in the Southern Ghor (Fig. 4.1.1). They include Bab Adh-Dhra’, Numayra, as-Safi (in the An-Naq’ neighborhood), Feifa, and Khirbat Khunayzir. It is intriguing to consider that they may have actually been the five “Cities of the Plain” mentioned in the Old Testament (Genesis 14, 18, 19). This story is corroborated by 5,000-year-old cuneiform tablets, found at ancient Ebla in northern Syria, that describe the location of these cities as being in the Moabite plain next to the Dead Sea (the Southern Ghor) and are dated from approximately the same period.

According to the Old Testament story, two of these cities, Sodom and Gomorrah, were wicked, full of unrepentant sinners. God eventually decided to destroy them, saving only Abraham’s nephew, the righteous Lot, and his family, who fled Sodom.



Figure 4.1.1. Early Bronze Age sites in the Southern Ghor (Expedition to the Dead Sea Plain).

## Bab Adh-Dhra'

Bab Adh-Dhra' is the largest of the five EBA sites in the Southern Ghor. Over decades, archaeological excavations have explored both its settlement and its adjacent cemetery. As the city grew, it incorporated many adobe brick-built houses enclosed by a perimeter wall with towers and a gatehouse, which the site's Arabic name, "gate of the arm," alludes to (Figs. 4.1.2–3).



*Figures 4.1.2.a–b. Artist's impression of the EBA town at Bab Adh-Dhra' enclosed by a perimeter wall with towers and a gatehouse (a); aerial photo of the same view of the site (b) (E. Carlson and K. D. Politis)*



*Figure 4.1.3. Artist's impression of the adobe houses inside the EBA town at Bab Adh-Dhra' (E. Carlson).*

In the cemetery, over 60 tombs were excavated, the majority of which had circular or elliptical shafts, and three had rectangular ones (Figs. 4.1.4–5). The chambers, cut from the shaft, were one to five in number and varied from circular to square, with flat, slightly rounded, or domed roofs. There were also structures filled with pottery, jewelry, metalwork, and other objects (Figs. 4.1.6–7).



Figure 4.1.4. Artist's impression of an EBA burial ceremony at Bab Adh-Dhra' (Expedition to the Dead Sea Plain).



Figure 4.1.5. Burial chamber in an EBA tomb at Bab Adh-Dhra' (Expedition to the Dead Sea Plain).



Figure 4.1.6. Excavations of a structure at Bab Adh-Dhra' (Expedition to the Dead Sea Plain).



Figure 4.1.7. Artist's impression of the structure at Bab Adh-Dhra' (E. Carlson).

## An-Naq' in as-Safi

At An-Naq', the EBA town has not been discovered, so archaeologists have excavated only at the extensive cemetery, which covers about 2,000 square meters and may have tens of thousands of tombs. Of the 144 tombs excavated thus far, most had an east-west orientation and can best be described as shallow cist tombs, characterized by stone-lined sides, such as tomb B 92 (Figs. 4.1.8–9).

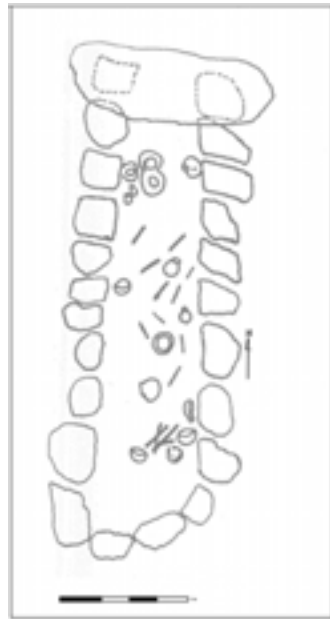


Figure 4.1.8. Cist Tomb B 92 at An-Naq', as-Safi (Z. Nai'mat).



Figure 4.1.9. Artist's impression of a cist tomb at An-Naq', as-Safi (E. Carlson).

Two exceptionally large rectangular monumental tombs (nos. B 109 and B 125) were constructed of huge slab stones (Figs. 4.1.10–11). These have been characterized as chamber tombs and were possibly associated with persons of higher status.



Figure 4.1.10. Megalithic chamber tombs B 109 and B 125 among more common cist tombs at An-Naq', as-Safi (K. D. Politis).

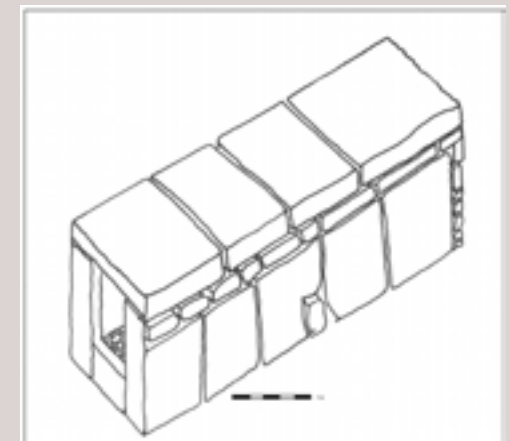


Figure 4.1.11. Reconstruction drawing of tomb B 125 at An Naq', as-Safi (Z. Na'imat).

Such megalithic constructions, often called dolmens, are known throughout the Levant during the EBA. Tombs B 125 and B 109 at An-Naq' should be considered this type.

Along with some of the typical locally made EBA pottery were marble mace heads, perforated ostrich eggs, and a spheroidal vase carved from andesite, a type of volcanic rock (Figs. 4.1.12–16).

Figure 4.1.13. "Net" painted EBA pottery juglette from An-Naq', as-Safi (K. D. Politis).

Figure 4.1.12. Drawings of typical EBA pottery from An-Naq', as-Safi (Z. Na'imat).

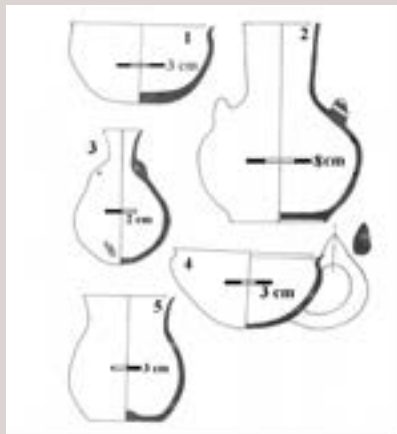


Figure 4.1.14. Alabaster mace head from An-Naq', as-Safi (K. D. Politis).



Figure 4.1.15. Perforated ostrich eggshell from An-Naq', as-Safi (K. D. Politis).



Figure 4.1.16. Egyptian andesite spheroidal vase from An-Naq', as-Safi (E. Braun).

## Dayr 'Ayn 'Abata

Just north of An-Naq', in as-Safi at Dayr 'Ayn 'Abata, excavations revealed a cave dwelling and human burials with pottery (Figs. 4.1.17–18), flints, and beads dating to the EBA. A cist-type tomb in the cave and a cairn tomb with large cover slabs resemble those found at An-Naq'.



Figure 4.1.17. EBA pottery from the cave at Dayr 'Ayn 'Abata (T. Springett).



Figure 4.1.18. Cist burial and occupational remains in the cave at Dayr 'Ayn 'Abata (Deir Ain Abata Project).

## Numayra, Feifa, and Khunayzir

Archaeological excavations also examined the Southern Ghor EBA sites of Numayra, Feifa, and Khunayzir. At Numeira the work concentrated on the town center, whereas at Feifa and Khunayzir more tombs were dug (Figs. 4.1.19–25).



Figure 4.1.19. Artist's impression of an EBA neighborhood at Numayra (E. Carlson).



Figure 4.1.20. Excavation of EBA houses at Numayra (Expedition to the Dead Sea Plain).



Figure 4.1.21. Artist's impression of the interior of a typical EBA house at Numayra (E. Carlson).



Figure 4.1.23. Artist's impression of an EBA burial at Feifa (E. Carlson).



Figure 4.1.22. Excavation of EBA cist tombs at Feifa (Expedition to the Dead Sea Plain).



Figure 4.1.24. Western view of EBA tombs at Khunayzir (Expedition to the Dead Sea Plain).

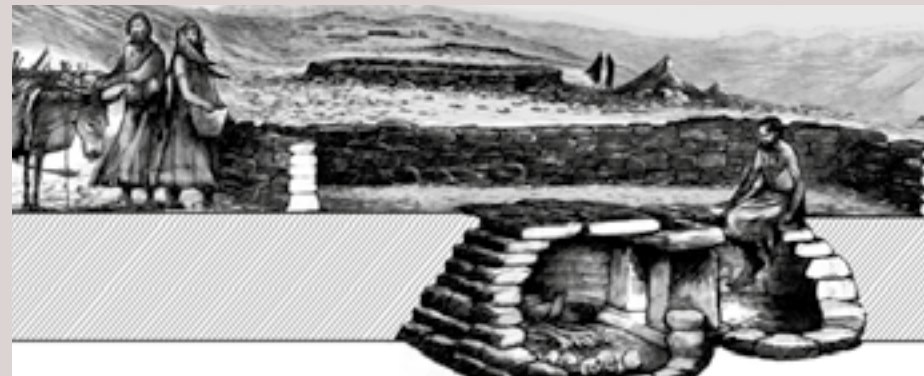


Figure 4.1.25. Artist's impression of an EBA burial at Khunayzir (E. Carlson).

## Culture and Economy in the Southern Ghor during the Early Bronze Age

The Early Dynastic Egyptian sphere of influence most likely extended to the Southern Ghor during the Early Bronze Age (EBA), and certainly the two regions shared some direct cultural links. Pottery types, ceremonial stone mace heads, and the andesite spheroidal vase found in the cemeteries all allude to this. Through their large chamber tombs, the inhabitants of the Southern Ghor may have been attempting to imitate Egyptian megalithic funerary architecture.

Early Bronze Age people in the Southern Ghor were farmers, herders, traders, and craftspeople (potters, weavers, metalsmiths, and stoneworkers). Their economy focused on products used in daily life, and archaeologists have found relatively few luxury goods in the EBA towns throughout the region.

Burnt seeds that have been recovered indicate a vibrant agricultural economy. Farmers grew wheat, barley, grapes, figs, olives, pistachios, peas, lentils, flax, and chickpeas. Many of these plant remains have evidence indicating that they grew in irrigated fields, and archaeologists believe the EBA people invested a great deal of time and energy into building irrigation systems and terracing the hillsides for orchards.

The equally rich faunal remains reveal sheep, goats, pigs, and cattle as the most common animals living in and around the towns. People raised these animals for their meat and secondary products, such as milk, hair, and wool. Traders used donkeys for transportation.

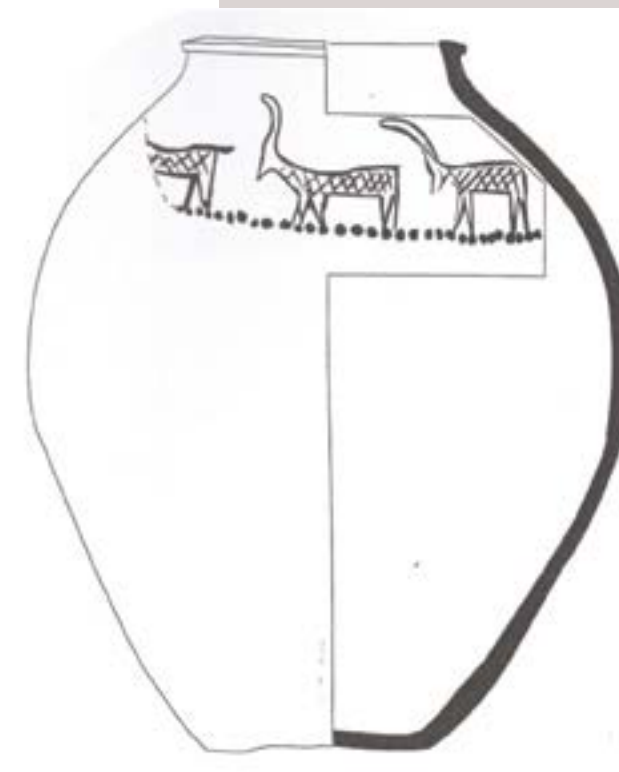
## The Middle Bronze Age

The only known settlement in the Southern Ghor dating to the Middle Bronze Age (MBA) (2100–1600 B.C.) is Zahrat Adh-Dhra'-1, just east of Mazra'a. Excavations here uncovered rectangular and square rooms with doorways and streets in between (Fig. 4.1.26).



Figure 4.1.26. MBA settlement at Zahrat Adh-Dhra'-1 (K. D. Politis).

Some pottery finds from the excavations have parallels from the MBA cemetery at Dayr 'Ayn 'Abata, confirming a similar date for the settlement (Figs. 4.1.27–8).



Figures 4.1.27–28. MBA pot decorated with incised ibex from Zahrat adh-Dhra'-1 (I. Berelov).



On the Pleistocene shelf and hillsides of the Southern Ghor are many large cairns (piles of stones) containing tombs dating to the MBA. Only 1 km north of Zahrat adh-Dhra'-1, at Makdas ar-Rababa, is an extensive cairn field with about 65 such tombs. The proximity of these to Zahrat adh-Dhra'-1 makes a relationship between these two sites likely. Systematic excavations at Dayr 'Ayn 'Abata revealed 42 cairn tombs that contained pottery, worked bone, metalwork, and beads dating to the MBA (Figs. 4.1.29–31).

Figure 4.1.29. MBA cairn tomb field at Dayr 'Ayn 'Abata (W. E. Moth).

Figure 4.1.30. MBA pottery recovered from cairn tombs at Dayr 'Ayn 'Abata (T. Springett).

Figure 4.1.31. MBA beads and other jewelry elements recovered from cairn tombs at Dayr 'Ayn 'Abata. (T. Springett).

The builders constructed each tomb by carefully piling stones to form a dome or beehive shape generally provided with a single chamber, although one tomb had two chambers (Fig. 4.1.32). These usually stood on an artificial platform made of stone (Figs. 4.1.33).

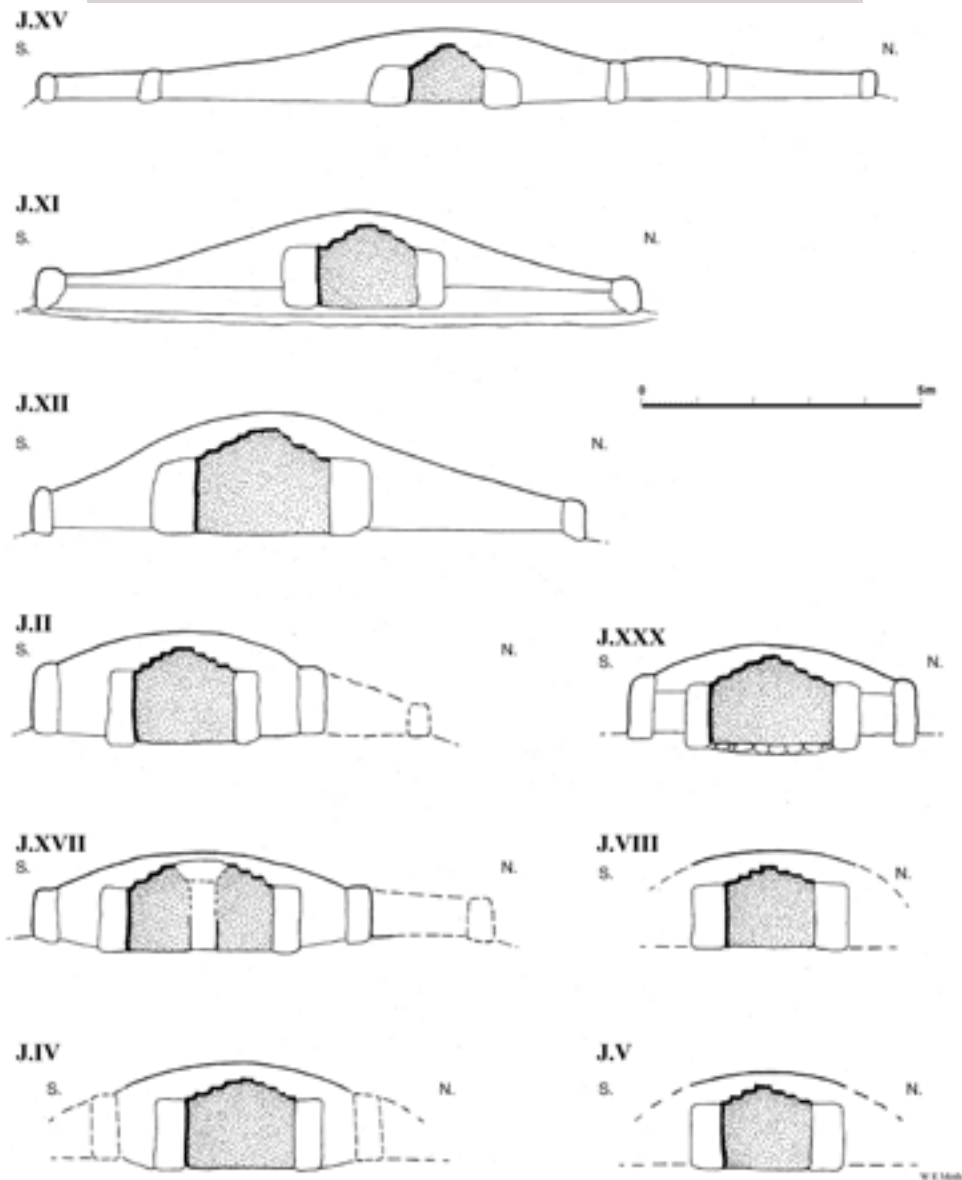


Figure 4.1.32. Dome- or beehive-shaped cairn tombs at Dayr 'Ayn 'Abata (W. E. Moth).



Figures 4.1.33.a-b. Cairn tombs with stone-made platforms at Dayr 'Ayn 'Abata (W. E. Moth).

Farther south on the Pleistocene shelf of as-Safi, an additional 28 similar MBA cairn tombs have been discovered. Most had been robbed. And below the fortress of Umm at-Tawabin there are more MBA cairn tombs and a huge perimeter casemate wall that may also be of a similar date. If so, this would resolve the lack of MBA settlements in the region.

### The Middle Bronze Age Enigma

Biblical scholars date the Old Testament stories of Abraham, Isaac, Jacob, and Joseph to the Middle Bronze Age (approximately 2200 to 1600 B.C.). However, the archaeological evidence for these tales is scanty at best. Perhaps an explanation is that it was a period of peoples on the move rather than in settled communities.

Funerary architecture and objects characteristic of the MBA are well represented in the Southern Ghor. Although the only settlement so far discovered is Zahrat adh-Dhra'-1, MBA sites may await discovery on the Pleistocene shelf between as-Safi and Mazra'a, which archaeologists have not yet surveyed.

## 4.2. The Iron Age

At the end of Bronze Age in the Southern Ghor there was an occupational gap without any obvious continuity into the subsequent Iron Age (IA), which seems to have ushered in a new culture that began around 900 B.C. and lasted until about 600 B.C. The large unfortified settlements characteristic of this period allude to stable, relatively peaceful times that some scholars associate with the kingdom of Moab. One such site is Tulaylat Qasr Musa al-Hamad, possibly ancient Zoar, one of the biblical "Cities of the Plain."



Figure 4.2.1. Molded pottery bust representing a Moabite (T. Springett).

Located near the southeastern shore of the Dead Sea, Tulaylat Qasr Musa al-Hamad sits on rich alluvial soils with easily accessible perennial fresh water from the Wadi al-Hasa, (Fig. 4.2.2). These environmental factors formed the basis for a sprawling agricultural settlement. Dozens of large quern-stones indicate that the people who lived here ground cereal grains into flour for bread, a staple food of the times (Fig. 4.2.3). Other remains from archaeological excavations have verified an agrarian economy, and pottery confirms the Iron Age date of the site (Figs. 4.2.4–5).



Figure 4.2.2. Aerial view of the Wadi al-Hasa alluvial fan, showing modern agricultural farms in the vicinity of Tulaylat Qasr Musa al-Hamad and, in the background, the Dead Sea to the west (K. D. Politis).



Figure 4.2.3. Large saddle quern used for grinding cereal grains into flour at Tulaylat Qasr Musa al-Hamad (K. D. Politis).



Figure 4.2.4. Excavation trench at Tulaylat Qasr Musa al-Hamad showing two layers of Iron Age occupation with an in situ quern-stone. The so-called Qasr Musa al-Hamad is in background (K. D. Politis).



Figure 4.2.6. Agricultural fields and view to the east toward the Wadi al-Hasa and its alluvial fan from Tulaylat Qasr Musa, possibly the site of Iron Age Moabite Zoar. Date palm (*Phoenix dactylifera*) in center; the female plant has been widely cultivated in the past for its fruit (K. D. Politis).



Figure 4.2.5. Pottery chalice from excavations at Tulaylat Qasr Musa al-Hamad (J. A. Verduce).

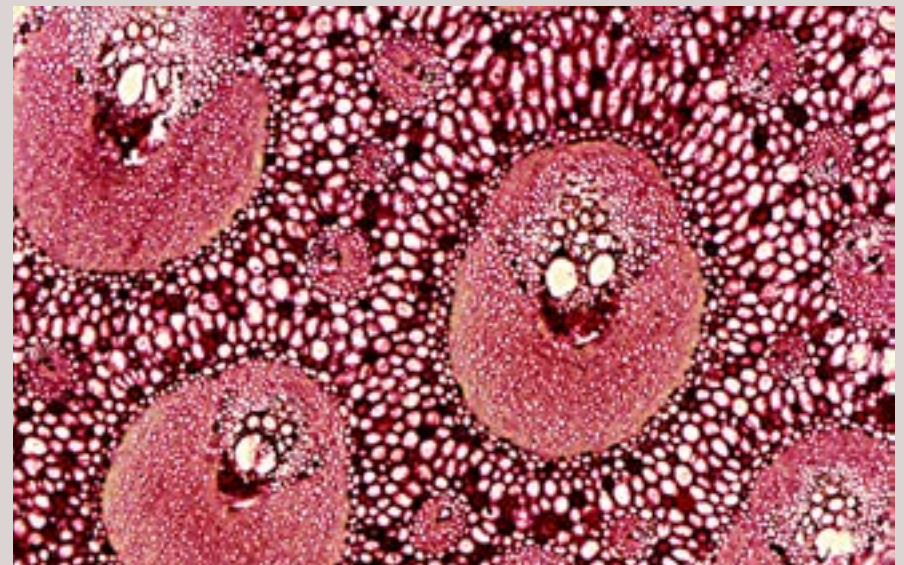


Figure 4.2.7. Magnified thin section of date palm (*Phoenix dactylifera*) wood (C. Cartwright).

Few other Iron Age sites have so far been discovered in the Southern Ghor, and these seem primarily to be hilltops, or rujums, such as those at Feifa, Khunayzir, and near the Wadi Umruq, surrounded by rich agricultural lands that presumably were exploited in the past as they are today (Fig. 4.2.8).



Figure 4.2.8. Iron Age hilltop near the mouth of Wadi Umruq, surrounded by rich agricultural fields still in use today (K. D. Politis).



Figure 4.2.9. Zoar depicted on the Madaba mosaic map surrounded by date palms on the southeast shore of the Dead Sea (K. D. Politis).

## 5.1 Classical Periods (Nabataean and Greco-Roman)

The Nabataean Arabs were a Semitic-speaking group of people who profited enormously through trade (primarily of frankincense) with the Greco-Roman world and progressively adopted Hellenistic art forms, architecture, and other aspects of culture.



Figure 5.1.1. Map showing the extent of the Nabataean Kingdom in the 1st century B.C. (F. Villeneuve and L. Nehme).

The Nabataean and Roman periods in the Southern Ghor are well known through historic writings, such as those of the 1st-century A.D. historian Josephus and the *Notitia Dignitatum* (a 4th-to-5th-century list of Roman civil and military officials), which refer to it as "Zoara," the main strategic and commercial city on the southern end of the Dead Sea (Figs. 5.1.2–4). There was relative administrative continuity during this time, and in A.D. 106 the Nabataean Kingdom became a client state of Rome called *Provincia Arabia*, with the same borders (Fig. 5.1.1).

As no ancient roads ran along the eastern side of the Dead Sea littoral, seafaring provided communications with the north and west. This is apparent on the Madaba map (Fig. 5.1.5). And indeed, in the so-called "Babatha Archives," a collection of the 2nd-century A.D. Greek documents discovered in the "Cave of Letters" northwest of the Dead Sea, there is mention of Mahoza as the harbor of Zoara (Fig. 5.1.6), as well as the Mazra'a farms (Ghor al Mazra'a) in Zoara. Of course, dates were a prevalent product, but so were balsam and indigo (Figs. 5.1.7–9).



Figure 5.1.2. Aerial view of southeastern end of Dead Sea with Mazra'a and Khirbat Qazone (Qazun) in the foreground, the Bay of Haditha (ancient Mahoza) on the right, and the Lisan Peninsula in background (K. D. Politis).



Figure 5.1.3. Map showing Khirbat Qazone, Haditha, Mazra'a, and other Nabataean/Roman sites (Q. Dasuqi after J. M. Farrant).

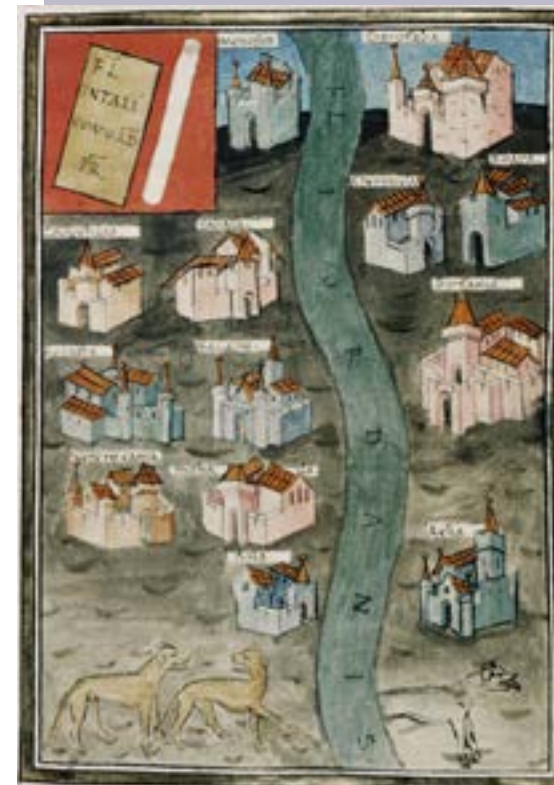


Figure 5.1.4. Zoara on the map of Roman sites in the *Notitia Dignitatum*, dated to the 4th to 5th century A.D. (Bodleian Library, Oxford).



Figure 5.1.5. Boats on Dead Sea carrying salt (left) and wheat (right), with the port of Zoara at the southern end. Detail of the mosaic map at Madaba (M. Piccirillo).



Figure 5.1.6. Zoara mentioned in a document from the 2nd-century A.D. Babatha Archive (N. Kokkinos).



Figure 5.1.7. Aerial view of the hilltop of the ancient port of Mahoza, modern Haditha (K. D. Politis)



Figure 5.1.8. Hypocaust (central heating) system for a Roman-period bathhouse in Haditha (K. D. Politis).



Figure 5.1.9.a. Qasr Bulayda, site of a Nabataean farmstead that may have produced balsam oil (K. D. Politis).



Figure 5.1.9.b. *Hypericum perforatum* (St. John's wort), a species of balsam-producing plant that can be found in the Southern Ghor, was known to the Nabataeans (Z. Fouseka).

## Khirbat Qazone (Qazun) Cemetery

An accidental discovery in the late 20th century by archaeologists working in the Southern Ghor brought to light a remarkable site where the bodies of thousands of Nabataeans were interred and preserved to an exceptional degree along with their clothes. Excavations revealed an uncommon form of burial (Figs. 10–11). Since then, similar cemeteries have been found at Khirbat Mutrab/Sekin, Feifa, and Khunayzir. Along with other sites in the region, they give us a good picture of Nabataean life on the shores of the Dead Sea.



Figures 5.1.10.a–b. A burial sealed with adobe bricks (a) and a body wrapped in reused clothes (b) at Khirbat Qazone (K. D. Politis).

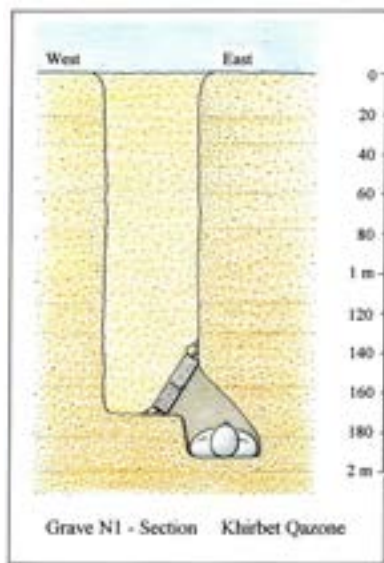


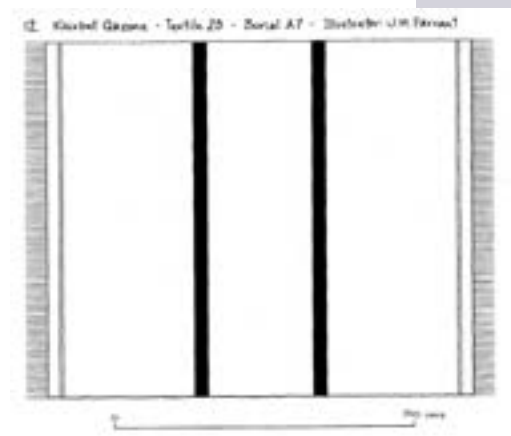
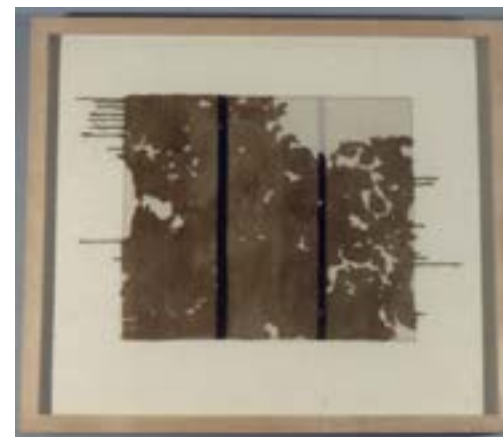
Figure 5.11. Section of a typical burial at Khirbat Qazone (J. M. Farrant after C. Pickersgill).



Figure 5.11. Artist's impression of how Nabataeans were wrapped in textiles or leather and carried to the burial place (R. Douaud).



Figures 5.1.12.a–b. Conserving Greco-Roman textiles from Khirbat Qazone (T. Springett).



Figures 5.1.13a–b. Conserved and framed Graeco-Roman tunic with clavi (stripes) from Khirbat Qazone (a) (T. Springett); drawing of Graeco-Roman tunic with clavi from Khirbat Qazone (b) (J. M. Farrant).



Figure 5.1.14. Image of a woman wearing a fringed tunic with clavi, from Fayyum, Egypt, A.D. 170–200. Identical textiles have been found at Khirbat Qazone (Metropolitan Museum of Art, New York).

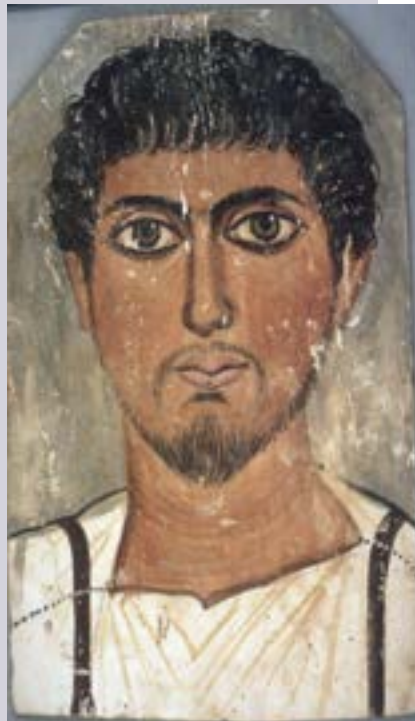


Figure 5.1.15. Image of a man wearing a tunic with clavi, from Fayyum, Egypt, A.D. 110–130. Identical textiles have been found at Khirbat Qazone (British Museum, London).



Figure 5.1.16. Greco-Roman red-colored tunic with arrow designs from Khirbat Qazone (T. Springett).



Figures 5.1.17.a–b. Gold and silver earrings from Khirbat Qazone (T. Springett).



Figure 5.1.18. Nabataean nefesh sign engraved on a stone grave marker from Khirbat Qazone (T. Springett).



## Defense, Communication and Road Network

A complex road network with castra (forts) and castella (small forts) was organized leading into and around the Southern Ghor from the 2nd century B.C. to the 4th century A.D. Regularly maintained, this served military purposes as well as trade (the latter often evidenced by the archaeological recovery of coins, indicating their common use) (Figs. 5.1.27–28), particularly to link the Red Sea and Mediterranean ports of Ayla and Gaza, respectively. Later it also protected Christian pilgrimage. Note that there was never a road along the eastern side of the Dead Sea, necessitating transportation by boat.

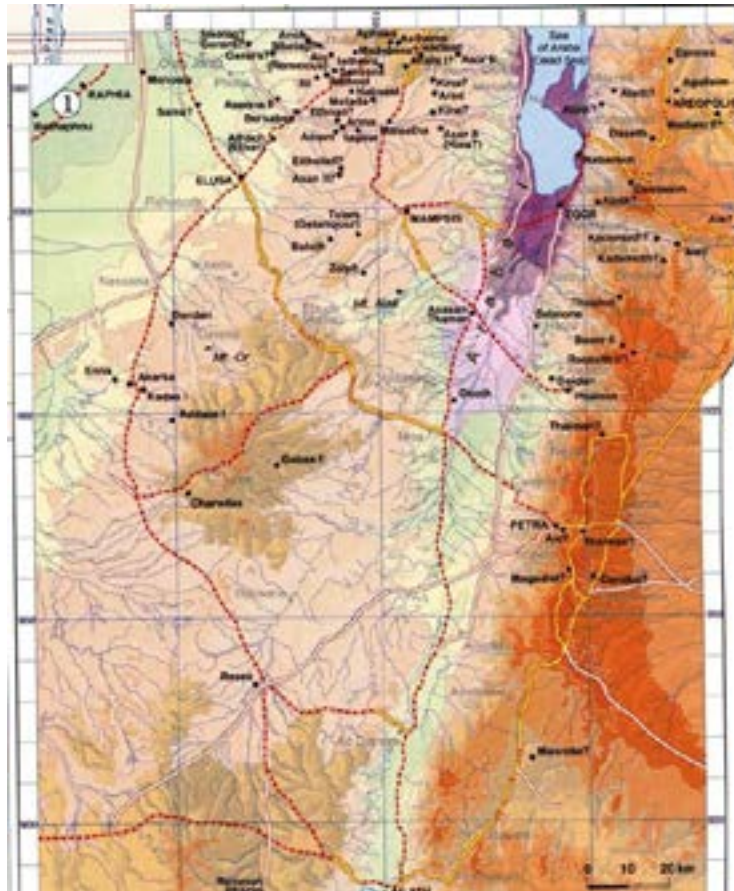


Figure 5.1.19. Road network south of the Dead Sea during the Nabataean and Roman periods (Carta, Jerusalem).



Figure 5.1.20.a. Stepped Imperial Roman road leading from the eastern plateau down to the Southern Ghor (K. D. Politis).



Figure 5.1.20.b. Stepped Imperial Roman road leading from the eastern plateau down to the Southern Ghor (G. A. Papaionnou).

## The Ascent of Luhith at the Wadi 'Isal

The ascent of Luhith was a key Nabataean and Roman road in Zoara. Located at a place known today as the Wadi 'Isal, this important, ancient route connected the Moabite tribal area on the eastern plateau and ancient Characmoaba (modern Karak) with the west. A number of ancient sources mention Luhith, including the Old Testament (Isaiah 15: 5–8, Jeremiah 48: 5) and the Dead Sea Scrolls. There are ruins of three Roman castella that guarded the mouth of the Wadi 'Isal and the road that led southwards.



*Figure 5.1.21. The ascent of Luhith at the Wadi 'Isal, looking east, guarded by three castella (small forts) (K. D. Politis).*



*Figure 5.1.22. Camel caravan along the shore of the Dead Sea near the Wadi Numayra (K. D. Politis).*



*Figure 5.1.23. Aerial view of the castrum, or fortress, of Zoara at Umm at Tawabin. Note the huge perimeter defensive wall (K. D. Politis).*



*Figure 5.1.24 Roman castellum (small fort) guarding the road at Rujum Sheikh Salim at the Wadi Numayra (K. D. Politis).*

## 5.2. Early Christian and Byzantine Period

During the Early Christian and Byzantine period (late 4th–early 7th centuries A.D.), the Southern Ghor, then known as Zoara, belonged to the historic province of Palaestina Salutaris Tertia (Third Palestine). Remains of many archaeological sites rich in material finds reflect the prosperity of the time.



Figures 5.1.25.a–b. Incense burner found at Umm at Tawabin, inscribed with the Nabataean script (K. D. Politis).



Figures 5.1.27.a–b. Roman coin with Emperor Trajan Decius found at Dayr 'Ain 'Abata, A.D. 249–251 (T. Springett).



Figure 5.1.26. Alabaster container for frankincense from South Arabia, found inside the cave at Dayr 'Ain 'Abata (J. M. Farrant).



Figure 5.1.28. Nabataean King Aretas IV and Queen Sheqilat on an early 1st-century A.D. coin (T. Springett).



Figure 5.2.1. Map showing the Byzantine province of Palaestina Tertia Salutaris (ACOR).

Zoara was an important agricultural and commercial center with a road and communications network established during the preceding Roman period. It was well known for its production of dates, wheat, balsam, and indigo, and it also exploited its resources of salt, bitumen, sulfur, and copper ore. The quality and sophistication of its material culture reflected Zoara's wealth, highlighted by its extraordinary literacy: more than 600 dated Greek and Aramaic inscriptions have been discovered there.

Recent excavations at Khirbat ash-Shaykh 'Isa have revealed two churches adorned with imported marble columns, church furnishings, and mosaic floors inscribed in Greek dating to the 6th century A.D. Glass mosaic cubes have also been discovered, indicating that these churches were richly decorated with wall mosaics as well. These belonged to the seat of a bishopric and a vibrant urban community attested to in historical texts.



Figures 5.2.2.a–b. Imported carved marble column and chancel post from the church at as-Safi (K. D. Politis).



Figure 5.2.3. Depictions of pomegranates within interconnected squares and circles enclosing stepped designs on a floor mosaic in the church at as-Safi (K. D. Politis).



Figure 5.2.4. Four opposing rosebuds on a floor mosaic in the church at as-Safi (K. D. Politis).

As revealed by recent archaeological excavations, there were streets paved with stone slabs and lined with columns, and industrial and domestic structures, as well. At adjacent An Naq' is the city's vast cemetery, where archaeologists have found over 500 inscribed and intricately carved funerary stone markers and a wealth of grave goods. These give precise dates of the deceased, their names, ages, and sometimes even their occupations. Many of these stones can now be seen in the Museum at Lowest Place on Earth.



Figure 5.2.5. The decorated Christian tombstone of Gorgonios, who died at the age of 55 in A.D. 436, from An Naq' cemetery, as-Safi (T. Springett).



Figure 5.2.6. Tombstone of Bishop Apse of Zoara, who died at the age of 55 in A.D. 369, from An Naq' cemetery, as-Safi (T. Springett).



Figure 5.2.7. Stone engraved with an intricate cross flanked by birds, from as-Safi (K. D. Politis).

## The Sanctuary of Lot

The Sanctuary of (Saint) Lot at Dayr 'Ayn 'Abata, popularly known as "Lot's Cave," is one of the most important Byzantine sites in the Southern Ghor and indeed in all of Jordan. Perched on a steep mountain slope overlooking the modern town of as-Safi (Fig. 5.2.8), it appears accurately depicted next to Zoara on the mosaic floor map at Madaba (Fig. 5.2.9).



Figure 5.2.8. The Sanctuary of Lot at Dayr 'Ayn 'Abata on a cliff above ancient Zoara (T. Springett).



Figure 5.2.9. The Sanctuary of Lot above Zoara on the southeastern shore of the Dead Sea, depicted on the mosaic floor map at Madaba (K. D. Politis).

Meticulously excavated and restored over the course of 15 years (1988–2004), it is one of the finest examples of an early Christian monastic complex that has been fully studied and published. It is a "must-see" for all those visiting the area (Fig. 5.2.10). A road leading up to the site and a stone-paved stairway to the church facilitate access. The mosaic floors of the church have been conserved and provided with a protective shelter (Fig. 5.2.11). The adjacent Museum at the Lowest Place on Earth displays the significant objects discovered during excavation.

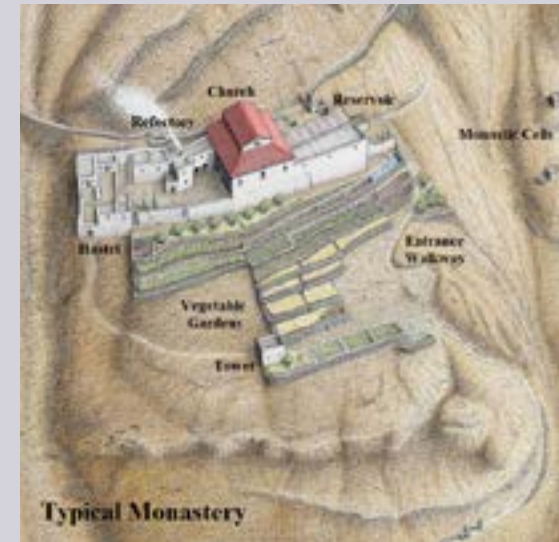


Figure 5.2.10. Illustration of the monastic complex at the Sanctuary of Lot, a typical monastery of the early Christian-Byzantine period in the Holy Land (J. M. Farrant, labeled by K. D. Politis).



Figure 5.2.11. Aerial view of the early Christian-Byzantine monastery at the Sanctuary of Lot after excavation, conservation, stabilization, fencing, and installation of a stone stairway (K. D. Politis).

The focal point of this monastery is a church built around a natural cave (Figs. 5.2.12–13), such as the one in which Lot and his daughters are said to have taken refuge after the destruction of Sodom and Gomorrah (Genesis 19).

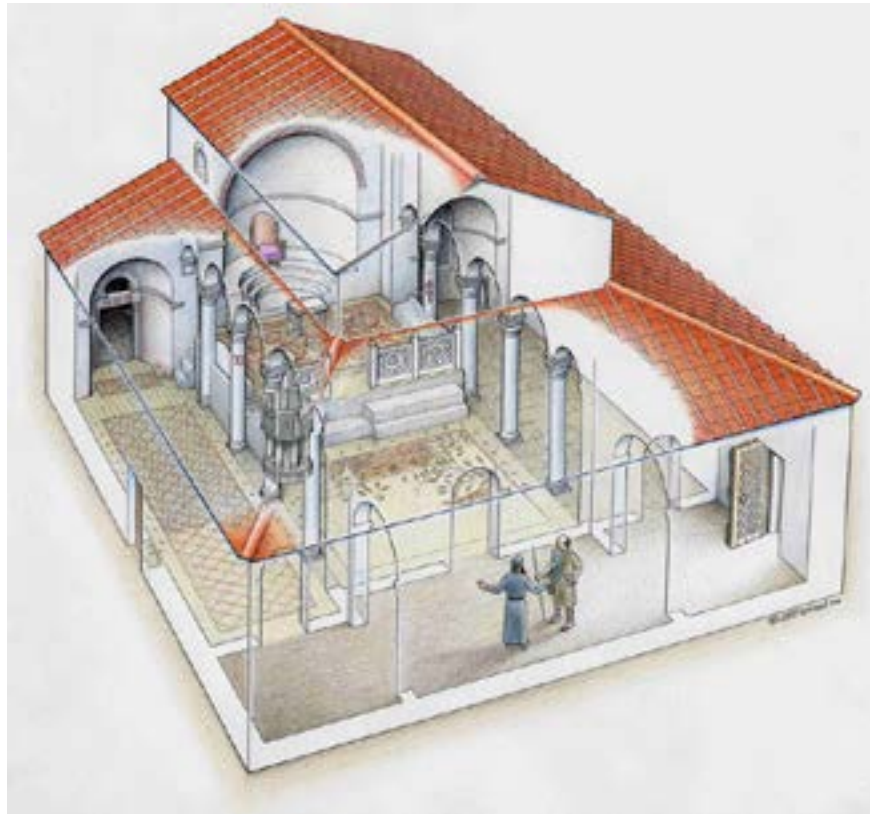


Figure 5.2.12. Perspective representation of the Church of Lot (J. M. Farrant).

Figure 5.2.13. Entrance to Lot's Cave in the nave of Church of Lot, with inscribed mosaic pavement dating to April A.D. 605, in the time of Bishop Iakovos and Abbot (of the monastery) Sozomenos (T. Springett).



## Mosaics

Of particular interest in the Lot Church are the seven mosaic pavements created to adorn the church floors. These are now visible on site and in the Museum at the Lowest Place on Earth (Figs. 5.2.13, 14–16).



Figure 5.2.14. Mosaic pavement in the chancel of the Church of Lot dating to A.D. 605. In the center, where the altar once stood, is a Greek inscription within a cross that reads "Good End" (T. Springett).



Figure 5.2.15. Mosaic pavement from the diakonikon (chamber for the storage of vestments and certain other objects used during services) of the Church of Lot dating to March A.D. 572–573. The Greek inscriptions mention the Bishop Peter, the Abbot Eufziou, other clergy, and Kosmas the mosaicist. This mosaic has been re-assembled and is now on exhibition in the Museum at the Lowest Place on Earth (S. Chlouveraki).



Figure 5.2.16. Mosaic pavement in nave of the Church of Lot dating to April A.D. 691, well into the Umayyad Islamic period. The Greek inscription mentions clergy and the mosaicist Ioannis Savinaou (T. Springett).

As well as monetary donations (Fig. 5.2.17), some pilgrims left testimonies of their visits to the Sanctuary of Lot. Some, such as Sozomenos, Procopios, Ulpus, and Nestacia daughter of Zenobios, simply inscribed their names on the walls of the building. St. Stephen the Sabaite, from the monastery of Mar Saba in the Judean Desert, was known to regularly visit the site during Lent (the 40 days before the Christian holiday of Easter) on his famous treks around the Dead Sea in the late 8th century A.D., as did the Russian Abbot Daniel on his pilgrimage of 1106–1107 (Fig. 5.2.29).



Figure 5.2.17. A pot filled with 555 Byzantine copper coins, probably a pilgrim's donation, found at the Sanctuary of Lot (T. Springett).

In the Holy Quran, Lot is known as the prophet Lut (26: 161; 37: 134), whose story is similar to that of the Old Testament (Genesis 21: 72; 29: 27–28; 11: 70–78, 81–82; 26: 166; 27: 55). Arabic graffiti on the church walls and on late 7th–8th century A.D. pottery provide evidence for the site's veneration during the Islamic period as well (Fig. 6.7).

The location had been used as a burial place during the Bronze Age and was occupied at the time of Jesus Christ. These facts suggest that the site was a revered holy place even before Christianity. Objects from these excavations are on display in the Museum at the Lowest Place on Earth.

### Qazone Church and Cemetery in Mazra'a

A basilica adorned with mosaic pavements was recently discovered in Mazra'a, adjacent to the cemetery of Khirbat Qazone (Figs. 5.2.18–20). The mosaics have Greek inscriptions but no dates. Nonetheless, it can be deduced that they belonged to an early Christian (4th–5th-centuries) community because the tombstones are of the "initial" types found elsewhere in Jordan (Figs. 5.2.21a–b).

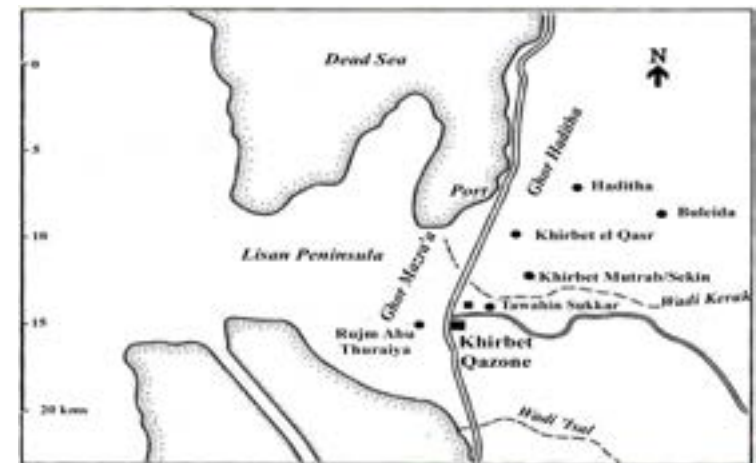


Figure 5.2.18. Map showing Khirbat Qazone as a square (Q. Dasuqi, after J. M. Farrant).



Figures 5.2.19.a–b. Mosaic pavements in the nave (space for worshippers) and apse (altar recess) of the Qazone church at Mazra'a (K. D. Politis).



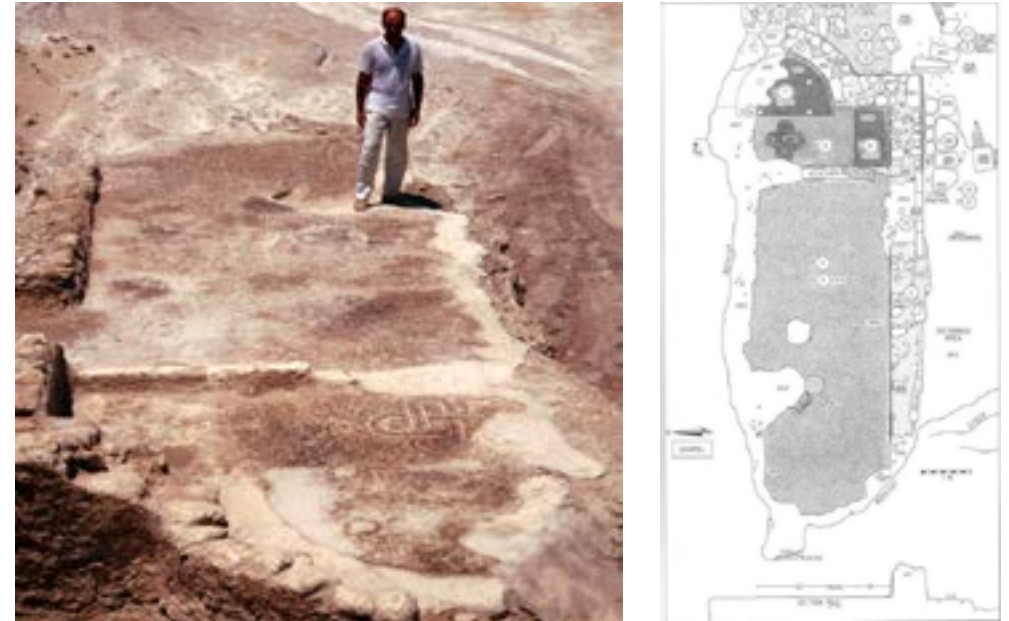
Figures 5.2.20.a–b. Details of the mosaic pavements in the Qazone church at Mazra'a (K. D. Politis).



Figures 5.2.21.a–b. Etched palm branch flanked by the Greek letters alpha and omega, symbolizing Jesus Christ, and a crude cross within a square on tombstones from Khirbat Qazone cemetery in Mazra'a (T. Springett)

## The Lisan Hermitages

In the center of the Lisan Peninsula are several caves hewn into the soft white marl cliffs, where early Christian ascetic monks once lived (Figs. 5.2.23–24). Some of them etched their names in Greek on the cave walls. They included Elias, Agapios, Konstantinos, Ioannis, and Makarios. The focal point of these hermitages was a monastery with a small chapel where the monks and pilgrims would occasionally congregate (Figs. 5.2.22a–b).



Figures 5.2.22.a–b. Apse and mosaic pavement in the chapel of Dayr al-Qattar on the Lisan Peninsula (a, T. Springett; b, Holmgren and Kaliff).



Figure 5.2.23. Aerial view of the Byzantine monastic hermitage of Qasr Tuba on the Lisan Peninsula. This was a station for monks traveling from the Judean desert monasteries in the west to Zoara. The Dead Sea is in the background (K. D. Politis).



Figure 5.2.24. Byzantine monastic hermitage of Qasr Tuba on the Lisan Peninsula (K. D. Politis).

The combination of these hermitages and the monastery served as part of a network of rest stations on the pilgrimage route that extended from Jerusalem to the Judaeen Desert monasteries and then eastward to the southern Moabite plains of the Zoara district. The pilgrims were bound for the monastery at the Sanctuary of Lot, the biblical cities of Zoara, Sodom, and Gomorrah, and beyond to the Monastery of Aaron's Tomb, south of Petra. Pilgrims such as St. Stephen the Sabaite in the late 8th century A.D. made such journeys especially during Lent.

Today these sites are accessible by permission and with a guide. It is well worth the effort to visit this lunar-like landscape, which gives the visitor a good impression of how harsh life was for the ascetic monks. A four-wheel-drive vehicle and extra time are both recommended to visit these.

### The Wadi al-Hasa Hermitage

On the northern escarpment of the mouth of the Wadi al-Hasa is a cave (Fig. 5.2.25) hewn into the rock with two interconnecting chambers (Figs. 5.2.26–27). The northern one contains a double, stone-cut cist tomb. The adjacent southern chamber has an apse (recess for an altar) on the eastern side, flanked by two niches. Three stone-built rooms lie immediately to the southeast.



Figure 5.2.25. Hermitage on the northern escarpment of the mouth of the Wadi al-Hasa (K. D. Politis).



Figure 5.2.26. Plan of the Wadi al-Hasa Hermitage (G. A. Papaioannou).

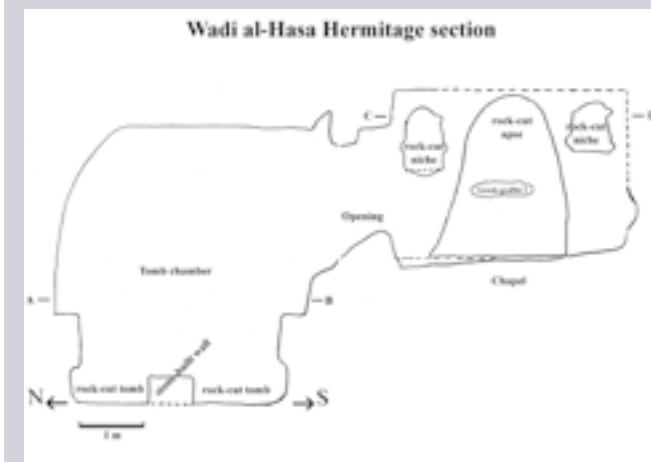


Figure 5.2.27. Section of the Wadi al-Hasa Hermitage (G. A. Papaioannou).

The hermitage at the Wadi al-Hasa may be characterized as a cliff-side memorial site for venerating the burial place of two saintly ascetics. The inscription, etched in Greek, that calls it a holy place indicates it was a recognized Early Christian pilgrimage site in Byzantine Palaestina Tertia, perhaps related to a passage in the Bible. According to the Arab historians Yaqut and Ibn 'Abbas, Lot's two daughters were buried near the springs of Zoara, modern Ghor as-Safi. Could this site, then, be their traditional burial place, venerated by early Christians?

It is also possible that a hermit or caretaker simply lived there. Early Byzantine pottery sherds and remnants of an ancient path leading up to the cave suggest that the site had frequent visitors. Taking into account the inscription indicating a holy place and the impressive burial chamber, it seems that the site was intended as a memorial to a holy man who had attracted a significant number of pilgrims.

## Monastic Life

During the early Byzantine period, daily life in a Christian monastery was organized along strict rules. People in these monasteries were called "monks" or "ascetics," Greek words for someone living alone. They prayed, worked, and ate by themselves in small cells or caves around the monastery. Monks normally survived on bread, dried fish, fruits, and vegetables. On feast days they met for communal prayers in the church and might eat a meal with meat all together in the refectory. Usually monks would work in vegetable gardens, weave baskets, and offer water to and possibly accommodate pilgrims and other travelers.

Such ancient monasteries and hermitages have been found in the Southern Ghor at 'Ayn 'Abata, the Wadi al-Hasa, and the Lisan Peninsula (Fig. 5.2.28).

## The Mosaic Map at Madaba

The mosaic map at Madaba in Jordan is a unique floor map indicating the locations of more than 150 cities, topographic features, and holy sites ranging from the Syrian coast to the Nile River Delta in Egypt, all labeled in Greek. Several known ancient buildings shown on the map allow us to date it to the late 6th to early 7th centuries A.D. Much of the map was destroyed by accident before its discovery in 1887. In its original state it probably included the entire Early Christian Byzantine Empire, perhaps as a pilgrim's guide to the holy sites. Its importance cannot be overestimated (Fig. 5.2.29).



Figure 5.2.28. Map showing early Byzantine monastic sites in eastern Palaestina Tertia (J. M. Farrant).



Figure 5.2.29. Central section of the early Christian-Byzantine mosaic map at Madaba (M. Piccirillo).

## 6. Islamic Periods (Umayyad, Abbasid, Fatimid, Crusader, Ayyubid/Mamluk)

Most of the medieval finds in the Southern Ghor, both material and architectural, belong to the Abbasid, Fatimid, and Ayyubid/Mamluk periods (ca. mid-8th to late 10th and late 12th to early 16th centuries A.D.). These were mainly discovered during excavations at Khirbat ash-Sheikh 'Isa (KSI) and Masna' al-Sukkar in as-Safi, but they also include Dayr 'Ayn 'Abata and the Lisan Hermitages.



Figure 6.1. Twelfth century A.D. map showing the prominence of Zoara/Zughar (Al-Idrisi, A.D. 1154) (Brockhaus/Aquarium, Stuttgart).

### Historical Context

After the first Islamic caliphate under the Umayyads, which had its capital in Syria at Damascus, Abbasid dominance (which formally began in A.D. 750) gradually moved its center of authority and influence eastward to Baghdad, causing the eventual desertion of settlements in much of the Bilad ash-Sham (Levant). European Crusaders filled in some of the resulting geopolitical gaps, but not without conflict with Fatimid Egypt, and their presence ended in the late 12th century. By 1187 (marked by the Battle of Hattin) they succumbed to the Ayyubids of Egypt, who firmly established their rule over the entire region, which continued into the subsequent Mamluk period. This time of Egyptian domination was relatively peaceful, with economic prosperity until the late 15th century (Fig. 6.1).

In the Southern Ghor, early Byzantine Zoara had apparently been abandoned peacefully by the mid-7th century A.D. Its buildings were then reoccupied around the late 8th century, during the Abbasid period, when economic activity seems to have focused on indigo production (Fig. 6.2–4). There is evidence of similar circumstances at Dayr 'Ayn 'Abata and the Lisan Peninsula (Figs. 6.5–7). Next came an abandonment phase when complete pottery vessels were left in situ and sandy silt covered all the structures. The evidence for Fatimid and Crusader occupation is scanty at best, represented only by some pottery and coins (Fig. 6.8–9).



Figure 6.2. Indigo processing pot found in situ during excavations at KSI, as-Safi (K. D. Politis).



Figure 6.3. Molded pottery oil lamp from the Abbasid period, ca. 8th century A.D., at KSI, as-Safi (M. O'Hea).



Figure 6.4. Carved bone comb decorated with three incised concentric circles on each side, ca. 8th century A.D., from KSI, as-Safi (A. Sakellariou).



Figure 6.5. Embroidered Kufic Arabic inscription in indigo blue reading "Property of Fadl," from the Lisan Hermitage, dated to the Abbasid period, ca. 8th century A.D. (K. D. Politis).



Figure 6.6. Cloth woven from yarns resist-dyed with indigo, from Dayr 'Ayn 'Abata, 8th century A.D. (T. Springett).



Figure 6.7. Abbasid-period water jug inscribed in Arabic, found at Dayr 'Ayn 'Abata, 8th century A.D. (W. Lyons).



Figure 6.8. Coin from the Crusader Kingdom of Jerusalem (A.D. 1143–1163), from KSI, as-Safi (R. E. Jones).



Figure 6.9. Segor (Zoara) centrally depicted on the A.D. 1458 map by William Wey (Trinity College, Dublin).

The subsequent Ayyubid/Mamluk period marks a time of major rebuilding atop the ruins of earlier structures, with materials being reused largely with disregard for previous architectural plans.

### Khirbat ash-Sheikh 'Isa

Khirbat ash-Sheikh 'Isa (KSI) has been identified as the remnants of the main market-town center of late Islamic Zughar in as-Safi, similar to the preceding early Byzantine city of Zoara, from which it derived its name. It has been the focus of archaeological excavations since 1995, when a major external city wall was discovered (Fig. 6.10). Excavations intensified from 2002 to 2017 (Figs. 6.11–12).



Figure 6.10. Ayyubid/Mamluk western city wall at KSI, as-Safi (T. Springett).



Figure 6.11.a Glazed ceramic bowl from Raqqa in north Syria, ca. 13th–15th centuries A.D., found at KSI, as-Safi (K. D. Politis).



Figure 6.11.b Molded pottery oil lamp, Ayyubid/Mamluk period, ca. 13th–15th centuries A.D., from KSI, as-Safi (A. Silke-atcheva).



Figure 6.12. Mancala game board on a block of white sandstone. Although the game was popular during the medieval periods, this mancala board from KSI, as-Safi, dates to the 6th–7th centuries (K. D. Politis).

## The Story of Sugar

During the Ayyubid/Mamluk period, sugar production was very important in the Dead Sea region, where dozens of sugar factories were built near towns with perennial freshwater sources. These were part of an industry that included sugarcane plantations, presses for crushing the sugarcane, and refineries where the juices were boiled in copper cauldrons. Three such factories have been found in the Southern Ghor, at Mazra'a, as-Safi, and Feifa. The one at as-Safi is the largest, with two presses and twelve boilers (Figs. 6.13–23). Adjacent is Khirbat ash-Shaykh 'Isa, the late Islamic market town of Zughar or Segor, where sugar was sold for export and which consequently gave its name to the product.



Figure 6.13a-b. Sugarcane juices flowed out from the presses, across an arched bridge, to channel leading northeastward (graphics, Y. Dray; photos, USAID SCHEP (a) and K. D. Politis (b)).

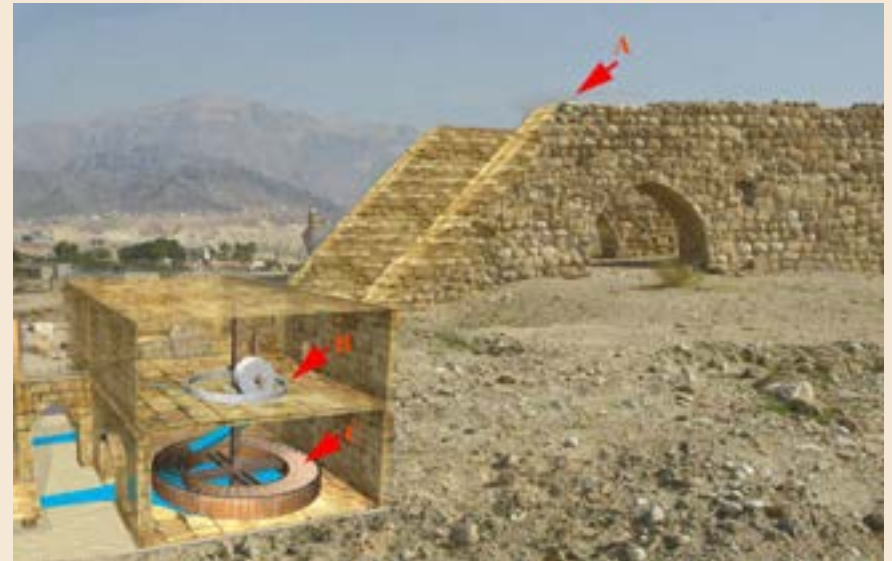


Figure 6.14. Proposed reconstruction of the aqueduct and the pressing and gearing chambers at Masna' as-Sukkar, as-Safi: A, oblique shafts; B, roller presses; C, paddle wheel (graphics, S. Witkin; photo, K. D. Politis).

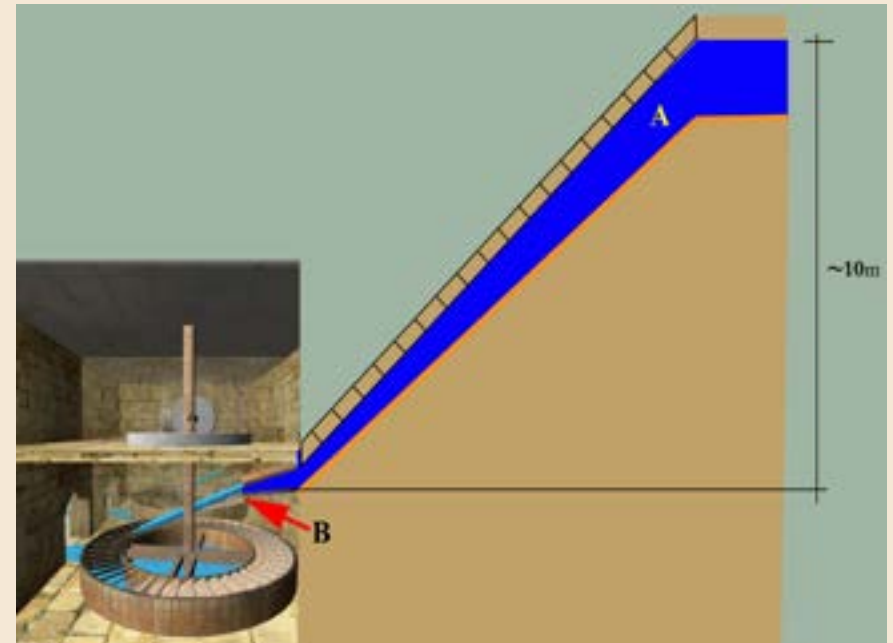


Figure 6.15. Proposed reconstruction of the water-powered mechanism at Masna' as-Sukkar, as-Safi: A, oblique shaft; B, outlet (Y. Dray).

Schematic illustration of gear room at Masna al-Sukkar, Ghor as-Safi

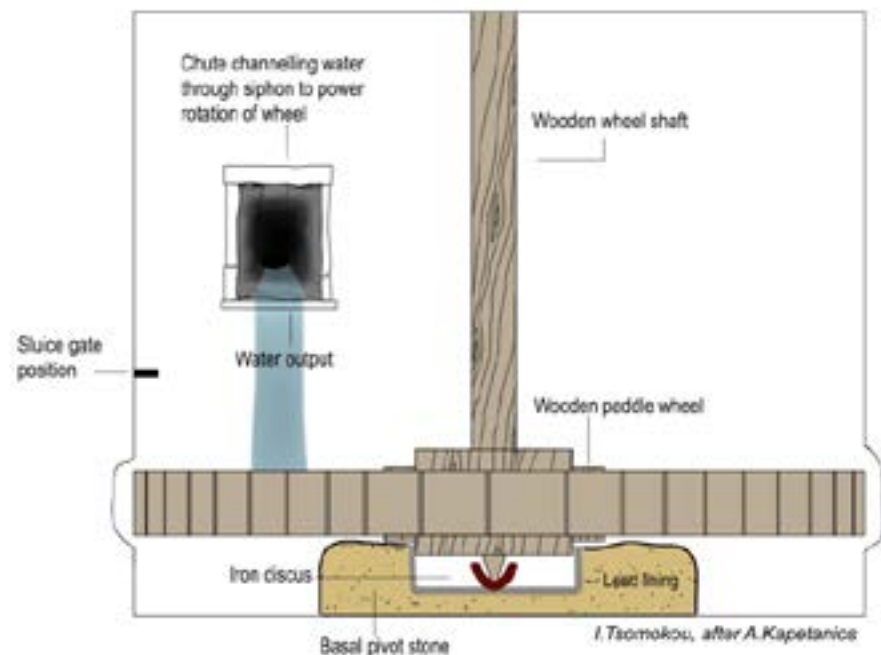


Figure 6.16. Schematic representation of the gearing system in the lower rooms at Masna' as-Sukkar, as-Safi (I. Tsomoukou, after A. Kapetanios).



Figure 6.17. Overhead composite image of sugar processing area at Masna' as-Sukkar, as-Safi (Q. Dasuqi).



Figure 6.18. Collecting vat for pressed sugar juice at Masna' as-Sukkar, as-Safi (K. D. Politis).



Figure 6.19. Sugar pots set into clean plastered surfaces at Masna' as-Sukkar, as-Safi (K. D. Politis).

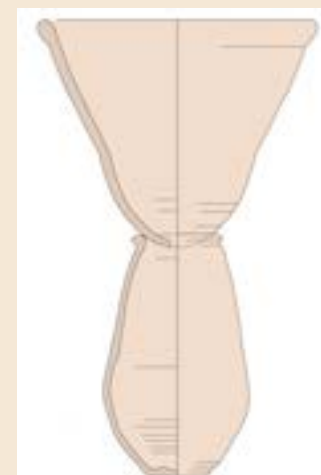


Figure 6.20. Sugar cone (upper) and molasses jar (lower) from Masna' as-Sukkar, as-Safi (K. D. Politis).



Figure 6.21. Clay stamped with official state stamp from Masna' as-Sukkar, as-Safi (K. D. Politis).



Figure 6.22. Sugar processing area from the north, with reconstructed arches, at Masna' as-Sukkar, as-Safi (K. D. Politis).



Figure 6.23. Schematic reconstruction of the western arcade over the sugar processing area at Masna' as-Sukkar, as-Safi (U. Bellwald).

Extracting juice from sugarcane and making it into crystalized sugar originated in Southeast Asia over 2,000 years ago. The ancient Greeks came across this strange new substance that came from "reeds that give honey without bees." But the secret of making sugar was kept from the west until the 11th and 12th centuries, when the Crusaders learned it from the Arabs, who by then were expert in science and technology. After crushing the sugarcanes, sugar producers undertook a complicated chemical process of boiling and purifying the raw sugar juices (Figs. 6.24–26). Water-powered pressing mechanisms and the production of specialized pottery and copper vessels were vital to the enterprise. With its need for large-scale, labor-intensive farming, sugar production became the first modern industry. The wealth that the Arabs gained from trading sugar is comparable to that from petroleum today.



Figure 6.24. Illustration showing the processing of sugarcane to make sugar in Sicily, 1570 (Jan van der Straet, *Nova Reperta*).



Figure 6.25. Inscription on a column in the Umayyad Mosque of Damascus, dated A.H. 836 / AD 1432-1433, recording the endowment of properties in the Jordan Valley connected with the sugar industry by the Sultan Barsbay (H. Saad).

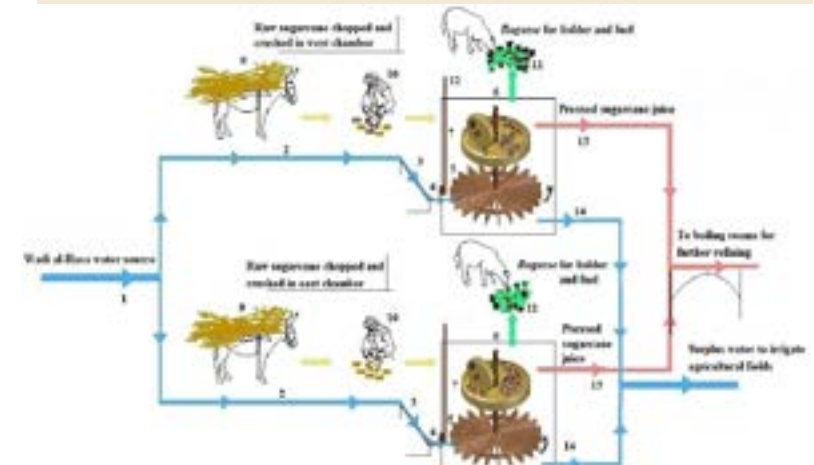


Figure 6.26. Schematic flow chart showing sugarcane processing at as-Safi (A. Kapetanios).



*Figure 6.27. North view of the northern building at Masna' as-Sukkar. Note that the well-hewn sandstone blocks forming an arched entranceway are Ayyubid/Mamluk and the vault and adobe bricks overlaying them are early 20th century (T. Springett).*



*Figure 6.28. Oil painting on canvas of Masna' as-Sukkar with hills above, from the west (J. Bradbury).*

## 7.1. Ottoman Southern Ghor

The earliest evidence for the Southern Ghor in the Ottoman period comes from a late 16th-century tax register (daftar-il mufassal) that records information only about the populations in Sāfiya (as-Safi) and Mazra'a villages.

The area was not fortified until the late 19th century (Fig. 7.1.1), when a mutasarrif (or sanjakbey) based in Karak governed it. There were two outposts on the southeastern shores of the Dead Sea at as-Safi and Haditha villages. The latter also had a natural harbor where, by 1897, a regular steamer ferry would dock to deliver the mail. The Ottoman navy had a port there as well.

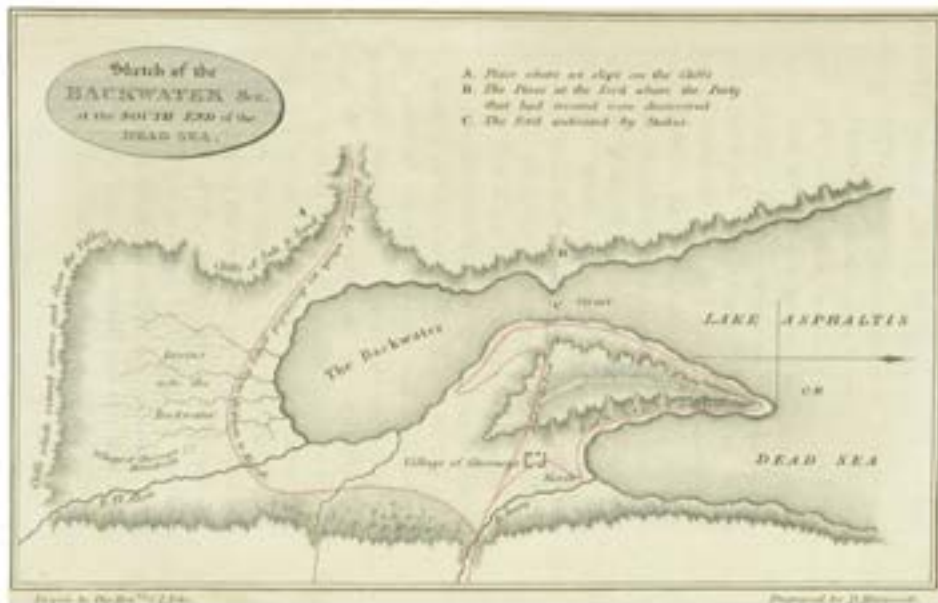


Figure 7.1.1. Sketch map of the southern end of the Dead Sea, identifying two villages of “Ghorneys” in the early 19th century A.D. (Irby et al. 1823).

During the 19th and early 20th centuries, Europeans who traveled to the Dead Sea region wrote of the Southern Ghor and the *ghawarneh* living there in tents and reed huts (Fig. 7.1.2).

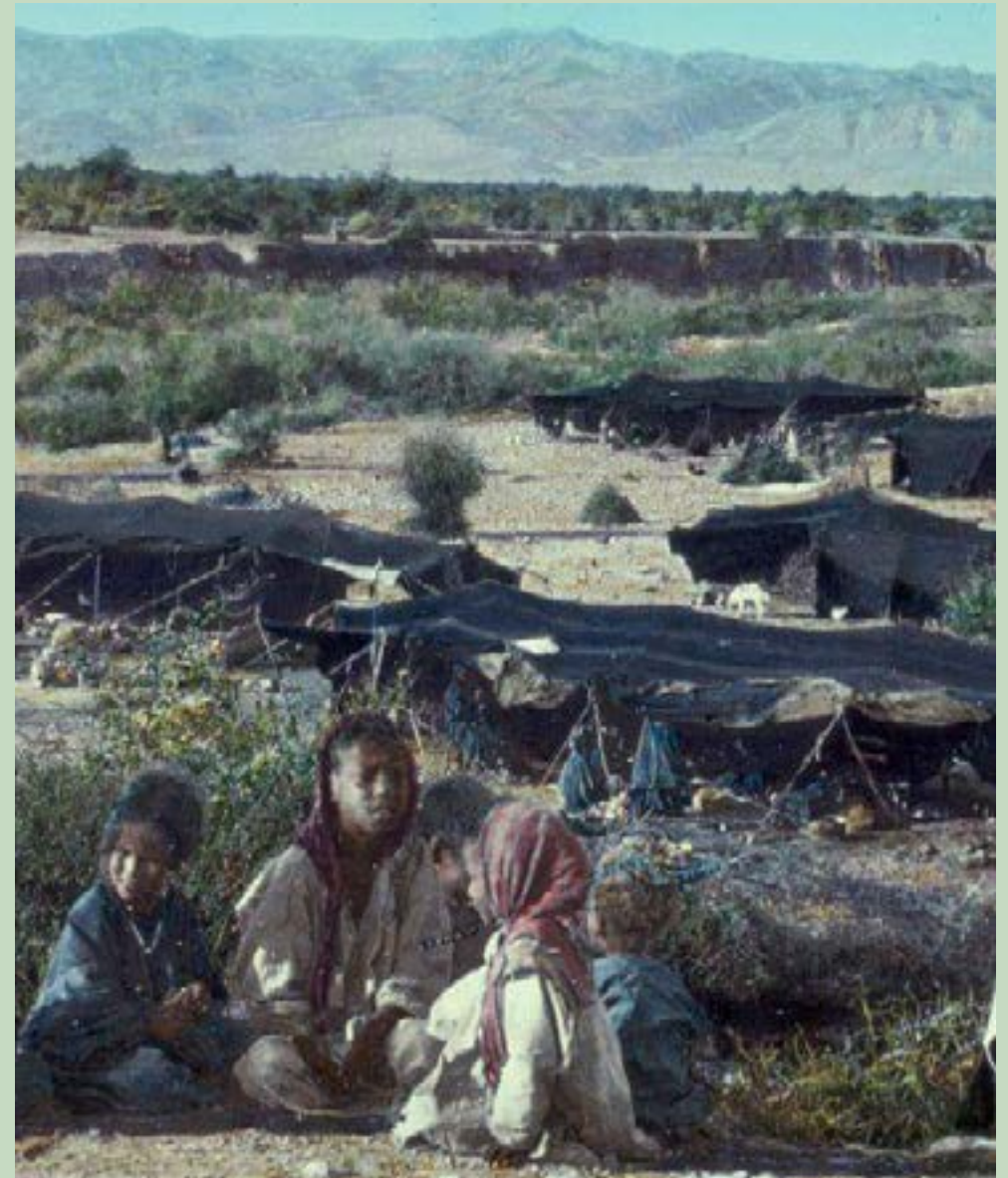


Figure 7.1.2. Ghawarneh with their bayt sha'ar tents by the Wadi al-Hasa, early 20th century (Ghawr as Safi Project archives).

## Flour Mills

At the far southwestern end of the Ottoman complex at Mashnaqa stand the remnants of a stone-built tower with a vertical penstock (floodgate) chute fed by an aqueduct from the Wadi al-Hasa (Figs. 7.1.3-4).

Similarly constructed flour mills apparently of the same period can be found at the Wadi Adh-Dhra' (Fig. 7.1.5), some 35 km to the north, and at the Wadi Feifa (Fig. 7.1.6), 11 km to the south. These are comparable to those found to the north, in the Jordan River Valley, dating to the late Ottoman period.

As in the preceding Ayyubid/Mamluk period, agriculture formed the base of the Southern Ghor's economy during Ottoman times. Wheat fields took the place of indigo and sugarcane plantations as providers of the main cash crop. Perennial water sources and the mild winter climate enhanced yields and enabled the region to produce a surplus of flour, which was traded to Karak and beyond.

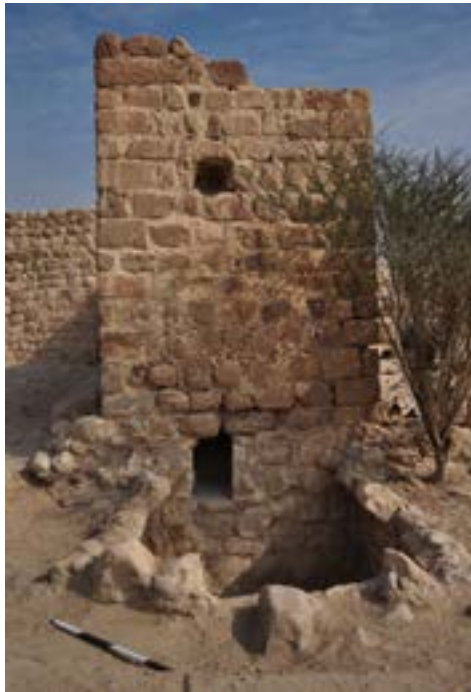


Figure 7.1.3. Vertical penstock of the Ottoman-period flour mill at Mashnaqa, from the west (A. Silkatcheva).



Figure 7.1.4. Aqueduct of the Ottoman-period flour mill at Mashnaqa (after reconstruction), from the south (A. Silkatcheva).



Figure 7.1.5 Vertical penstock and mill house of the Ottoman-period flour mill at the Wadi Adh-Dhra', from the south (K. D. Politis).



Figure 7.1.6. Double mill houses and aqueduct of the Ottoman-period flour mill at the Wadi Feifa, from the southwest (K. D. Politis).

## Ottoman Military Posts

By the outbreak of the First World War, two Ottoman military posts operated in the Southern Ghor: a sizeable one in as-Safi (Mashnaqa) and a smaller one near the bay of Haditha. These two posts essentially administered the area, registered lands, and guarded the southern Dead Sea and western parts of the Karak governorate. They also levied taxes, particularly on the lucrative wheat production of the region.

The Ottoman fort of Mashnaqa consisted of structures built of adobe bricks around the disused Mamluk-period sugar factory (Figs. 7.1.7–8). In 1918, Great Arab Revolt forces under the command of Sherif Abdullah Ibn Hamza successfully besieged and occupied it (Fig. 7.1.9).



Figure 7.1.7. Aerial view of structural remains of the Ottoman fort of Mashnaqa at as-Safi, from the northwest (K. D. Politis).



Figure 7.1.8. Mashnaqa, from the west, in the early 20th century (Ghawr as Safi Project archives).



Figure 7.1.9. Ottoman Mauser rifle cartridges with crescent moon and star, dated A.H. 1325, from the battle with Great Arab Revolt forces in Mashnaqa at as-Safi (P. Hyde-Edwell).

The small Ottoman military post near the bay of Haditha (Fig. 7.1.10) had an adobe construction similar to that of Mashnaqa (Figs. 7.1.11a–c) and seems to have been part of the Ottoman navy's "lake-port of Kerak" that T. E. Lawrence described Sherif Abdullah Ibn Hamza besieging with 70 Beersheba Bedouin, thus stopping traffic on the Dead Sea. The modern Jordanian army occupied it until the 1990s. It has since been demolished to expand the village, and private houses now stand on the location.



Figure 7.1.10. The natural bay of Haditha at the southeastern end of Dead Sea, aerial view from the east (K. D. Politis).



Figure 7.1.11.a. The Ottoman military post at Haditha in 1999, from the east; now demolished (K. D. Politis).



Figure 7.1.11.b. The Ottoman military post at Haditha in 1999, from the west; now demolished (K. D. Politis).



Figure 7.1.11.c. The Ottoman military post at Haditha in 1999, from the west; now demolished (K. D. Politis).

## 7.2. Twentieth-Century Southern Ghor: From British Mandate to Hashemite Kingdom

As in the late Ottoman period and during the Arab Revolt, the Southern Ghor played a small but significant role in the Emirate of Transjordan, which was established in 1921 under British mandate. Geographically, it was cut off from the northeastern shores of the Dead Sea, the Jordan River Valley, and the eastern highlands (Fig. 7.2.1). Considered a backwater, it nonetheless became the southern back door of the new independent Hashemite Kingdom, founded in 1946. After the hostilities of 1970, the region witnessed a renaissance of social, infrastructural, agricultural, and industrial development. An arousal of cultural awareness culminated in a distinct identity and local pride within modern Jordan.



Figure 7.2.1. 1917 map (reprint of one originally prepared in 1915) showing details of the southern end of the Dead Sea, with Ghor es-Safiye (Ghor as-Safi) in a central position at the dawn of Transjordan. Scale 1:25,000 (National Archives, UK. Title: Syria Jerusalem [Kuds-Esh-Sherif], MPH 1/674/5).



Figure 7.2.2. Bayt sha'ar tent in Ghor as-Safi, early 20th century (Ghawr as Safi Project archives).



Figure 7.2.3. Chibouk (clay tobacco pipe), ca. mid-20th century; Ibrahim Muslim Hashoush family, as-Safi (K. D. Politis).

During the British Mandate period (1921–1946) the people of the Southern Ghor (ghawarneh, as they were and are still called) numbered just over 6,000 and were divided into two major alliance groups, one based in the northern villages of Haditha and al-Mazra'a, the other in the south in as-Safi and Feifa. Cultivation of millet, tobacco, indigo, and madder provided the main economy, with tribes having acknowledged lands farmed by extended families (Fig. 7.2.3).

As late as the 1940s the Southern Ghor remained an isolated, unknown, and unexplored region of Transjordan. Malaria was rife, and it was deemed an unsafe place near the border of Israel. Outsiders traveling here needed armed escorts.

### Traditional Architecture

Vernacular architecture mostly remained the same between late Ottoman times and the mid-20th century. Simple huts made of reeds (Fig. 7.2.4) and long bayt sha'ar tents (Fig. 7.2.2) dominated domestic dwellings. Builders used local cobblestones (Fig. 7.2.5) and adobe bricks (Figs. 7.2.6–7) primarily for the construction of public buildings. Since the 1970s, cement and concrete blocks have become the main building materials.



Figure 7.2.4. Typical domestic hut made of bound reeds, Southern Ghor (K. D. Politis).



Figure 7.2.5. Old mosque made of adobe bricks and local cobbles in al-Mazra'a; now demolished (K. D. Politis).



Figure 7.2.6. Mid-20th-century adobe brick-made building, with a domed roof to alleviate heat, in as-Safi; now demolished (K. D. Politis).



Figure 7.2.7. Mid-20th-century square adobe brick-made building in as-Safi (K. D. Politis.)

In the cases of open-air mosques, a simple row of stones with an outline of a mihrab (prayer niche indicating the direction of Mecca) sufficed (Fig. 7.2.8). Similar mosques were recorded during the mid-20th century in Transjordan.



Figure 7.2.8. Open-air mosque near the Wadi Sarmuj (K. D. Politis).

## Recent Developments

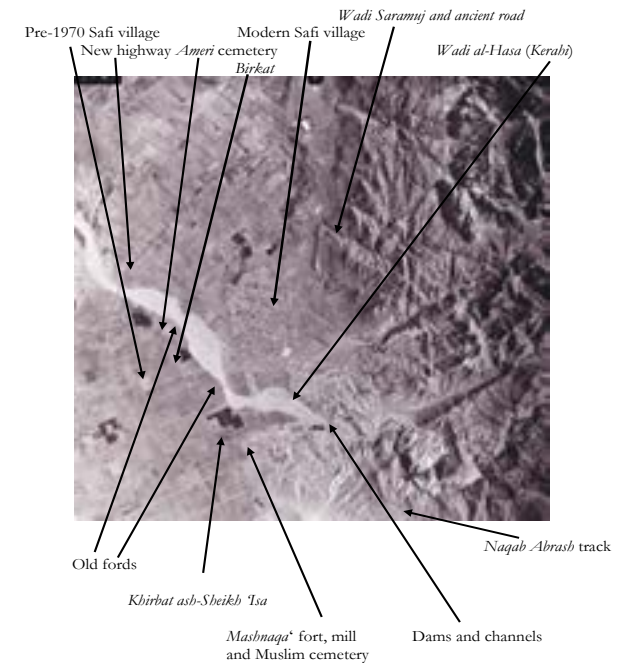


Figure 7.2.9. Aerial photo showing 20th-century sites in the Southern Ghor in 1992 (courtesy of Royal Jordanian Geographic Society; annotated by K. D. Politis).

Between the 1940s and 1960s, the settlements of the Southern Ghor were situated near wadis that provided rich alluvial soils (Fig. 7.2.10) and easily accessible water for irrigation. This enhanced agricultural productivity and in turn helped the communities to gradually develop and grow. Agriculture continued to play a vital role in the economy of the Southern Ghor. Wheat production, which Ottoman authorities had maintained but heavily taxed, was now deregulated and supported by state investments. Modern flour mills were installed to match the increased harvests (Fig. 7.2.11).



Figure 7.2.10. Center of pre-1970 as-Safi village surrounded by verdant agricultural fields (K. D. Politis).



Figure 7.2.11. Modern flour mill at pre-1970s as-Safi village (K. D. Politis).



Figure 7.2.12. Muslim cemetery at Al-Ameri (or maqbarat as-Safi), west of the ford at the Wadi al-Hasa (K. D. Politis).

But despite these advances, the Southern Ghor was still a relatively underdeveloped part of Jordan. During the mid-20th century, salt, a valuable commodity, was collected at Numayra and from the bay near Haditha village (Fig. 7.2.13), from which flat-bottomed iron boats (Fig. 7.2.14) transported it to Jerusalem. The economic and strategic position of a port on this bay at the southern end of the Dead Sea is mirrored during Roman and Byzantine times, when it was named Mahoza and likewise served as a harbor for the district of Zoara. This is evident from the Madaba mosaic map, with its depiction of boats transporting white (salt?) and yellow (wheat?) cargos on the Dead Sea (Fig. 5.1.5).

In the 1970s the government established new townships and planned agricultural fields with an underground irrigation system. Excavations for all these works accidentally revealed many antiquities and opened a new chapter in the cultural history of the region. Perhaps the most important event in the late 20th century was the construction of a new highway along the entire length of the Dead Sea. When this opened in 1999, the Southern Ghor and its villages were at last easily accessible to all of Jordan. This not only facilitated commerce (particularly of agricultural products) but also culturally opened a region that had been secluded for millennia.



Figure 7.2.13. Collecting salt from the Dead Sea, (K. D. Politis).



Figure 7.2.14. Remnants of a flat-bottomed iron boat for salt transport at the bay of Haditha (K. D. Politis).

Today the Southern Ghor belongs to the Karak Governorate and has a population of over 40,000. It is a growing, vibrant, and increasingly thriving community in modern Jordan. In 2018, as-Safi, the center of the Southern Ghor, was decreed the cultural capital of Jordan for the year, confirming its position as a proud heritage site.



Figure 7.2.15. Today tomatoes are a staple agricultural produce of the Southern Ghor (K. D. Politis).

## 8. Conservation, Heritage Management, and Tourism

### Conservation

Responsible heritage management begins with the preservation of ancient sites and objects for future generations to appreciate. With this in mind, archaeologists working in the Southern Ghor established a conservation program from the outset, in 1988. This began with the Deir Ain Abata Project, for which the British Museum and the Greek Ministry of Culture gave substantial support in order to train some workers from the local community to conserve architectural features, in particular mosaic pavements. Consequently, these valuable individuals worked for and augmented their skills in the subsequent Ghawr as Safi Project, sponsored by the Hellenic Society for Near Eastern Studies (HSNES) from 2011 to 2017, with additional support from the Sustainable Cultural Heritage through Engagement of Local Communities Project (SCHEP), funded by USAID and implemented by the American Center of Research (ACOR). These trainees documented and stabilized new mosaic pavements found during excavations at Khirbat ash-Sheikh 'Isa (Figs. 8.1).

In addition, the conservation of portable objects (mostly of stone and pottery) from excavations at several other Southern Ghor sites supplemented the SCHEP training program (Figs. 8.2). In 2017 the Archaeological Institute of America and Hilton Worldwide (AIA-Hilton) awarded a grant to consolidate and protect the structures of the Masna' as-Sukkar sugar factory complex at as-Safi (Fig. 8.3). The HSNES trained workers to cut sandstone blocks (voussoirs) used to restore several arches in preparation for a future shelter over the sugar processing areas (Fig. 8.4). Introduction of a drainage system prevented rainwater from further damaging the site.



Figure 8.1. Documenting and conserving mosaic pavements at Khirbat ash-Sheikh 'Isa, as-Safi (M. A. Hashoush).



Figure 8.2. Pottery conservation training in the Museum at the Lowest Place on Earth, as-Safi (K. D. Politis).



Figure 8.3. Consolidating structures of the Masna' as-Sukkar sugar factory at as-Safi (K. D. Politis).



Figure 8.4. Restored stone arches of the Masna' as-Sukkar sugar factory at as-Safi (K. D. Politis).

## Heritage and Site Management

Until recently, the local population did not understand the antiquities found in the Southern Ghor and thus undervalued them in terms of cultural identity. Yet the area has one of the wealthiest such legacies in the region. The people living here simply lacked awareness and education about their rich heritage.

Since 1988, an integral objective of the Deir Ain Abata Project has been to encourage a local consciousness and identity through archaeology. As early as 1995 USAID recognized the tourism potential of this underdeveloped area and provided some support for the project which foresaw the coming of SCHEP. Over years of informative discussions, site visits, and seasonal employment, the inhabitants began to feel a growing sense of pride and consequent ownership of the past (Fig. 8.5). The need to preserve and display all the finds locally intensified. This culminated in the establishment of the Museum at the Lowest Place on Earth at as-Safi.



Figure 8.5. Discussions during a site visit by a local school group from as-Safi to the Sanctuary of Lot at Dayr 'Ayn 'Abata (T. Springett).

SCHEP, which was initiated in 2014, shares these same goals, and recognizing the importance of the Ghor as-Safi project, made it its first sponsored project. Throughout Jordan, SCHEP has raised awareness of the importance and potential benefits that cultural heritage holds for local communities. Men and women from an area are trained as archaeological site stewards who make certain that SCHEP and project directors understand and work toward the community's needs and interests and who help to educate students and other residents.

With these objectives in mind, HSNES was asked to prepare for SCHEP a management plan for the Southern Ghor, which was approved by the Department of Antiquities of Jordan and includes lectures about heritage in the local community, the training of two site stewards, regular site and fence maintenance, periodic removal of vegetation, and clearing of wind-blown sand from ancient sites. These actions continued in 2017 with the support of the Al-Hima Foundation and in 2018 with AIA-Hilton funding. SCHEP also aided the development of more effective museum and on-site presentations, as well as printed publications and online information, about the Southern Ghor's cultural heritage.

These efforts have long-lasting benefits in the Southern Ghor. The conservation trainees for the Ghawr as Safi Project were jobless young women and men from the area, who learned at the Museum at the Lowest Place on Earth and in the field how to collect, store, and present artifacts and techniques for conserving pottery and mosaics. Like the Deir Ain Abata Project, this training provided more than education and deeper appreciation of local history: it also resulted in employment for dozens of community members, giving them a real-world, practical stake in their ancient heritage.

## Museum of Southern Ghor Heritage

The idea of a museum at the lowest place on earth originated in 1996, during archaeological excavations at the Sanctuary of Lot. The late King Hussein proclaimed the site a holy maqām (Islamic monument) in 1995, and six years later UNESCO added it to its Tentative World Heritage List. The location therefore was deemed a suitable place for a local museum. Initial funding came in 1999 from the Arab Potash Company, which commissioned Georges J. Hakim to design the museum. On the basis of these plans, the Government of Jordan financed the building, which began in 2004 and was completed by 2006 (Fig. 8.6).



Figures 8.6 Aerial view of Museum at the Lowest Place on Earth (Aerial Photographic Archive for Archaeology in the Middle East).

The museum encompasses an area of about 2,000 x 500 m at the southeastern end of the Dead Sea basin, which at its lowest point is approximately 405 m below sea level, the lowest place on the earth's surface. In 2007 the Ministry of Tourism and Antiquities of Jordan contracted the HSNEs to complete the interpretation and design of the exhibits within the museum. The exhibit objective is to describe the various peoples who have lived in and traveled along the Southern Ghor, the southeastern shores of the Dead Sea. The overall concept was therefore entitled "The Peopling of the Lowest Place on Earth," and the museum was consequently named the Museum at the Lowest Place on Earth. It formally opened to the public in 2012. The Museum's purpose is to display the archaeological heritage of the region and to preserve and store its material culture, thus presenting the narrative of human civilization in the area (Fig. 8.7).



*Figure 8.7. Exhibition hall of the Museum at the Lowest Place on Earth (K. D. Politis).*

The museum exhibits have been upgraded periodically under the auspices of HSNEs, funded by SCHEP in 2015–2017, by AIA-Hilton in 2018, and by private sponsors.

The museum now houses offices of the Department of Antiquities of Jordan, an archaeological conservation laboratory, an archive room, ample storerooms, and a hostel for scholars who have come to study the museum collections. It also serves as a cultural center where several local and international events have been held, most notably part of the 7th World Archaeological Congress, in 2013.

## A New Tourism Destination

Until recently, the only tourist attractions in the Southern Ghor were the Sanctuary of Lot and the Museum at the Lowest Place on Earth. The former has strong biblical associations and has been featured in Jordan's tourism program for over 20 years. A shelter now protects the church mosaics, a road and pathway make reaching it easier, and signage offers information about the site (Fig. 8.8).



*Figure 8.8. Aerial view of the Sanctuary of Lot at Dayr 'Ayn 'Abata before the erection of a protective shelter over the church mosaics. Note the visitor pathways below and the protective walls above (K. D. Politis).*

The Museum at the Lowest Place on Earth has global appeal because of its unique geographic position. Furthermore, it is located midway between Amman and either Petra or Aqaba (about 1.5 hours in either direction) on a highway, known as the "Dream Road," that runs along the eastern shore of the Dead Sea. These two factors have made it an important tourist site in Jordan, and the number of visitors is increasing.

The Women's Association of Safi runs a museum shop there, and there is a café under local management.

In 2013 UNESCO initiated a revitalization of indigo production in the Southern Ghor, with support from the Drosos Foundation. By 2017, the Women's Association of Safi had turned the endeavor, which is based on the archaeological discoveries of ancient sites there, into a profitable enterprise that attracts worldwide attention.



Figure 8.9. K.D. Politis shows U.S. Ambassador and Department of Antiquities Director the Masna' as-Sukkar sugar factory, with new visitor signage (B. Porter).



Figure 8.10. Masna' as-Sukkar sugar factory from the north, with the visitor pathway made of wooden pallets (USAID SCHEP).

The ancient Masna' as-Sukkar sugar factory is now earmarked as a major attraction in the Southern Ghor for local visitors and foreign tourists alike. In 2017 HSNES designed seven bilingual visitor signs installed with SCHEP funding (Fig. 8.9). The support of the Al-Hima Foundation and SCHEP provided pathways made of wooden pallets (Fig. 8.10). These improvements allow visitors to view the site and discover its fascinating history even without the company of a tour guide. It is through this kind of long-term support for a community and its heritage that USAID and SCHEP have made fundamental changes to the tourism sector in Jordan, thereby truly enabling a sustainable local economy.

In the new Jordan Museum in Amman there is a partial reconstruction of the as-Safi Masna' as-Sukkar sugar factory (Fig. 8.11). This shows how much Jordan values the site as a vital part of its national heritage and as a tourist destination.



Figure 8.11. Partial reconstruction of the Masna' as-Sukkar sugar factory exhibited in the Jordan Museum, Amman (K. D. Politis).

Another SCHEP-supported endeavor is the South Valley Company for Sustainable Cultural Heritage and Tourism Development. Founded by two of Ghor as-Safi's former site stewards, this community-based enterprise provides tourists with experiences not available elsewhere in the Southern Ghor. The centerpiece is Safi Kitchen, where tourists from elsewhere in Jordan and from abroad can enjoy learning about the culture and cuisine of this under-visited part of the country through farm-to-table agritourism experiences (Fig. 8.12.a-b). Through biking and hiking tours, visits to working farms and rural families, and ecotourism, the South Valley Company provides tourists with new ways to see the Southern Ghor and members of the local community, including women, with new means of earning a livelihood while preserving their ancient and modern cultural heritage.



Figure 8.12.a. A woman from Ghor as-Safi chops fresh mulukhiyyeh, a local crop that makes a popular Jordanian dish, in Safi Kitchen (USAID SCHEP).

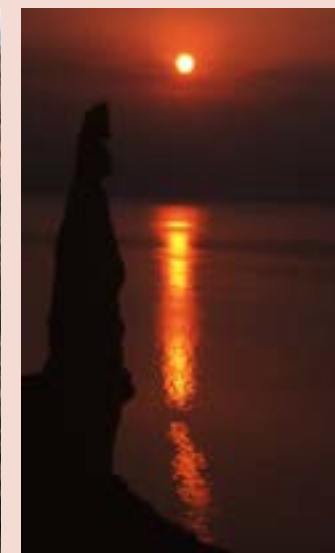
Figure 8.12.b. Tourists from the United States pick vegetables from a local farm in Ghor as-Safi as part of a Safi Kitchen farm-to-table experience (USAID SCHEP).



The Southern Ghor also offers the traveler opportunities to discover stunning natural landscapes. Perhaps the most amazing is the lunar-like terrain of the Lisan Peninsula, jutting out from the southeastern shore of the Dead Sea. Its white, powdery, dried-out layers of sediment once formed the bottom of the ancient Lisan Lake. The salt formations, bitumen, and sulfur balls all found naturally here remind some visitors of the ancient story of Lot and the destruction of Sodom and Gomorrah (Figs. 8.13–15).



Figure 8.13. Naturally forming upright salt columns on the Dead Sea shore may have inspired the story of Lot's wife turning into a pillar of salt (K. D. Politis).



Figures 8.14.a–b. A natural upright stone pillar, north of the Wadi Ibn Hammad, that local tradition calls "Lot's Wife" (a) (K. D. Politis); sunset over Dead Sea (b) (J. Younis).



Figure 8.15. Naturally occurring sulfur balls encased in gypsum salts found on the Lisan Peninsula sediments, thought by some to be the "brimstones" referred to in the biblical story of Lot (K. D. Politis).

The rose-colored sandstone cliffs of the gorge at Wadi Numayra resemble the narrow gorge (siq) that serves as the entrance to Petra (Fig. 8.16). With its shade and cool-running water, it is a perfect mid-day picnic stop. There is no sign posted, but its entrance stands opposite a modern war memorial that is on the west side of the highway.



Figure 8.16. The entrance to the red sandstone gorge at the Wadi Numayra (A. Lowe).

Trekking in wadis is a particularly invigorating activity. Several of the Southern Ghor's wadis, such as Numayra (Fig. 8.16) and Hasa (Fig. 8.17), are outstanding places to comfortably walk through. You can see spectacular geology, vegetation, mammals, birds, and even fish. You can wade through flowing streams and stand under cascading waterfalls (Fig. 8.18).



Figure 8.17. Flowing perennial stream at mouth of the Wadi al-Hasa (K. D. Politis).



Figure 8.18. Waterfall in the Wadi al-Hasa, near the Wadi Hamrash (K. D. Politis).

The Southern Ghor offers numerous natural springs, some of which are thermal and have therapeutic qualities, including those at Ibn Hammad and Dhra' (Fig. 8.19), which, although virtually unknown, are easily accessible.



Figure 8.19. Mouth of the 'Ayn Dhra' hot spring. The Arabic word dhra' means "arm," implying that the land has been upturned by a powerful force (K. D. Politis).

### Wildlife

With its combination of ample freshwater sources and favorable geographical orientation, the Southern Ghor lies along one of the most important north-south bird migration routes in the world and is thus an ideal location for birdwatching. Over a billion birds are estimated to cross annually. Some, like the greater hoopoe-larks, green bee-eaters, and Tristram's grackles, fly through, but others, such as the black eagle and griffin vulture, stay to nest here (Figs. 8.20–21).



Figure 8.20. Green bee-eaters (*Merops orientalis*), a common sight in the Southern Ghor, are very welcome, as they feed on numerous flies and other small insects (J. Al-Younis).



Figure 8.21. Storks flying through the Southern Ghor (J. Al-Younis).

An area extending from west of the village of Feifa to the Wadi Khunayzir has been designated a nature reserve where you can peacefully watch these birds. Wild boars, hyenas, and wild cats roam freely here. Agama lizards and other reptiles are abundant. Indigenous tropical and salt-tolerant plants also survive in this reserve. All these recreate the particular biosphere of the Southern Ghor (Figs. 8.22–26).



Figure 8.22. Feifa Nature Reserve (Royal Society for the Conservation of Nature).



Figure 8.23. A blue Sinai agama (*Pseudotrapelus sinaitus*) hiding among rocks in the Southern Ghor (J. Al-Younis)



Figure 8.24. Flowering caper bush (*Capparis spinosa*) in the Southern Ghor (T. Springett).



Figure 8.25. Flowering atil tree (*Maerua crassifolia*), indigenous to the Southern Ghor (T. Springett).



Figure 8.26. The so-called "apple of Sodom" (*Calotropis procera*) is a shrub that easily grows in salty soils of the Southern Ghor; its fruit is not edible (K. D. Politis).

Near the village of Feifa, just before you reach the end of the depression of the Southern Ghor, on the east side of the highway is a spectacular road leading up the Wadi Umruq, on to Tafila, and eventually to Petra and beyond (Fig. 8.27).



Figure 8.27. View of Southern Ghor and Dead Sea from the Wadi Umruq (K. D. Politis).



Figure 8.28. Viewing Dead Sea salt pans of the Southern Ghor from the Wadi Kuneyeh (R. Schick).



Figure 8.29. The Museum at the Lowest Place on Earth overlooking the Dead Sea at dusk (K. D. Politis).

## 9. Further Reading

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*Cover Image: Zoara and the Sanctuary of Lot on the  
mosaic map floor at Madaba in Jordan (K. D. Politis).*