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BURIED IN THE VILLAGE: SKELETON FINDS IN A GRAECO-ROMAN SETTLEMENT AT WADI UMM EL-ASHDAN, NW-EGYPT

ABSTRACT: *The article presents the results of archaeological campaigns in 2009 and 2010 at a site in the arid zones of north-western Egypt. Ca. 25 km southwest of the harbour city Marsa Matruh, the settlement between two branches of the Wadi Umm el-Ashdan could be dated to Graeco-Roman times (2nd c. BCE to 4th c. CE) on the basis of ceramic finds. Tombs have been found, which are characterized by the construction made of field stones above surface, covered with a thick layer of plaster. Three of the inhumation burials were excavated, of which one was disturbed and had no skeleton inside, while the other two burials served three deceased. The anthropological diagnosis of the three skeletons indicates that the male individuals died of advanced age. Bones and teeth show numerous signs of age degenerative changes.*

KEY WORDS: *NW-Egypt - Arid landscape - Rural settlements - Burials - Anthropology*

DEATH, BURIALS, AND SKELETONS IN NORTH-WESTERN EGYPT

If one thinks about the death along the shores of the Mediterranean in Libya and Egypt, the heavy combats at the end of WW II come to mind. In a rather scarcely populated region of the Mediterranean Large memorials at el-Alamein and Tobruk mark highly visibly the battlefields and attract visitors from around the world. In Graeco-Roman antiquity, the area between Alexandria and the Jebel el-Akhdar in Eastern Libya

was also not a densely populated area, but rather a marginal zone where only with the end of the 20th and the beginning of the 21st century research on its history started. Polish excavations at el-Alamein (Daszewski 2008, Zych 2002) or survey projects in the Eastern and Western Mamarica (Bates 1914, Hulin *et al.* 2008, 2010, Pöllath, Rieger 2011, Rieger, Möller 2011, Rieger *et al.* 2012, Vetter *et al.* 2009, Vetter *et al.* 2013, White 2002a, 2002b) give insights into a Graeco-Roman way of living along the coast, but also an autochthonous way of living in the southern zones which lie on the Marmarica-

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Plateau. Since burials as a resilient form of cultural expression are commonly used as markers of distinction, of traditions that remain rather indigenous or become hybrid (Lembke 2014, Zych 2001), the findings of burials and skeletons from a village on the tableland southwest of Marsa Matruh (*Figures 1 and 2*) are not only of anthropological interest but also from the point of view of burial practices.

THE ARCHAEOLOGY OF NORTH-WESTERN EGYPT IN GRAECO-ROMAN TIMES

The area our research focused on is the Eastern Marmarica and extends to 50 km east and west of the

harbour city of Marsa Matruh, ancient Paraitonion. The survey covered the northern fringes of the Libyan Desert down to 150 km south of the coast (*Figure 1*). The entire region is semi-arid to arid and lies below the agronomic line for rainfed agriculture. Life-strategies in antiquity based (and still base) on agriculture on the Northern Tableland, cut by wadis, and the coastal zone due to an elaborate system of "water harvesting", as well as on livestock breeding to make use of the vast areas of fallow between the wadi incisions.

On the Northern Tableland, where people could make best use of the arid environment, a large number of villages, hamlets and farmstead from Graeco-Roman times could be documented (*Figures 1 and 2*).

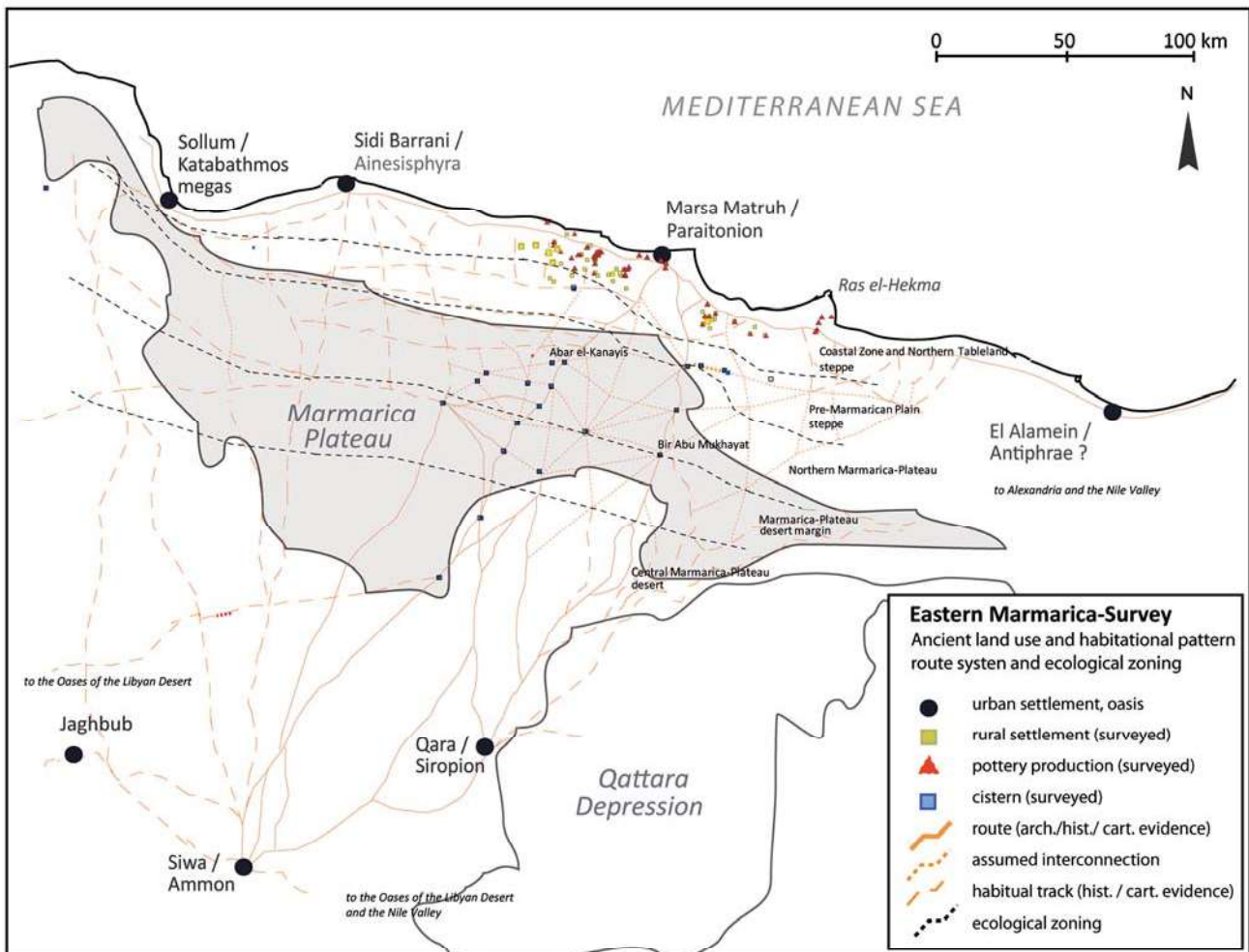


FIGURE 1: North-western Egypt between the Qattara-Depression and the Mediterranean coast, with the settlement and land use pattern as well as the route system in Graeco-Roman times on the Marmarica-Plateau. Plan: A.-K. Rieger.

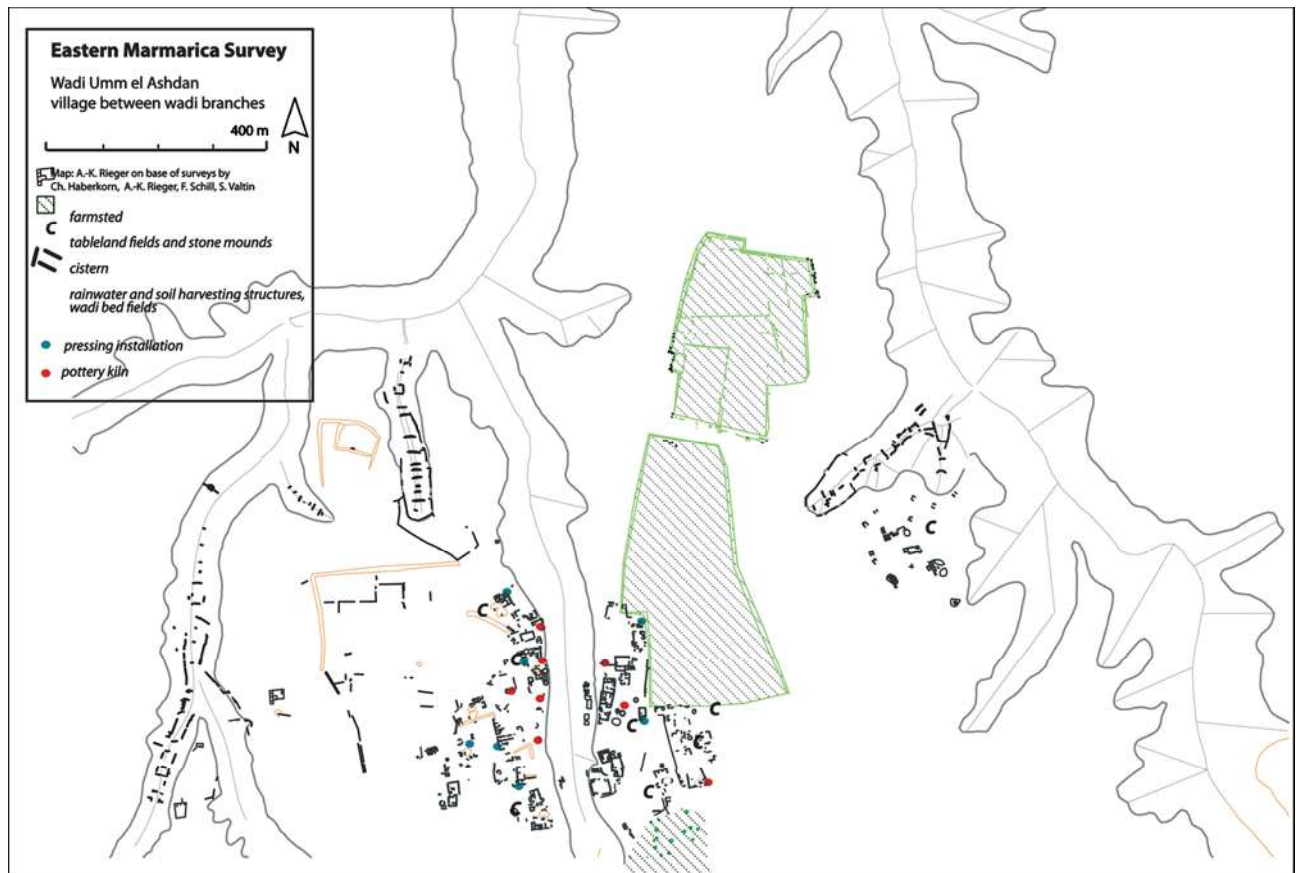


FIGURE 2: The settlement of Wadi Umm el-Ashdan on the Northern Tableland west of Marsa Matruh. Plan: A.-K. Rieger, S. Valtin.

The settlement at Wadi Umm el-Ashdan

At Wadi Umm el-Ashdan (Figure 2) a larger settlement is located, consisting in c. 25 to 30 individual rectangular houses or farmsteads, distributed on both sides of the western branch of the wadi. The settlement covers an area of c. 0.25 km² and disposes of at least three cisterns, five wine presses, and many small-scale kilns. Circular structures might have been pigeon houses that were breed for eggs, meat, and manure (Figure 2). The chronology set up through pottery show that the village was in use between the 2nd c. BCE to the 4th c. CE. The houses are built with the local field stones as foundation for raising walls in mudbricks. They measure between 350 to 700 m², often with rooms grouped around a courtyard, or with just one to two rooms only

without a courtyard. The houses had flat roofs. Some pieces of painted plaster (red on white) represent decoration of the inner walls of the houses, even if of modest standard.

The village of Umm el-Ashdan represents a common scheme on the northern tableland. Yet, since we do not have many comparisons, Tell el-Haraby, only a kiln, el-Alamein a city with closer relations to Alexandria, while Marsa Matruh in Graeco-Roman times is not known (Boussac 2007, Majcherek, Shennawi 1992).

Beside the areas for living and working there are grave yards situated on the slopes of the wadi (Figures 2 and 3). The surface evidence of small compartments made from thin walls as well as many plaster remains along the slopes is different from the surface evidence in the settlement, so that we assumed here a necropolis.



FIGURE 3: Wadi Umm el-Ashdan, the western branch of the wadi, where parts of the necropolis are situated. Slightly cleaned surface of the trench 10, view from north. Photo: B. Geissler.

The burials and findings in trench 10-1, 10-2, 10-3

A representative trench (trench 10, *Figures 3 and 4*) was laid out on the eastern slopes of the wadi in order to verify or falsify our assumption. After the confirmation that the structures and remains belong to burials, the aim was to investigate the construction, the possible grave goods, the chronology, and the anthropological remains from the necropolis, i.e. the inhabitants of the village.

We opened three burials (10-1, 10-2, 10-3) correlated to the skeletal remains analysed below (skeleton UA 305, skeleton UA 312, skeleton UA 320) (*Figures 4 and 5*).

Trench 10-1

The first trench 10-1 was opened inside an oval of stones (*Figure 6*). We removed the upper layer, which consisted of a mixture of brownish earth mixed with little parts of mud and some pottery. After about 0.2 m the neck of an amphora was found, put upside down on the northern end of the oval and missing its bottom (*Figure 7*). After 0.4 m we discovered a rectangular

shape measuring about 2.0 m by 0.5 m that was cut in a layer of mud-like material with high density that also in other trenches appeared to lie directly on the bedrock. The rectangle was filled with the same material as before, up to a depth of 0.5 m, only that this filling was much softer with a big variety of conclusions. The uncompressed material in the inner of the tomb is the result of a disturbance. The bones still in the burial on a deeper level in the southeast corner of the ditch were muddled and lay in different levels.

Trench 10-2

The second tomb (10-2) lies directly in the west of the 10-1 (*Figure 4*). After the removal of the surface material, a layer of mud-like material of high density with only little conclusions appeared. Again a rectangular shape of approximately the same dimensions as in the tombs 10-1 appeared. In a depth of about 0.5 m from the surface some bones appeared. This time we discovered them undisturbed and all parts of the straight skeleton lying on its back were in the correct position (*Figure 8*). Pieces of wood, clung to metal nails and preserved due to corrosion, were mixed

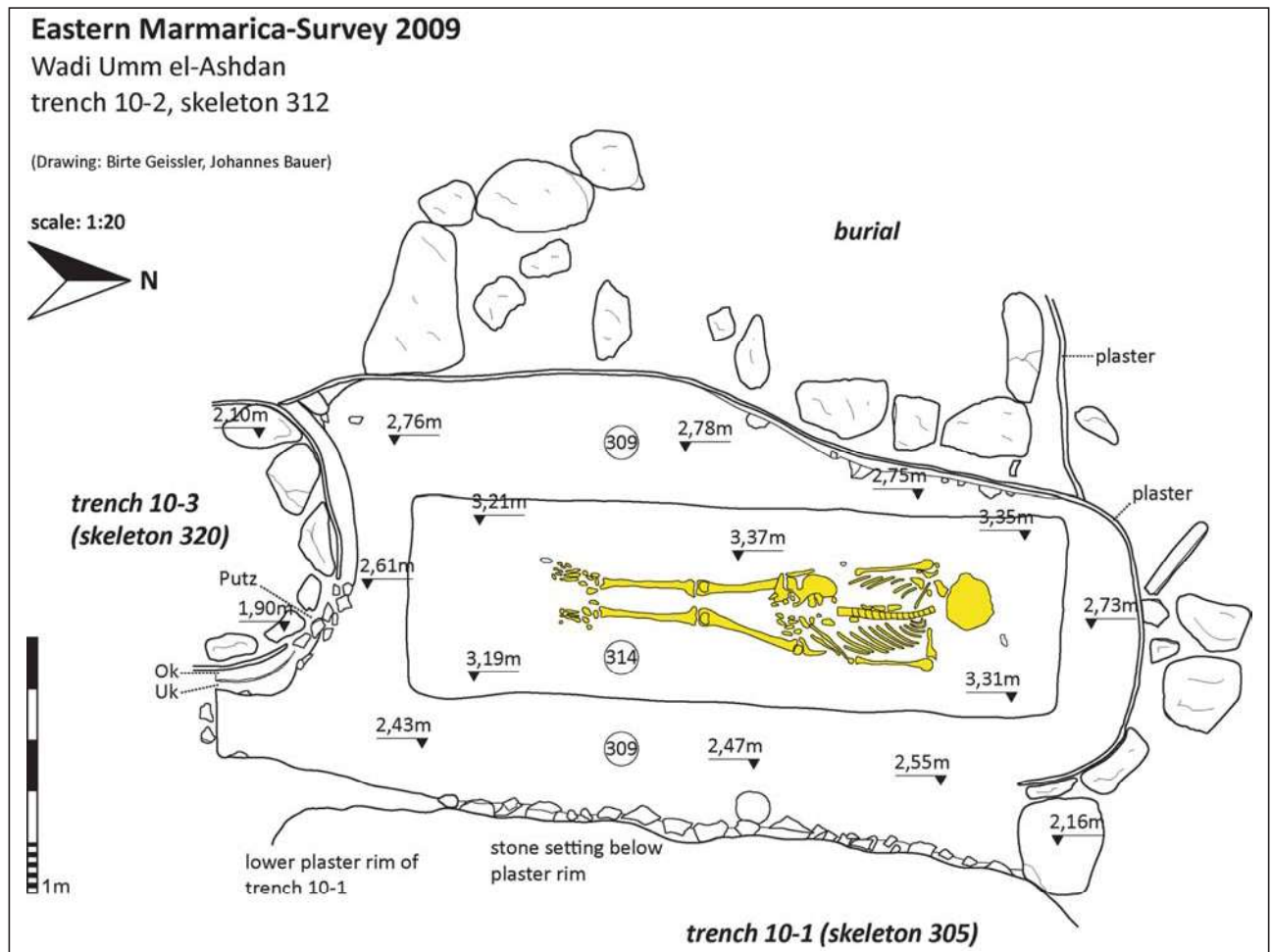


FIGURE 4: Drawing of the trench 10, with the burial 10-1, 10-2, 10-3. Plan: B. Geissler, J. Bauer.



FIGURE 5: Aerial view on the situation of trench 10 and the pertaining burials. Photo: A. Gross.



FIGURE 6: View of burial 10-1, on the level above the skeleton UA 305. Photo: B. Geissler.



FIGURE 7: The upper part of the amphora (type AE 3-6.2) set upside down at the northern end of the burial.
Photo: A.-K. Rieger.



FIGURE 8: Skeleton UA 312 in burial 10-2.
Photo: B. Geissler.



FIGURE 9: Piece of wood (pine), with corroded metal nail.
Photo: A.-K. Rieger.

among the filling of the tomb and were part of the burial (Figure 9). No ceramic or other metal objects were found in the grave.

Trench 10-3

Trench and burial 10-3, situated to the south of 10-2 (Figure 4), showed again a rectangular cavity cut the in the calcareous hill gravel in north-south direction (Figure 10). The human skeleton is complete, the head is showing northwards. No ceramic, metal, or other objects were found in the grave.

The structure of the tombs and burials and comparisons

The tombs are dug out as far as the shallow soils on the slope allow. Above surface the graves and bodies in them were covered and marked with a rectangular to oval stone structure (or cist) made of field stones with earthen mortar. These markers of the borders of the burials are gone in most cases. Nevertheless, on



FIGURE 10: View of trench 10-3 with skeleton UA 320. Photo: B. Geissler.

surface level the layers of the covering plaster are still visible in some cases. The whitish plaster could have been painted – comparable to the plaster pieces from the house contexts, and may have served to protect and increase visibility of the tomb (*Figure 5*). A comparable technique and appearance we find in the western North Africa, at the Roman necropolis of Puppūt (Hammamet, Ben Abed; Griesheimer 2004).

Apart from the type of burial we could document at Wadi Umm el-Ashdan, also rock-cut tombs are common as soon as the topography allows this. Where Wadi Umm el-Ashdan drains into the coastal plain, rock-cut tombs are preserved in the escarpment, for example (*Figure 11*). At el-Alamein and Plinthe to the east, more elaborate and also sub-surface tombs are common (Boussac, Georges 2010, Boussac *et al.* 2012, Daszewski 2010). At el-Alamein also remains of wooden coffins were found (Zych 2002, without botanical analysis). The standard of technique and decoration is, however, higher the closer one comes to Alexandria.

The findings

The amphora

The amphora in trench 10-1 is a locally produced amphora, an AE 3-6.2 (Möller 2015) (*Figure 7*). It dates to the 1st to 4th c. CE, i. e. to Roman times. This



FIGURE 11: Rock-cut tombs on the escarpment, where drains Wadi Umm el-Ashdan to the coastal plain. Photo: A.-K. Rieger.

date goes well along with the most extensive phase of settlement and landuse in the Eastern Marmarica between the 2nd and the 4th c. CE (Pöllath, Rieger 2011, Rieger *et al.* 2012, Rieger, Möller 2011). The amphora from the burial was produced in tone of the kilns in the settlement, where similar pieces of these thin-walled amphorae came to light. The type was not produced in the large-scale pottery workshops, so that we assume them to be for a very local purpose and use. The occurrence in the necropolis corroborates this assumption.

Pieces of wood

In the burial 10-2 we found pieces of wood conglomerated with corroded metal (iron?) nails (Figure 9). The archaeobotanical analysis by Victoria Asensi Amorós came to the result that the wood is from a *Pinus* cf. *sylvestris* (2011). These unexpected findings in a treeless region show on the one hand, that Pinaceae were imported to the area around Paraitonion in Graeco-Roman times. On the other hand, people used it for either sarcophagi or at least wooden boxes put as grave good into the burials at the settlement of Wadi Umm el-Ashdan. It was not only the wood of pine trees, but also of cedars (*Cedrus* sp.) that were imported. Both conifers are not indigenous in Egypt and had to be transported from the Cyrenaica in the west or the Levante in the East. Their wood can be estimated an expensive commodity.

ANTHROPOLOGICAL EXAMINATION OF THE SKELETAL FINDS AT THE SETTLEMENT OF WADI UMM EL-ASHDAN

If the remains of human bones from the settlement of Wadi Umm el-Ashdan, which are presented and analysed in the following paragraphs, are not well preserved, the reason lies in the temporarily humid conditions. Runoff of winterly precipitations across the tableland, down the slopes, where the necropolis is situated, brings water to the organic material, accelerating its decomposition. Only at a find spot, a cistern site 50 km south of the coast the conditions were so arid, that human remains were better preserved (Grosskopf *et al.* 2016).

Skeletal preservation at the settlement of Wadi Umm el-Ashdan is characterized by an aggressive decomposition phenomenon. The majority of the skeletons exhibit heavy fragmentation (Figure 12) and decomposition was pronounced in some cases.

Brushite formation was also occasionally detected, indicating acidic surroundings.

All three skeletons examined were males that reached a late middle age (late mature). Pathological changes were unspectacular and restricted primarily to age-related wear and tear.

Morphological age estimation was conducted according to the methods proposed by Acsádi and Nemeskéri (1970). Anthropological age groups for age at death include adult (20–40 yrs.), mature (40–60 yrs.) and senil (> 60 yrs.). Some age estimations were further defined in categories early, middle, and late adult or mature. Evaluation of dental abrasion is based on the schemata of Miles (for a summary of anthropological methods, see Herrmann *et al.* 1990, for pathological changes see Aufderheide, Rodriguez-Martin 1998 and Ortner, Putschar 1985). Standard anthropological diagnosis was conducted strictly on a morphological basis under field conditions.

Skeleton UA 305, trench 10-1

The skeleton is heavily fragmented and incomplete, yet fragments from all anatomical regions are present. The skull is underrepresented, and parts of the lower left extremity are missing.

Sex determination

The following sex-related characteristics indicate a male individual:

A narrow sciatic notch, blunt orbital margins, zygomatic bone is robust, and the mastoid process is very pronounced.

The individual's stature is large and robust (skull wall thickness ranges from 8.2 to 10.7 mm), and the Dens axis measures 10.9 mm.

Age estimation

Age-related characteristics suggest an age at death in the middle mature age class.

The pubic symphysis shows alteration stage 3–4 and there is heavy osteophytosis on the vertebral bodies and advanced tooth abrasion.

Dentition

In the maxilla, the area including teeth 15 to 25 are present. Intravital tooth loss is seen at positions 14, 23, and 25. The mandible is present only in small fragments and the individual areas can no longer be reconstructed.

Four isolated premolars, three molars, a single rooted tooth (likely an incisor), and one root fragment



FIGURE 12: Fragmented bones of the skeleton UA 305. Photo: B. Grosskopf.



FIGURE 13: Teeth with clear traces of dental abrasion (UA 305). Photo: B. Grosskopf.



FIGURE 14: Blue-green coloration on several foot bones (UA 305). Photo: B. Grosskopf.

are present. Occlusal abrasion is at stage 2 for two premolars and two molars. The two other premolars and molar exhibit stage 4 of abrasion (Figure 13).

Pathologies

Osteophytes on a cervical, two lumbar, and one sacral vertebra as well as evidence for spondylarthrosis are present.

A damaged and broken open proximal tibia epiphysis shows three Harris lines.

Stature reconstruction

No long bone was preserved in its entirety, which is necessary for a height reconstruction, however, two femur fragments could be reconnected and yielded a maximum shaft length of 41 cm. The femur head was missing and a reconstructed height of well over 158 cm is suggested.

In general, various bones such as the heavy foot bones and wide distal humeral epiphysis (right: width 4.6 cm, left: 4.2 cm) indicate a large and robust male.

Anatomical variations and comments

The sacral segments are not completely fused. A blue-green coloration is observable on several foot bones (Figure 14).

Skeleton UA 312, trench 10-2

The skeleton was heavily fragmented (Figure 15) and skull fragments had a maximum size of 75 mm. Some of the bones exhibit brushite formation (Figure 16).

Sex determination

All sex-related skull characteristics indicate a male individual:

The mastoid process is large and wide at the base, the superciliary arches (brow ridges) are pronounced, orbital rim is robust, and the skull wall thickness reaches 7.8 mm in some areas. Some postcranial elements also point to a robustly built person. The transverse diameter of the dens axis is 10.7 mm.

The pelvic bone is heavily fragmented and unusable for a sex determination.

Age estimation

Based upon changes in the pubic symphysis, skull suture fusion, and degenerative joint disease in various extremities, age is placed in the middle to late mature age category.

Pubic symphysis: Stage 4, diploe shows a tendency to early mature age group, suture closure of the sagittal 4: 3-4; L1: 2-3, and rib cartilage partially ossified.



FIGURE 15: Fragmented bone of skeleton UA 312. Photo: B. Grosskopf.



FIGURE 16: Brushite formation on the tibia (UA 312). Photo: B. Grosskopf.

Dentition

The following teeth are present in jaw fragments: 44 to 48, tooth 46 was lost premortal. Occlusal abrasion is at least stage 2. Another 21 teeth are present but loose and not in a socket. Two upper and one lower molar (identification not possible) display contact caries lesions.

Heavy dental calculus formation is found at the labial and lingual surfaces, especially on the incisors. Severe periodontal disease is observed around the area of the mandibular incisors.

The tooth enamel shows evidence for linear enamel hypoplasia (four distinct lines), indicating developmental interruption during childhood when the tooth crown was formed.

Pathologies

Cervical and lumbar vertebral bodies display advanced osteophytosis and the thoracic vertebrae show similar changes but accompanied by degenerative damage to the vertebral plates.



FIGURE 17: Position of the individual UA 320 in the grave. Photo: B. Geissler.



FIGURE 18: Position of the individual UA 320 in the grave. Photo: B. Geissler.

The right glenoid cavity is slightly arthrotic, showing some marginal lipping. The lateral end of the clavicle shows degenerative changes. Arthrosis of the radioulnar joint is also present. Exostotic growths are observable on both tibial tuberosities and the right patella shows an ossified enthesis. The left tarsal bones and proximal joint of the big toe joint (first metatarsophalangeal joint) all show changes associated with degenerative joint disease.

Anatomical variations and comments

Wormian bones are present at the lambdoid suture (L1).

Iron discoloration and iron residues at the right distal posterior surface (15 × 18 mm) (according to the archaeologist this stems from the wooden box with nails). A radius fragments shows iron colored spots at different places (< 10 mm).

Blue-green coloration was in the interior of the skull around the nasal region, on the right glenoid cavity, a distal rib end, and on an unidentified skull fragment. Crystallization is reminiscent of Vivianite formation present.

Left hand bones: both distal phalanges present were much darker than the proximal ones. The bones of the right hand did not show this coloration difference, although these too did not show a homogenous color.

Skeleton UA 320, trench 10-3

In-situ report Nov. 10, 2009

Most of the skeleton was unearthed and exposed. It is in a supine position and the arms are laid over the waist,

slightly at an angle (*Figure 17* and *Figure 18*). Although the skeleton appears undisturbed, a number of bones were found disarticulated from the rest of the skeleton:

A tarsal bone (right navicular) was found about 60 cm south of the skull and approximately 6 cm above the upper edge of the highest point of the skull. Hand phalanges and the phalanx of the big toe were found near the knee, but above the level of the skeleton. An isolated carpal bone was found near the knee. There was no indication of a rodent burrow or tunnel, which otherwise could have explained the movement of these bones.

Observable characteristics on the skull, such as pronounced superciliary arches and large mastoid process, suggest a male sex. The radius was measured in situ.

The skeleton is fragmentary and incompletely preserved (*Figure 18*). Damage due to decomposition is particularly apparent in the areas around the epiphyses, vertebral column, and pelvis, as well as the right femur and near the skull base. The facial skeleton is missing, and the mandible is broken and incomplete.

Samples (now in the IFAO, Cairo)

Radiocarbon date: 1st metacarpal bone

Isotope analysis: two metatarsal fragments and one premolar

DNA analysis: probably a canine

Sex determination

Sex related characteristic indicate a male individual:

General robusticity and highly pronounced brow ridge, the zygomatic bone and mastoid process are

both robust and the nucal area is pronounced. However, the sciatic notch is not particularly narrow.

Age estimation

Age at death is estimated to be in the middle to late mature category.

Suture closure is advanced (C1 and 2: 2-3, S 1-3: 2-3, S4: 1-2, L1: 2, L2: 2, L3: 1) and indicates an age at death of 50-60 years.

Heavy osteophyte formation at the vertebral bodies, significant occlusal abrasion, and ossification of rib cartilage further supports an older adult age.

Dentition

Premortem tooth loss of 36 and 46. Alveolar bone sockets 47 and 48 are present. Position 37: a root fragment is still in the socket, the rest is broken off. Position 38 is also present.

Heavy decomposition rendered the other sockets undiagnosable.

Various loose teeth are present including: one upper molar, abrasion stage 4; one premolar or canine, abrasion stage 4 and contact caries; one premolar, abrasion stage 2; two tooth fragments worn down to the root, and four root fragments.

Pathologies

There were severe degenerative changes to the cervical vertebral endplates and spondylarthrosis. The

lumbar vertebrae show clear osteophyte formation at the vertebral endplate edge.

Slight marginal lipping at the right and left distal ulna and at the left Facies articularis carpalis were apparent, and also slight degenerative joint disease at the shoulder, knee, and pelvic joints. Both patella exhibit arthrotic changes, as do the foot bones, of which one metatarsal shows signs of eburnation (Figures 19 and 20 a, b).

Healed rib fracture, left side. Harris lines were visible at the proximal end of the tibia.

Stature reconstruction

No long bone was preserved in its entirety. Two lengths were obtainable during the in-situ examination.

Archaeologists measured the femur as 47 cm. However, the measurement was only up to trochanter major, resulting in an estimated height of more than 170 cm.

The radius measurement in situ is 26.5 cm, which produces a height estimation of 172 cm.

Anatomical variations

The left humerus shows a supra trochlear foramen and the sacral segments are not completely fused.

Measurements

Greatest cranial length: 193 mm

Greatest cranial width: 144 mm



FIGURE 19: Degenerative joint disease of the patella (UA 320). Photo: B. Grosskopf.



→
FIGURE 20: A, B - arthrotic changes and eburnation at the distal joint of a metatarsal bone (UA 320). Photo: B. Grosskopf.

Index length-width: 74.6 (under a value of 75, a skull is considered dolichocephal).

CONCLUSION

The archaeological and the anthropological evidence from Wadi Umm el-Ashdan of only three individuals is of course rather limited. It might be a result of randomness that the three individuals are all male (*Table 1*).

The mature, even late mature age of the individuals at Umm el-Ashdan may also be arbitrary. Yet, their age serves as a proof that people in the Eastern Marmarica with the mixed life-strategies in the arid environment could reach high ages 40 to 60 years. Nevertheless, their bones and teeth show the hardships of a life of physical labor in Roman times.

Comparisons to other skeletal finds can be made on the basis of the same historically and ecologically regional background, of a similar time frame, and of more or less comparable living conditions. The burials

of four individuals at Abar el-Kanayis are the spatially closest to the skeletons from Wadi Umm el-Ashdan (Grosskopf *et al.* 2016). They were found at a late Roman roadhouse at a cistern along the route to Siwa, ca. 50 km south of Umm el-Ashdan on the Marmarica-Plateau. It was in use from the 3rd c. CE onwards with a phase of reuse after the 6th c. CE (Rieger *et al.* 2012). Hence, the burial situation at Abar el-Kanayis is different to Wadi Umm el-Ashdan, since it is not a necropolis of a settlement (Grosskopf *et al.* 2016, Appendix 1). The skeletons were examined in 2009 to determine the age, sex and stature of the individuals, as well as to diagnose any skeletal manifestations of pathologies.

With the exception of some minor *post mortem* fragmentation, the bone preservation at Abar el-Kanayis was much better than the preservation at the more humid northern settlement of Wadi Umm el-Ashdan. Apart from the preservation the life time of the individuals at the northern and the southern site in the Eastern Marmarica differs by ca. three centuries.

Different to the findings from Wadi Umm el-Ashdan, where the only male individuals may not

TABLE 1: Main features of the skeletons found at Wadi Umm el-Ashdan. *Fragmentation of the bones allowed only an estimation.

Burial	Sex	Age	Height *	Remarks
UA 305	male	middle mature (47–54 years)	more than 158 cm	blue-green coloration on several foot bones
UA 312	male	middle to late mature (47 to 60 years)	-	iron and blue-green discoloration
UA 320	male	middle to late mature (47 to 60 years)	more than 170 cm	

TABLE 2: Main features of the skeletons found at Abar el-Kanayis (ca. 7th c. CE, see Appendix).

Burial	Sex	Age	Height +/-3.5 cm	Remarks
AKA 9	male	early mature age group (around 40 years)	172 cm	Remnants of textile
AKA 70	male	middle to late mature (47 to 60 years)	157 cm	purple color on some bones
AKA 111	male	middle mature (47–54 years)	165 cm	
AKA 119	male	middle to late mature (mid 50s)	163 cm	violet color on some bones

represent the actual gender ratio of Roman times, we could interpret the inhumations of only male individuals at Abar el-Kanays as reflecting the actual gender-balance at the cistern site in Late Roman / Byzantine times. The (former) roadhouse seems to have been a desert retreat for hermits buried in simple pits at the end of their lives (Grosskopf *et al.* 2016).

The rather arduous conditions of a life in an arid environment were similar for the individuals living at Wadi Umm el-Ashdan and Abar el-Kanayis (Rieger *et al.* 2014), even though at the roadhouse no agricultural activity was feasible. Yet, physical labor with long walks or limited food supply was most probably part of their life.

The age composition at both sites is almost identical: The people died at a mature to late mature age. The pathologies the skeletons show are age-related rather than the result of illnesses. Yet, the hardships of their lives in the arid ecological conditions and an unbalanced nutrition are reflected in the morphology of their skeletons.

Appendix

The chronology of the burials could be fixed by a finding of a piece of palm tree wood from the sand levels above the burials. It was analyzed at the Laboratory of the IFAO, Cairo (Sample no. 633, analysis IFAO_0537): Conventional 14C-Age: (1sigma) -1312 ± 35 BP; 1σ calibrated result: Cal 660 AD to 710 AD, and Cal 746 AD to 766 AD; 2σ calibrated result: Cal 655 AD to 772 AD. A 14C-analysis of the bones is pending at the IFAO, Cairo; see Rieger *et al.* 2012.

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