



UNIVERSITY  
OF WARSAW | Polish Centre of  
Mediterranean Archaeology



---

**Title: Report from field reconnaissance at Gebelein, Khozam and el-Rizeiqat.**

Author(s) : **Wojciech Ejsmond, Julia M. Chyla, Cezary Baka**

Journal: *Polish Archaeology in the Mediterranean* 24/1 (Research)

Year: 2015

Pages: 265 - 274

ISSN 1234–5415 (Print), ISSN 2083–537X (Online)

Publisher: Polish Centre of Mediterranean Archaeology, University of Warsaw (PCMA UW),  
Wydawnictwa Uniwersytetu Warszawskiego (WUW)

[www.pcma.uw.edu.pl](http://www.pcma.uw.edu.pl) [www.wuw.edu.pl](http://www.wuw.edu.pl)

---

**Abstract:** A field reconnaissance in the region of Gebelein, Khozam and el-Rizeiqat in 2013 was aimed at obtaining information on site topography and state of preservation, even as it tested mobile GIS devices and remote sensing analysis to improve usage procedures in field prospection. Archival maps and satellite imaging were used to locate archaeological features, analyze changes of landscape and modern expansion of the cultivation zone from the natural alluvial plain into the low desert area.

**Keywords:** Gebelein, Khozam, el-Rizeiqat, mobile GIS, field prospection, satellite imaging, remote sensing

تقرير الإستطلاع الميداني في الجبلين وخزام والزريرات .  
Wojciech Ejsmond, Julia M. Chyla, Cezary Baka

**الملخص:** إن الإستطلاع الميداني في منطقة جبلين وخزام وزريرات كان يهدف إلى الحصول على معلومات عن طبوغرافية الموقع وحالة الحفظ. وقد إستخدمت أجهزة نظم المعلومات الجغرافية المحمولة وتحليل الإستشعار عن بعد لتحسين إجراءات البحث الميداني وكذلك إستخدمت خرائط أرشيفية وصور الأقمار الصناعية لتحديد المعالم الأثرية و تحليل المتغيرات في الصور الطبيعية للتوسع الحديث في المنطقة الزراعية في السهل الرسوبي في منطقة الصحراء المنخفضة.

*POLISH ARCHAEOLOGY IN THE MEDITERRANEAN (PAM)*  
*Annual of the Polish Centre of Mediterranean Archaeology, University of Warsaw*

*Editorial Board*

Piotr Bieliński  
Krzysztof M. Ciałowicz  
Wiktor Andrzej Daszewski  
Michał Gawlikowski  
Włodzimierz Godlewski  
Karol Myśliwiec  
Tomasz Waliszewski

*International Advisory Board*

Jean Charles Balty  
Charles Bonnet  
Giorgio Buccellati  
Stan Hendrickx  
Johanna Hlaubek

Peer-reviewed by members of the *PAM* committee of independent reviewers.  
<http://www.pcma.uw.edu.pl/en/pam-journal/pam-independent-reviewers/>

POLISH CENTRE OF MEDITERRANEAN ARCHAEOLOGY  
UNIVERSITY OF WARSAW

# POLISH ARCHAEOLOGY IN THE MEDITERRANEAN

XXIV/1

---

RESEARCH



## ABBREVIATIONS

<i>AA</i>	<i>Archäologischer Anzeiger; Jahrbuch des Deutschen Archäologischen Instituts</i> (Berlin)
<i>ANM</i>	<i>Archéologie du Nil Moyen</i> (Lille)
<i>ASAE</i>	<i>Annales du Service des Antiquités de l'Égypte</i> (Cairo)
<i>AV</i>	<i>Archäologische Veröffentlichungen, Deutsches Archäologisches Institut, Abteilung Kairo</i> (Berlin–Mainz am Rhein)
<i>BAAL</i>	<i>Bulletin d'archéologie et d'architecture libanaises</i> (Beirut)
<i>BAH</i>	<i>Bibliothèque archéologique et historique</i> (Paris)
<i>BAR IS</i>	<i>British Archaeology Reports International Series</i> (Oxford)
<i>BASOR</i>	<i>Bulletin of the American Schools of Oriental Research</i> (Ann Arbor, MI)
<i>BCH</i>	<i>Bulletin de correspondance hellénique</i> (Paris)
<i>BdE</i>	<i>Bibliothèque d'étude</i> (Cairo)
<i>BIFAO</i>	<i>Bulletin de l'Institut français d'archéologie orientale</i> (Cairo)
<i>BSAA</i>	<i>Bulletin de la Société d'archéologie d'Alexandrie</i> (Cairo)
<i>BSFE</i>	<i>Bulletin de la Société française d'égyptologie</i> (Paris)
<i>CCE</i>	<i>Cahiers de la céramique égyptienne</i> (Cairo)
<i>EtTrav</i>	<i>Études et travaux. Travaux du Centre d'archéologie méditerranéenne de l'Académie des sciences polonaise</i> (Warsaw)
<i>FIFAO</i>	<i>Fouilles de l'Institut français d'archéologie orientale</i> (Cairo)
<i>GAMAR</i>	<i>Gdańsk Archaeological Museum African Reports</i> (Gdańsk)
<i>GM</i>	<i>Göttinger Miszellen</i> (Göttingen)
<i>IAMS</i>	<i>Institute of Archaeo-Metallurgical Studies</i> (London)
<i>JARCE</i>	<i>Journal of the American Research Center in Egypt</i> (Boston–Princeton–New York–Cairo)
<i>JEA</i>	<i>Journal of Egyptian Archaeology</i> (London)
<i>JGS</i>	<i>Journal of Glass Studies</i> (Corning, NY)
<i>JJP</i>	<i>Journal of Juristic Papyrology</i> (Warsaw)
<i>JRS</i>	<i>Journal of Roman Studies</i> (London)
<i>MDAIK</i>	<i>Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo</i> (Wiesbaden)
<i>OIP</i>	<i>Oriental Institute Publications</i> (Chicago)
<i>OLA</i>	<i>Orientalia lovaniensia analecta</i> (Louvain)
<i>PAM</i>	<i>Polish Archaeology in the Mediterranean</i> (Warsaw)
<i>PSAS</i>	<i>Proceedings of the Seminar for Arabian Studies</i> (London)
<i>SAAC</i>	<i>Studies in Ancient Art and Civilisation</i> (Kraków)
<i>SAK</i>	<i>Studien zur altägyptischen Kultur</i> (Hamburg)
<i>SAOC</i>	<i>Studies in Ancient Oriental Civilization</i> (Chicago)
<i>WVDOG</i>	<i>Wissenschaftliche Veröffentlichungen der deutschen Orient-Gesellschaft</i> (Berlin–Leipzig)

# REPORT FROM FIELD RECONNAISSANCE AT GEBELEIN, KHOZAM AND EL-RIZEIQAT

Wojciech Ejsmond,<sup>1</sup> Julia M. Chyla,<sup>2</sup> Cezary Baka<sup>3</sup>

<sup>1,2</sup> PhD candidates, Antiquity of Southeastern Europe Research Centre,  
University of Warsaw, <sup>3</sup> independent

**Abstract:** A field reconnaissance in the region of Gebelein, Khozam and el-Rizeiqat in 2013 was aimed at obtaining information on site topography and state of preservation, even as it tested mobile GIS devices and remote sensing analysis to improve usage procedures in field prospection. Archival maps and satellite imaging were used to locate archaeological features, analyze changes of landscape and modern expansion of the cultivation zone from the natural alluvial plain into the low desert area.

**Keywords:** Gebelein, Khozam, el-Rizeiqat, mobile GIS, field prospection, satellite imaging, remote sensing

Three Upper Egyptian archaeological sites, namely Gebelein, Khozam and el-Rizeiqat, located in Upper Egypt, were reconnoitred by a team working under the auspices of the Polish Centre of Mediterranean Archaeology, University of Warsaw, the objective being to obtain data on the location, topography, state of preservation and perspectives of research at these sites.

Modern agricultural expansion and rapid settlement development is

an ongoing threat to archaeological heritage in Egypt. Many sites are endangered or have been destroyed. Analyses of archival satellite images and old maps can inform on the appearance of archaeological sites before destruction, but locating in the field and documenting the state of individual features known from satellite imagery and maps is possible only with the use of special tools.

## METHOD

CORONA, Landsat, Google Earth and Pleiades satellite images have been used in the research (Palmer 2013; Contreras and

Brodie n.d.). The CORONA images were taken on 18 November 1968 (camera fore) and 29 July 1969 (camera aft), both from

the KH-4B mission, with a resolution of 1.80 m, cloud-free.<sup>1</sup> Low spatial resolution images: Landsat 1 (from 1972, resolution 60 m) and Landstat 8<sup>2</sup> (from 2013, resolution 30 m) were used as base maps in the Geographic Information System (GIS). Spatial analysis of data in GIS established a zone requiring special attention in view of extensive encroachment of cultivated areas upon the low desert areas outside the Nile Valley. Examination of archival satellite images revealed many archaeological sites at the edge of the low desert and the alluvial plain, because the area was not yet under cultivation at the time. The situation changed presumably around 1975, when pumps with diesel engines were introduced for irrigation on a large scale (Hopkins 1999). In the past thirty years agriculture has spread uncontrollably into areas where archaeological sites are located.

Google Earth images from the last few years were obtained for detailed analysis of the selected three sites located inside the endangered zone.<sup>3</sup> Maps by Pierre Jacotin

(1826: Pls 4–5) were registered (Chyla 2012) and used to vectorize agricultural areas and the course of the Nile at the end of the 18th century. The next step was to compare the spread of field zones with the current situation observed in the satellite images (such as Landstat). Jacotin's map was used also to locate villages, towns, archaeological sites and nomad camps. Their position was transferred in GIS from the archival map into modern satellite images.

The field survey gave opportunity to test the usefulness and the possibilities of GIS applications combined with mobile measuring tools such as Trimble Juno and MobileMapper 20. The collected archival data was processed and stored in GIS and afterwards converted into a mobile version. The research team used it to locate sites visible on Jacotin's map in the field. Mobile GIS allowed not only to use, but also to update collected information directly on the sites, during the fieldwork. The research generated effective use of available GIS technology and mobile

#### Team

*Dates of work:* March–April 2013

*Director:* Wojciech Ejsmond (independent)

*MSA representative:* Abd el-Hady and Ali Mohamed Ahmed (Esna Inspectorate)

*Archeologists:* Cezary Baka (student, Université Paris-Sorbonne), Julia M. Chyla, GIS specialist (UniGIS, Jagiellonian University in Kraków)

<sup>1</sup> CORONA imagery was orthorectified by the Center for Advanced Spatial Technologies, University of Arkansas and US Geological Survey, and published as a "CORONA Atlas of the Middle East" on the website: [corona.cast.uark.edu](http://corona.cast.uark.edu).

<sup>2</sup> Orthorectified Landsat imagery is available online from the NASA Global Land Cover Facility at: [glcf.umd.edu/data/landsat](http://glcf.umd.edu/data/landsat).

<sup>3</sup> For Gebelein, the images were taken on 9 September 2002, 26 December 2005, 31 December 2005, 7 February 2007, and 10 July 2009; for Khozam, on 5 March 2005, 31 January 2006, and 17 July 2009; for el-Rizeiqat, on 9 September 2002, 31 December 2005, 7 February 2007, and 15 June 2009. Resolution of all images was 0.50 m. In case of Gebelein, additional Pleiades satellite images provided by Astri Polska were used. Images were taken on 9 February 2013, with resolution 0.50 m with four bands, including near infrared.

software during various stages of research: desk-based assessment, data collection, but also post-processing of the collected field

evidence, and quick and efficient presentation of preliminary results (see Tripcevich 2004; Wagtendonk and De Jeu 2007).

## SITES

### GEBELEIN

Research at the Gebelein site complex [Fig. 1] started with an analysis of the present local topography, archival maps and contemporary satellite imagery. Ancient written sources and results of previous fieldwork were studied as well leading to the suggestion that the toponym “Gebelein” referred to this particular archaeological complex, a region enclosing different types of sites from different periods (Ejsmond 2013).

Analysis of near-infrared satellite images of Gebelein showed specific vegetation features in the fields surrounding the hills. These were interpreted as traces of an old riverbed and channels, considering that written sources from the Late and Greco-Roman periods referred to numerous waterways in the Pathyris region (Meeks 1972; Vandorpe and Waebens 2009: 25, Fig. 10). Some of the features were verified during the reconnaissance in 2013. Also, archaeological features observed both on satellite images and during the field survey were documented with the use of mobile GIS. For example, concentrations of tombs and a lithic site were added to the site database and GIS plan. The survey demonstrated the extent of destruction to archaeological sites resulting from agricultural cultivation. Analysis of the Google Earth historical images evinced destruction of a Palaeolithic archaeological site between 2009 and 2013.

The reconnaissance helped to understand the description of archaeologi-

cal research conducted at the end of the 19th and in the first half of the 20th century, and located some Pre- and Early Dynastic sites (Ejsmond 2013). Registering Jacotin’s map, combined with satellite imagery, showed the location of two ancient settlements: one to the north of the western mountain and the other at the western foot of the eastern mountain. In the 18th century, both sites seem to have formed koms, but on CORONA images from 1968 they were no longer visible. It suggests that they have been destroyed. *Sebak* digging had been confirmed for this area by earlier researchers (e.g., de Morgan 1912: 49) and this could have well been the reason for their disappearance.

The site marked in the north of Jacotin’s map may be identified as the ancient Egyptian Sumenu, called by the Greeks Crocodilopolis, “City of Crocodiles, which holds in honour that animal” (Strabo 17.1.47). The Predynastic settlement “of which the stratum of ashes remains” was also reported there (Donadoni Roveri 1990: 23). Some 3 km north of Gebelein, in the village of al-Mahamid Qibli, part of an Eighteenth Dynasty temple was unearthed (Bakry 1971). The temple was dedicated to the god Sobek, venerated in the form of a crocodile. In 1908 L. Lortet and C. Gillard bought two Pre- or Early Dynastic stone knives, with handles ornamented by depictions of crocodiles (Lortet and Gaillard 1909: 232–234). From el-Rizeiqat came a stone model of a boat from more or less the same period, featuring the head



of a crocodile at one end (Emmons et al. 2010: 74–75, Fig. 68). These discoveries confirm the veneration of the crocodile god in the Gebelein region from an early period in ancient Egyptian history.

The southern site can be attributed to Per-Hathor, also called by the Greeks Pathyris or Aphroditopolis. It is attested by the cult of the goddess Hathor (whom the Greeks identified with Aphrodite) in the local temples. One sanctuary was found on the top of the eastern mound; the second was a small speos on the eastern foothills of the same mound (Donadoni Roveri 1990: 23; 2001: 7–8; Morenz 2009). Jacotin's georeferenced map showed the location

of the kom, which could also be seen in photographs taken by the Italian excavators at the beginning of the 20th century. There the kom is visible as a small elevation of darker earth with some vegetation. The rest of the settlement was located on the peak of the eastern mound and on its western slope (Donadoni Roveri 1990: 23).

The village of Haut, which on Jacotin's map is located north of the eastern mound of Gebelein, may have derived its name from the hieroglyphic *Hwt*, an abbreviation of full names like *Hwt-Shm*, meaning mansion (Megally 1991). Late and Ptolemaic period mansions were located in this area on the grounds of an analysis of papyri

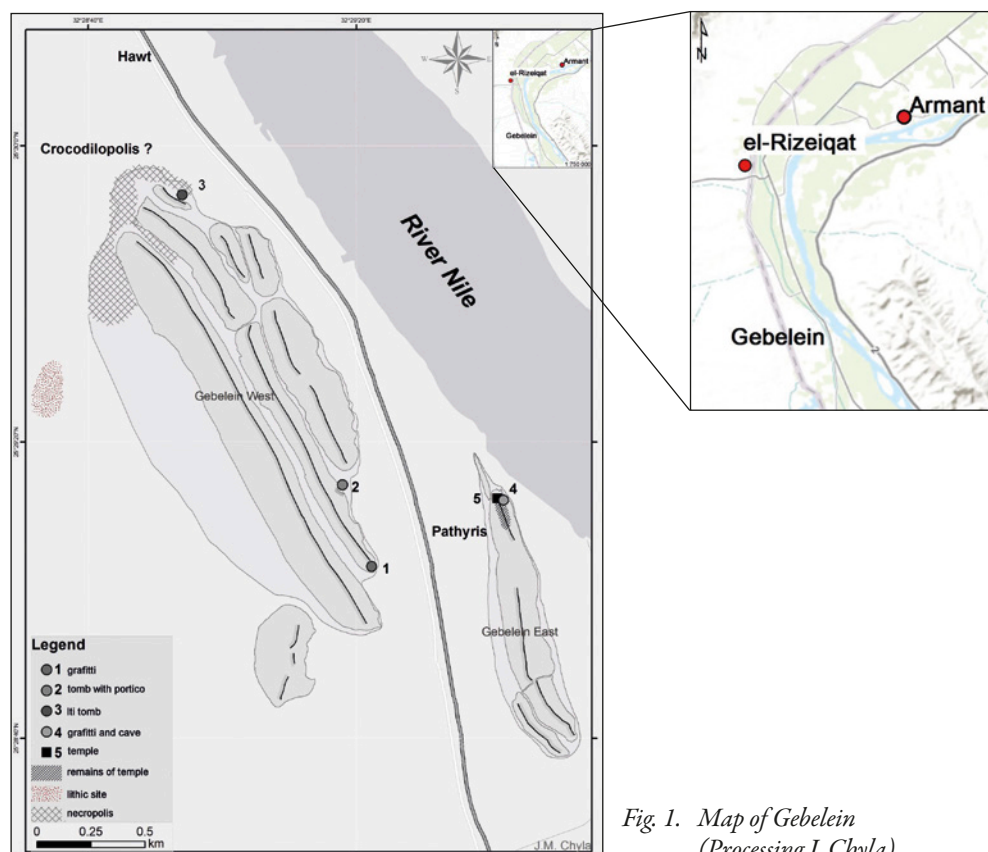


Fig. 1. Map of Gebelein  
(Processing J. Chyla)

evidence (Meeks 1972: Pls I, IV). Nowadays a contemporary settlement stands in this particular location, making an archaeological survey impossible.

Field research revealed the presence of some graffiti at the southern edge of the western mound. Their date spanned a time from the Predynastic Period (depictions of gazelles and giraffes) to the Nineteenth Dynasty at least. One of them was a large commemorative graffito from the first year of the reign of Ramesses IV (Wieczorek 2015).

Other graffiti noted during the reconnaissance were located on a rock wall by a path leading to a small cave, just next to the spot where the temple of Hathor had stood once at the top of the eastern mound (Vandorpe and Waebens 2009: 19, Fig. 8). The graffiti encompass several inscriptions of different length, mentioning “Hathor, Lady of Gebelein”, and were dated by Ludwig Morenz to the Eighteenth Dynasty, but not published (Morenz 2009: 199).

The present research supported the preparation of an Archaeological Information System for Gebelein, which consists of the following data: satellite images, archival maps, field data, results of satellite analysis and photographs. AIS is open, meaning that new data and results of analysis can be added on a continuous base.

The collection of data showed significant progressive changes of the landscape in the Gebelein area, taking place within the past 200 years. As said above, fields and settlements have progressed several kilometers into the desert and spread between the two mountains of Gebelein, where ancient sites have been reported. This situation caused destruction and endangered many archaeological objects.

## KHOZAM

(known also as Khizam) [Fig. 2]

According to Stan Hendrickx a number of small cemeteries could have existed in the vicinity of the village of Khozam, but their exact location is unknown (Hendrickx 1992: 199–200) save for some graves, which were reported around the tomb of “Banat el-Berrei” (“Girls of Berrei”) (Shehata 1990). The necropolises were dated to the Badarian culture(?), Naqada I–III and probably dynastic times(?) (Hendrickx 1992: 199–200; Hendrickx and van den Brink 2002: 361).

The site was excavated repeatedly by different scholars, who did not leave a sufficient account of their work. Hendrickx reported about 700 tombs, mostly simple pits (Hendrickx 1992: 199–200; Hendrickx and van den Brink 2002: 361) as well as a mud-brick structure with several female figurines present (Ucko 1968: Nos 111–127). Most recently, Rabia Zaki Ahmed Shehata (1990) described the threats and the poor preservation of the necropolis near Banat el-Berrei. The plan published in 1990 was translated into the GIS system and used to locate the area of one of the cemeteries described by Hendrickx. The area of the former site is under cultivation, save for a small Islamic graveyard, approximately 100 m southeast of Banat el-Berrei.

Near Banat el-Berrei the reconnaissance revealed some pottery in the section through the embankment of the Luxor–Cairo road, next to the tomb of Banat el-Berrei. It indicates that a part of the site may have been preserved beneath the road. The alternative is that earth from the cemetery was used to build the embankment. Pottery was also noted around the tomb of Banat el-Berrei.

According to Hendrickx, there should be three cemeteries in the area of Khozam: 1) near the mausoleum of 'Benat el-Beri'; 2) north of Khozam, east of the grave of 'Benat el-Beri', 4 km from the Nile; 3) south of the village, located 6 km from the Nile (Hendrickx 1992: 199). They were situated far from the area cultivated at the end of the 19th century, but within, and on the fringe of present-day fields. The rapid agricultural development in Upper Egypt threatens to have fields and new settlements introduced in these areas in the nearest future. The survey made an effort to locate these cemeteries in order to increase their chances for being protected.

An analysis of CORONA and Google images revealed areas of disturbed surface at the mouth of Wadi Berrei (A and B on the map). One such location, placed

approximately 2 km east of Khozam village, was selected for field reconnaissance. It fits the location of the third cemetery mentioned above. Human activity was recorded in the form of some flint, as well as pottery from the Early Dynastic Period and the Old Kingdom (dated by Dr. Teodozja I. Rzeuska from the Polish Academy of Sciences) in the vicinity of many pits and remains of digging. These artifacts are difficult to interpret, making it difficult to confirm the location of a necropolis on their grounds. However, it is very likely that the discovery of the artifacts supports Hendrickx's opinion concerning the localisation and dating of the necropolis. There is also a general map, published by Jacques de Morgan (1897: 38, Fig. 19), which shows the location of predynastic sites in the Luxor area, includ-



Fig. 2. Map of Khozam marking areas A and B (Processing J. Chyla)

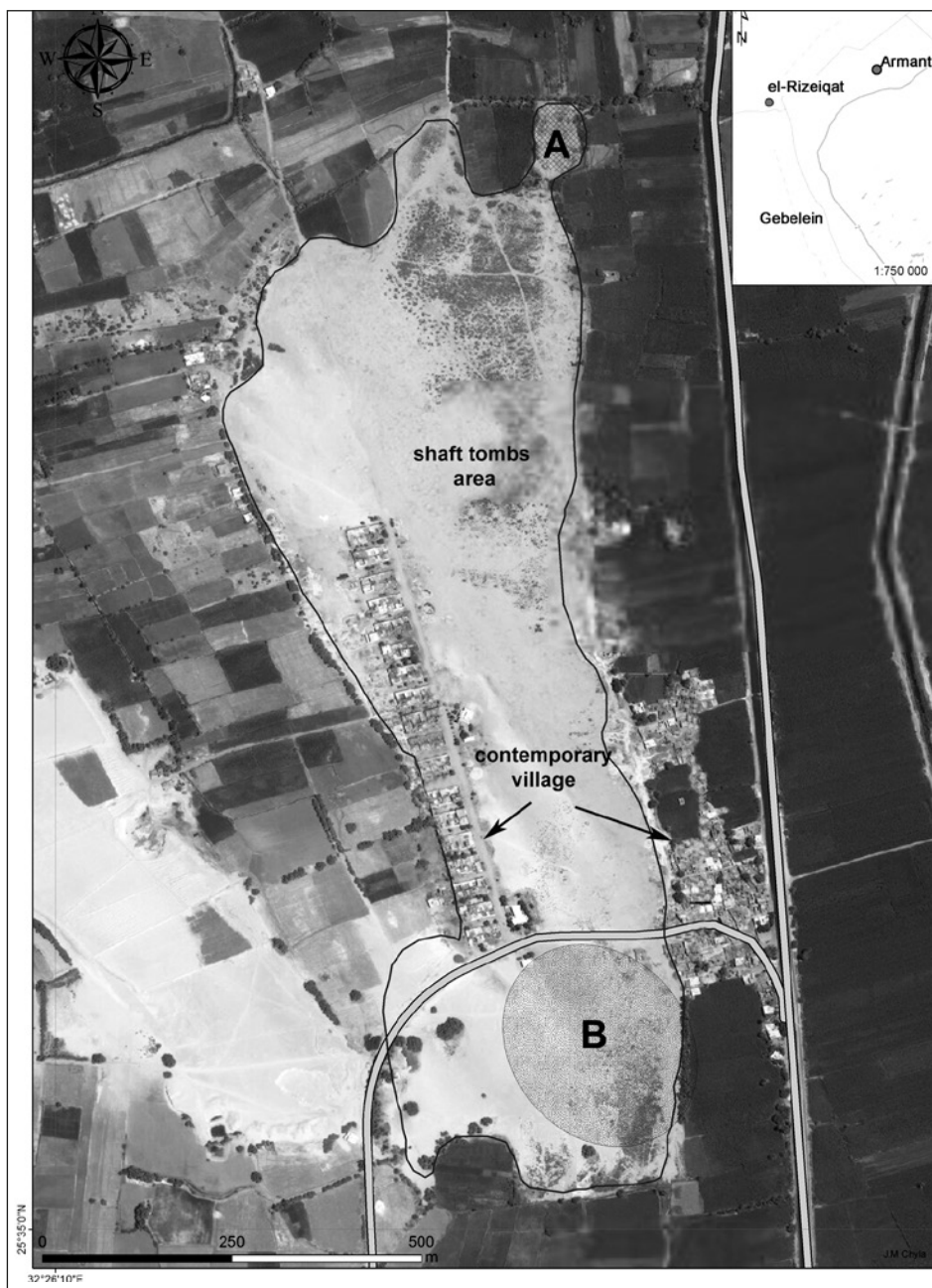


Fig. 3. Map of el-Rizeiqat  
(Processing J. Chyla)



ing Khozam. The position of the site fits the described location, but the map is very general.

#### EL-RIZEIQAT [Fig. 3]

The site was heavily looted at the end of the 19th century (Lortet and Gaillard 1909: 201–208, 239; de Morgan 1912: 49; Weigall 1910: 296–297). The cemetery is dated to the Naqada II period (Hendrickx and van den Brink 2002: 361), but also contains later burials from the Thirteenth–Eighteenth Dynasties (Weigall 1910: 296). Arthur Weigall estimated the number of graves at several hundred, writing: “[The tombs] mainly consist of mud-brick structures in the form of a deep rectangular shaft, from the bottom of which a vaulted burial-chamber leads; wide rectangular pits lined with bricks, and entered by a sloping passage or stairway at one end; and other well-known forms” (Weigall 1910: 269). Some stelae dated to the early Middle Kingdom, and executed in a homogenous style, are attributed to the el-Rizeiqat–Gebelein area (Rosati 2004).

The site extends along a longitudinal axis. Currently, cultivation has destroyed the oldest (Neolithic/Predynastic) part

of the site in the south. It is possible that this part of the necropolis was also partly destroyed by the extraction of clay and sand. Lithic tools were found at the southern edge of the site and the northern part yielded rectangular shafts and other structures, which fit Weigall’s description (1910: 269).

El-Rizeiqat is in better condition than the two earlier mentioned sites, although during the field survey many looted and destroyed graves were observed. Nowadays the biggest threat to the site is irrigation which has resulted in a rising water table in the area and the effectively spreading wild vegetation at the site.

#### ACKNOWLEDGMENTS

The team members would like to thank Prof. Karol Myśliwiec and Dr. Zbigniew E. Szafrński, as well as the Research Center in Cairo, branch of the Polish Centre of Mediterranean Archaeology of the University of Warsaw for their help and support. The season could not have taken place without the financial help of the University of Warsaw Foundation and the Consultative Board for Student Research of the University of Warsaw.

Wojciech Ejsmond, PhD candidate

Antiquity of Southeastern Europe Research Centre, University of Warsaw  
00-927 Warsaw, Poland, ul. Krakowskie Przedmieście 32  
wojtek.ejsmond@wp.pl

Julia M. Chyla, PhD candidate

Antiquity of Southeastern Europe Research Centre, University of Warsaw  
00-927 Warsaw, Poland, ul. Krakowskie Przedmieście 32  
julia.chyla@gmail.com

Cezary Baka

c.j.baka@gmail.com

## REFERENCES

### PRIMARY SOURCES:

- Jacotin, P. (1826). *Carte topographique de l'Égypte et de plusieurs parties des pays limitrophes levée pendant l'expédition de l'armée française, par les ingénieurs-géographes, les officiers du génie militaire et les ingénieurs des ponts et chaussées: assujettie aux observations des astronomes*. Paris: Imprimerie de C.L.F. Panckoucke.
- Strabo, *Geography* I–VIII [=Loeb Classical Library 49, 50, 182, 196, 211, 223, 241, 267], transl. by H. L. Jones, Cambridge, MA: Harvard University Press.

### SECONDARY SOURCES:

- Bakry, H. S. (1971). The discovery of a temple of Sobek in Upper Egypt. *MDAIK*, 27, 131–146.
- Chyla, J. (2012). Egipt na napoleońskich mapach i z satelity [Egypt on Napoleonic maps and satellite images]. *Ad Rem*, 3–4, 8–10 [in Polish].
- Contreras, D., and Brodie, N. (n.d.). Using Google Earth to identify and quantify the looting of archaeological sites: Methodology. Retrieved from <http://traffickingculture.org/data/data-google-earth/using-google-earth-to-identify-and-quantify-the-looting-of-archaeological-sites-methodology-dan-contreras-and-neil-brodie/> [accessed: February 2014].
- de Morgan, H. (1912). Report on excavations made in Upper Egypt during the winter 1907–1908. *ASAE*, 12, 25–50.
- de Morgan, J. (1897). *Recherches sur les origines de l'Égypte*. Paris: Ernest Leroux.
- Donadoni Roveri, A. M. (1990). Gebelein. In G. Robins (Ed.), *Beyond the pyramids: Egyptian regional art from the Museo Egizio, Turin* (pp. 23–29). Atlanta: Emory University Museum of Art and Archaeology.
- Donadoni Roveri, A. M. (2001). Gebelein. In D. B. Redford (Ed.), *The Oxford Encyclopedia of Ancient Egypt* II (pp. 7–9). Oxford: Oxford University Press.
- Ejsmond, W. (2013). Some remarks on topography of Gebelein archaeological site complex in Pre- and Early Dynastic Period. *GM*, 239, 31–42.
- Emmons, D., Eyckerman, M., Goyon, J.-C., Madrigal, K., Midant-Reynes, B., Gabolde, L., and Hendrickx, S. (2010). *L'Égypte au Musée des confluences: de la palette à fard au sarcophage*. Milan: Silvana.
- Hendrickx, S. (1992). The Predynastic cemeteries at Khozam. In R. F. Friedman and B. Adams (Eds.), *The followers of Horus: Studies dedicated to Michael Allen Hoffman, 1944–1990* [=Egyptian Studies Association Publications 2] (pp. 199–202). Oxford: Oxbow Books.
- Hendrickx, S., and van den Brink, E. C. M. (2002). Inventory of Predynastic and Early Dynastic cemetery and settlement sites in the Egyptian Nile Valley. In E. C. M. van den Brink and T. E. Levy (Eds.), *Egypt and the Levant: Interrelations from the 4th through the early 3rd millennium BCE* (pp. 346–398). London: Leicester University Press.
- Hopkins, N. S. (1999). Irrigation in contemporary Egypt. In A. K. Bowman and E. Rogan (Eds.), *Agriculture in Egypt: from Pharaonic to modern times* [=Proceedings of the British Academy 96] (pp. 367–385). Oxford: Oxford University Press.

- Lortet, L., and Gaillard, C. (1909). *La faune momifiée de l'ancienne Égypte* II. Lyon: Georg.
- Meeks, D. (1972). *Le grand texte des donations au temple d'Edfou* [=BdE 59]. Cairo: Institut français d'archéologie orientale.
- Megally, M. (1991). Toponymy, Coptic. In A. S. Atiya (Ed.), *The Coptic encyclopedia* VII (pp. 2271–2274). New York: Macmillan.
- Morenz, L. D. (2009). Hathor in Gebelein. Vom archaischen Höhenheiligtum zur Konzeption des Sakralbezirkes als zweites Dendera unter Menthu-hotep (II.). In R. Preys (Ed.), *7. Ägyptologische Tempeltagung: Structuring religion; Leuven, 28. September–1. Oktober 2005* (pp. 191–210). Wiesbaden: Harrassowitz.
- Palmer, R. (2013). Uses of declassified CORONA photographs for archaeological survey in Armenia. In W. S. Hanson and I. A. Oltean (Eds.), *Archaeology from historical aerial and satellite archives* (pp. 279–290). New York: Springer.
- Rosati, G. (2004). A group of Middle Kingdom stelae from El Rizeiqat/El Gebelein. *SAK*, 32, 333–349.
- Shehata, R. Z. A. (1990). Status report on the Predynastic cemetery of Khozam. *Varia Aegyptiaca*, 6(3), 165–166.
- Tripcevic, N. (2004). Flexibility by design: How mobile GIS meets the needs of archaeological survey. *Cartography and Geographic Information Science*, 31(3), 137–151.
- Ucko, P. J. (1968). *Anthropomorphic figures of predynastic Egypt and neolithic Crete with comparative material from the prehistoric Near East and mainland Greece*. London: Andrew Szmidla.
- Vandorpe, K., and Waebens, S. (2009). *Reconstructing Pathyris' archives: A multicultural community in Hellenistic Egypt* [=Collectanea hellenistica 3]. Brussels: Koninklijke Vlaamse Academie van België & l'Union Academique Internationale.
- Wagtendonk, A. J., and De Jeu, R. A. M. (2007). Sensible field computing: Evaluating the use of mobile GIS methods in scientific fieldwork. *Photogrammetric Engineering & Remote Sensing*, 73(6), 651–662.
- Weigall, A. E. P. B. (1910). *A guide to the antiquities of Upper Egypt: From Abydos to the Sudan frontier*. London: Methuen & Co.
- Wieczorek, D. F. (2015). A rock inscription of Ramesses IV at Gebelein: A previously unknown New Kingdom expedition. *EtTrav*, 28, 217–229.

---

## CONTENTS

---

## CONTENTS

ACKNOWLEDGMENTS .....	10
ABBREVIATIONS.....	11

### PAM REPORTS

PCMA FIELD MISSIONS AND PROJECTS IN 2012 AND 2013 (WITH MAP) .....	17
--------------------------------------------------------------------	----

### EGYPT

#### ALEXANDRIA: KOM EL-DIKKA

ALEXANDRIA: EXCAVATIONS AND PRESERVATION WORK ON KOM EL-DIKKA,  
SEASONS 2012 AND 2013

<i>Grzegorz Majcherek</i> .....	29
---------------------------------	----

ISLAMIC NECROPOLIS AT KOM EL-DIKKA IN ALEXANDRIA:  
RESEARCH IN THE 2010–2013 SEASONS

<i>Emanuela Kulicka</i> .....	62
-------------------------------	----

ISLAMIC GLASS FROM AREA U (2012–2013)

<i>Renata Kucharczyk</i> .....	73
--------------------------------	----

#### MARINA EL-ALAMEIN

RESEARCH AND CONSERVATION IN MARINA EL-ALAMEIN IN THE 2012  
AND 2013 SEASONS. THE POLISH–EGYPTIAN CONSERVATION MISSION

<i>Rafał Czerner, Grażyna Bąkowska-Czerner, Wiesław Grzegorek</i> .....	87
-------------------------------------------------------------------------	----

SELECTED CONSERVATION WORK IN MARINA EL-ALAMEIN IN THE 2012  
AND 2013 SEASONS

<i>Marlena Koczorowska, Wojciech Osiak</i> .....	101
--------------------------------------------------	-----

RESEARCH AND CONSERVATION IN THE ROMAN BATHS OF MARINA EL-ALAMEIN  
IN THE 2012 AND 2013 SEASONS (POLISH–EGYPTIAN CONSERVATION MISSION)

<i>Rafał Czerner, Grażyna Bąkowska-Czerner, Grzegorz Majcherek</i> .....	113
--------------------------------------------------------------------------	-----

#### TELL EL-RETABA

TELL EL-RETABA, SEASON 2012

<i>Sławomir Rzepka, Józef Hudec, Łukasz Jarmużek, Lucia Hulková, Veronika Dubcová</i> .....	139
-------------------------------------------------------------------------------------------------	-----

APPENDIX: TELL EL-RETABA 2012. PRELIMINARY REPORT ON ARCHAEOBOTANICAL  
INVESTIGATIONS

<i>Claire Malleson</i> .....	156
------------------------------	-----

TELL EL-RETABA 2012: THE POTTERY

<i>Anna Wodzińska</i> .....	164
-----------------------------	-----



# CONTENTS

---

## TELL EL-FARKHA

TELL EL-FARKHA. EXCAVATIONS, 2012–2013 <i>Marek Chłodnicki, Krzysztof M. Ciałowicz</i> .....	173
-------------------------------------------------------------------------------------------------	-----

## TELL EL-MURRA

TELL EL-MURRA (NORTHEASTERN NILE DELTA SURVEY). SEASONS 2012–2013 <i>Mariusz A. Jucha, Grzegorz Bąk-Pryc, Natalia Małecką-Drozd</i> .....	199
----------------------------------------------------------------------------------------------------------------------------------------------	-----

## SAQQARA

SAQQARA: SEASONS 2012 AND 2013/2014 <i>Karol Mysliwiec</i> .....	215
APPENDIX: CONSERVATION WORK IN SAQQARA (2012 AND 2014) <i>Zbigniew Godziejewski, Urszula Dąbrowska</i> .....	224
SAQQARA 2012: THE POTTERY <i>Teodozja I. Rzeuska</i> .....	230

## WEST THEBES (ASASIF, DEIR EL-BAHARI) AND VALLEY OF THE NILE

THE TOMBS OF ASASIF: ARCHAEOLOGICAL EXPLORATION IN THE 2013/2014 SEASON <i>Patryk Chudzik</i> .....	239
TEXTILES FROM TOMB II IN DEIR EL-BAHARI: PRELIMINARY REPORT FROM SEASON 2012/2013 <i>Aleksandra Hallmann</i> .....	247
DEIR EL-BAHARI. TEMPLE OF TUTHMOSIS III, CAMPAIGNS 2012–2013 <i>Monika Dolińska</i> .....	257
REPORT FROM FIELD RECONNAISSANCE AT GEBELEIN, KHOZAM AND EL-RIZEIQAT <i>Wojciech Ejsmond, Julia M. Chyla, Cezary Baka</i> .....	265

## DAKHLEH OASIS

DAKHLEH OASIS PROJECT, PETROGLYPH UNIT: SEASONS 2012 AND 2013 <i>Ewa Kuciewicz, Paweł Polkowski, Michał Kobusiewicz</i> .....	275
----------------------------------------------------------------------------------------------------------------------------------	-----

## BERENIKE

BERENIKE PROJECT. HELLENISTIC FORT, ROMAN HARBOR, LATE ROMAN TEMPLE, AND OTHER FIELDWORK: ARCHAEOLOGICAL WORK IN THE 2012 AND 2013 SEASONS <i>Steven E. Sidebotham, Iwona Zych, Joanna K. Rądkowska, Marek Woźniak</i> .....	297
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----

## SUDAN

### DONGOLA

DONGOLA. SEASONS IN 2012–2013 <i>Włodzimierz Godlewski</i> .....	325
APPENDIX: THE SKELETAL REMAINS FROM THE SANCTUARY OF ANNA IN THE MONASTERY ON KOM H <i>Robert Mahler</i> .....	340

---

## CONTENTS

---

WALL INSCRIPTIONS IN THE SOUTHWEST ANNEX TO THE MONASTERY ON KOM H AT DONGOLA: REPORT ON WORK IN THE 2013 SEASON <i>Adam Łajtar</i> .....	344
CRYPT 3 IN THE NORTHWEST ANNEX OF THE MONASTERY ON KOM H IN DONGOLA: REPORT ON THE EXPLORATION IN 2012 <i>Robert Mahler, Włodzimierz Godlewski, Katarzyna Danys-Lasek, Barbara Czaja</i> ....	352
BANGANARTI AND SELIB	
BANGANARTI AND SELIB IN 2011/2012 AND 2013 <i>Bogdan Żurawski</i> .....	369
EXCAVATIONS AT SELIB 2 IN 2012 <i>Roksana Hajduga, Katarzyna Solarska</i> .....	389
SELIB 1. PRELIMINARY REPORT FOR THE 2012 AND 2013 SEASONS <i>Aneta Cedro</i> .....	397
FAUNAL REMAINS FROM THE FORTIFIED SETTLEMENT AROUND THE CHURCH AT BANGANARTI IN SUDAN <i>Marta Osypińska</i> .....	411
EARLY MAKURIA (MTOM) PROJECT	
ANIMAL REMAINS FROM THE EARLY MAKURIAN CEMETERY IN EL-ZUMA (SEASON 2013) <i>Urszula Iwaszczuk</i> .....	425
GHAZALI	
GHAZALI 2012: PRELIMINARY REPORT <i>Artur Obłuski, Grzegorz Ochala, Miron Bogacki, Wiesław Małkowski, Szymon Maślak, Zaki ed-Din Mahmoud</i> .....	431
CYPRUS	
NEA PAPHOS	
NEA PAPHOS. SEASONS 2012 AND 2013 <i>Henryk Meyza</i> .....	443
LEBANON	
JIYEH	
PRELIMINARY REPORT ON THE 2012 AND 2013 EXCAVATION SEASONS AT JIYEH (PORPHYREON): WORK IN SECTOR D (RESIDENTIAL QUARTER) <i>Tomasz Waliszewski, Magdalena Antos, Piotr Jaworski, Piotr Makowski, Marcin Romaniuk, Rafał Solecki, Agnieszka Szymczak</i> .....	453
PRELIMINARY RESULTS OF A STRATIGRAPHIC ANALYSIS OF LATE ROMAN AND EARLY BYZANTINE ARCHITECTURE IN THE RESIDENTIAL QUARTER OF JIYEH <i>Michał Dzik</i> .....	475

## CONTENTS

---

RESULTS OF A SURVEY CONDUCTED IN THE AREA OF THE JIYEH MARINA RESORT HOTEL COMPLEX IN THE 2012 SEASON <i>Zofia Kowarska, Szymon Lenarczyk</i> .....	491
-----------------------------------------------------------------------------------------------------------------------------------------------------------	-----

## KUWAIT

### AL-SUBIYAH AND FAILAKA ISLAND

TUMULUS BURIAL FIELD ON THE NORTH COAST OF KUWAIT BAY. PRELIMINARY EXCAVATION REPORT ON THE SPRING SEASON IN 2012 <i>Łukasz Rutkowski</i> .....	505
CHRISTIAN SETTLEMENT AT FAILAKA, QUSUR SITE (KUWAIT): EXCAVATIONS IN 2011 AND 2013 <i>Magdalena Żurek</i> .....	529
PRELIMINARY REPORT ON THE ARCHAEOLOGICAL SURVEY OF THE JOINT KUWAITI–POLISH MISSION, FAILAKA ISLAND, 2012 <i>Franciszek Pawlicki</i> .....	547
FAILAKA ARCHAEOLOGICAL RESEARCH PROJECT. PRELIMINARY RESULTS AFTER THE FIRST SEASON OF EXCAVATION AT THE KHARAIB EL-DESHT SITE IN 2013 <i>Agnieszka Pieńkowska</i> .....	560
APPENDIX 1: KHARAIB EL-DESHT 2013: POTTERY. PRELIMINARY REPORT <i>Marta Mierzejewska</i> .....	571
APPENDIX 2: SURVEY OF KHARAIB EL-DESHT BAY ON FAILAKA ISLAND: PRELIMINARY REPORT <i>Magdalena Nowakowska</i> .....	579

## IRAQI KURDISTAN

NEWCOMERS AND AUTOCHTHONS. PRELIMINARY REPORT ON 2013 ACTIVITIES IN THE KURDISTAN AUTONOMOUS REGION, IRAQ <i>Dorota Ławecka</i> .....	591
---------------------------------------------------------------------------------------------------------------------------------------------	-----

## PAM STUDIES

LEVALLOIS TRADITION EPIGONES IN THE MIDDLE NILE VALLEY: SURVEY IN THE AFFAD BASIN <i>Marta Osypińska, Piotr Osypiński</i> .....	601
ZOOMORPHIC CLAY FIGURINES FROM TELL ARBID. PRELIMINARY REPORT <i>Maciej Makowski</i> .....	627
PLANT MACROFOSSILS FROM THE SITE OF TELL ARBID, NORTHEAST SYRIA (3RD–2ND MILLENNIUM BC). PRELIMINARY REPORT <i>Aldona Mueller-Bieniek, Krystyna Wasylkowa, Anna Smogorzewska</i> .....	657
THE ANIMAL ECONOMY OF PEOPLE LIVING IN THE SETTLEMENT OF TELL RAD SHAQRAH (SYRIA) <i>Joanna Piątkowska-Matecka, Rafał Koliński</i> .....	675

---

## CONTENTS

---

THE SOLAR ALTAR IN THE TEMPLE OF HATSHEPSUT AT DEIR EL-BAHARI: ARCHITECTURE AND IDEOLOGY <i>Andrzej Ćwiek</i> .....	693
FAIENCE OBJECTS FROM THE TOMB MMA 1152 AT SHEIKH ABD EL-GURNA <i>Patryk Chudzik, Andrzej Ćwiek</i> .....	701
INDIAN STEEL: A FORGOTTEN COMMODITY OF THE GREAT TRADE ROUTES <i>Marek Woźniak</i> .....	709
MONETIZATION OF ROMAN EGYPT DURING THE FLAVIAN DYNASTY (AD 69–96): THE CASE OF ALEXANDRIA AND BERENIKE <i>Katarzyna Lach</i> .....	727
CROSS-CULTURAL BEAD ENCOUNTERS AT THE RED SEA PORT SITE OF BERENIKE, EGYPT. PRELIMINARY ASSESSMENT (SEASONS 2009–2012) <i>Joanna Then-Obluska</i> .....	735
A NEW LOOK ON SOME OLD GLASS FINDS FROM PALMYRA <i>Krystyna Gawlikowska</i> .....	779
NEW INSIGHTS INTO NUBIAN ARCHERY <i>Łukasz Zieliński</i> .....	791
INDEX OF SITES .....	803
GUIDELINES FOR AUTHORS .....	804
PCMA PUBLICATIONS .....	805

*POLISH ARCHAEOLOGY IN THE MEDITERRANEAN (PAM)*  
*Annual of the Polish Centre of Mediterranean Archaeology, University of Warsaw*

PAM Editor-in-chief: Iwona Zych

Volume 24/1: Research

All texts peer-reviewed.

<http://www.pcma.uw.edu.pl/en/pam-journal/pam-independent-reviewers/>

Press-reviewing process: Urszula Wicenciak

Bibliographic editor: Aleksandra Zych

Language consultation: Iwona Zych

Technical editor: Iwona Zych

Digital processing: Ewa Czyżewska-Zalewska

Image processing and copyediting assistance: Ewa Czyżewska-Zalewska, Szymon Maślak, Marta Momot, Marek Puzkarski, Urszula Wicenciak

Original graphic design: Jerzy Kowalski, updated by Ewa Czyżewska-Zalewska for PCMA

DTP: Ewa Czyżewska-Zalewska, assisted by Agnieszka Dzwonek

Cover: Tumulus SB 100 from the Al-Subiyah region of Kuwait during exploration  
(Photo M. Makowski)

**ISSN 1234–5415 (Print), ISSN 2083–537X (Online)**

© Polish Centre of Mediterranean Archaeology, University of Warsaw, Warszawa 2015

© Wydawnictwa Uniwersytetu Warszawskiego, Warszawa 2015

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the Polish Centre of Mediterranean Archaeology of the University of Warsaw.

Polish Centre of Mediterranean Archaeology, University of Warsaw

00-497 Warszawa, Poland, ul. Nowy Świat 4

e-mail: [pam.pcma@uw.edu.pl](mailto:pam.pcma@uw.edu.pl)

[www.pcma.uw.edu.pl](http://www.pcma.uw.edu.pl)

Orders can be placed c/o Agnieszka Pieńkowska

[a.pienkowska@uw.edu.pl](mailto:a.pienkowska@uw.edu.pl)

University of Warsaw Press

00-497 Warszawa, Poland, ul. Nowy Świat 4

[www.wuw.pl](http://www.wuw.pl); e-mail: [wuw@uw.edu.pl](mailto:wuw@uw.edu.pl)

Internet Bookshop: [www.wuw.pl/ksiegarnia](http://www.wuw.pl/ksiegarnia)

*Printed in Poland*



## POLISH ARCHAEOLOGY IN THE MEDITERRANEAN

Published annually since 1990



*PAM XXIV/1 Research*

### REPORTS

Fieldwork projects carried out by PCMA teams in the Ancient Near East and Africa

- scope: archaeological, geophysical, restoration and study work
- areas of interest: Egypt, Sudan, Cyprus, Syria, Lebanon, Kuwait, Iraq
- timespan: ten millennia from prehistory and protohistory through the medieval period

### STUDIES

- archaeological, architectural and material research within the fields of study covered by PCMA fieldwork

*PAM XXIV/2 Special Studies*

*Deir el-Bahari Studies*

Editor Zbigniew E. Szafrński

Volume dedicated to research on specific egyptological and archaeological themes resulting from the ongoing work of the Polish conservation and restoration project in the Temple of Queen Hatshepsut in Deir el-Bahari (West Thebes, Luxor, Egypt). The 11 contributions included in this book concern mostly a later phase in the occupation of the complex, in the Third Intermediate Period (11th–8th century BC), when the abandoned temple was reused as a burial ground. A few of the articles refer to the original architectural form and decoration of the temple from the times of Hatshepsut (15th century BC). Also included is an article on tombs of three other queens of the Eighteenth Dynasty in the Valley of the Kings.

Available as full texts on-line at [www.pcma.uw.edu.pl](http://www.pcma.uw.edu.pl)

*PAM* volumes 17 to the present available on-line from [www.ceeol.com](http://www.ceeol.com)

Information and orders:

[www.pcma.uw.edu.pl](http://www.pcma.uw.edu.pl)

[pcma@uw.edu.pl](mailto:pcma@uw.edu.pl)

[pam.pcma@uw.edu.pl](mailto:pam.pcma@uw.edu.pl)

[www.wuw.pl/ksiegarnia](http://www.wuw.pl/ksiegarnia)

RESEARCH

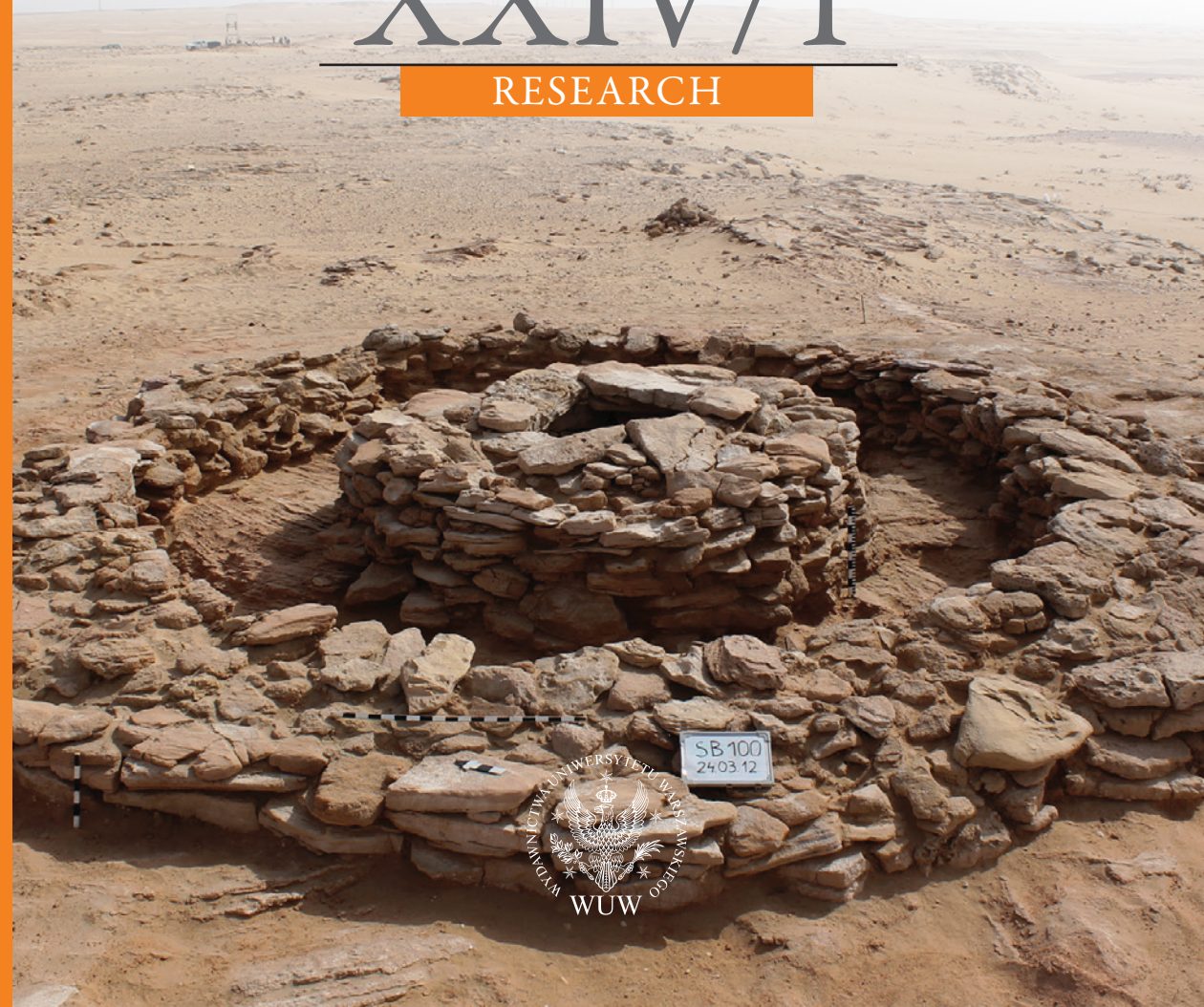
PAM XXIV/1

POLISH CENTRE OF MEDITERRANEAN ARCHAEOLOGY  
UNIVERSITY OF WARSAW

# POLISH ARCHAEOLOGY IN THE MEDITERRANEAN

## XXIV/1

RESEARCH



Polish Centre of  
Mediterranean Archaeology

