

Title: Fishing gear from Jiyeh (Porphyreon). Preliminary report

Author(s): Agnieszka Szulc-Kajak

Journal: *Polish Archaeology in the Mediterranean 22 (Research 2010)*

Year: 2013

Pages: 334–340

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 - www.wuw.pl

Abstract: The assemblage of metal fishing gear from PCMA excavations at the site of Jiyeh in Lebanon has been presented in the context of similar finds from other coastal sites in the Levant, as well as in association with objects representing fishing gear from earlier, Lebanese fieldwork in Jiyeh. The set includes net-sinkers of the FRLS type (folded rectangular lead sinkers), as well as fishing line hooks and net-repair tools. The principal kinds of fishing nets are also discussed in the article, as well as other aspects connected with catching fish.

Keywords: Jiyeh, fishing, FRLS , lead, net sinkers

FISHING GEAR FROM JIYEH (PORPHYREON) PRELIMINARY REPORT

Agnieszka Szulc-Kajak

PCMA affiliate

Abstract: The assemblage of metal fishing gear from PCMA excavations at the site of Jiyeh in Lebanon has been presented in the context of similar finds from other coastal sites in the Levant, as well as in association with objects representing fishing gear from earlier, Lebanese fieldwork in Jiyeh. The set includes net-sinkers of the FRLS type (folded rectangular lead sinkers), as well as fishing line hooks and net-repair tools. The principal kinds of fishing nets are also discussed in the article, as well as other aspects connected with catching fish.

Keywords: Jiyeh, fishing, FRLS, lead, net sinkers

Several dozen examples of metal fishing gear were discovered at the site of Jiyeh (Porphyreon) in Lebanon during archaeological excavations carried out between 1997 and 2010. These included 22 complete fishing net and line sinkers [Table 1; Fig. 2], mostly made of lead, as well as a few partly preserved examples and semi-products used in the production of such objects. Artifacts recovered from the current excavations corresponded to the assemblage recorded from excavations carried out in Jiyeh in 1975 and now held in the Beirut storeroom of the Directorate General of Antiquities of Lebanon. That collection included another few dozen objects classified as fishing gear. Singular examples of fishing gear were discovered also at Chhîm. Apart from the predominant lead net sinkers, the current assemblage from Jiyeh included other kinds

of artifacts, like bronze hooks and tools for repairing fishing nets. A few semi-products in the form of lead sheet to be folded into rectangular weights were also discovered at the site, as was a stone casting mold.

Fishing net sinkers along with other fishing gear are found on many Levantine sites along the sea coast, in different contexts, at harbors and anchorages, in shipwrecks, as well as houses and graves. Underwater archaeology has been the source of the largest number of finds of this kind, dated to all periods beginning with the prehistoric, i.e., the assemblage from the Neolithic fishing village of Atlit-Yam (see Galili, Rosen *et alii* 2002; Galili, Lernau, Zohar 2004). Neolithic stone net weights are visibly specific in form, but the standardization of fishing gear, both sinkers and hooks, from the Bronze Age on makes it virtually impossible to date

Table 1. Metal fishing gear from excavations in Jiyeh from 1997 through 2010

Inv. No.	Material	Item	Dimensions cm L/W/H	Context no.	Figure
JY12M	Lead	Net sinker, FRLS	5.5/1/0.7	H/59/29	<i>Fig. 2</i>
JY13M	Lead	Net sinker, FRLS	5.7/0.9/0.6	H/59/29	<i>Fig. 2</i>
JY14M	Lead	Net sinker, FRLS	6.5/0.9/0.6	H/59/?	
JY15M	Lead	Net sinker, FRLS	5.4/0.5/0.7	H/59/?	<i>Fig. 2</i>
JY16M	Lead	Net sinker, FRLS	6.3/0.8/0.5	H/59	<i>Fig. 2</i>
JY63M	Lead	Net sinker, FRLS	7.5/1.5/0.8	QII/2	
JY145M	Lead	Truncated conical weight	3.1/3.1/3.7	D/10/4	
JY148M	Lead	Sheet metal, semi-finished net sinker of the FRLS type	6.1/2.7/1	D/49/2	
JY151M	Lead	Net sinker, FRLS	5.8/1/0.6	D/77/5	
JY207M	Lead	Net sinker, FRLS	4/1.9/0.6	D/79/7	
JY213M	Lead	Net sinker, FRLS	3.3/0.9/0.5	D/20/20	
JY222M	Lead	Sheet metal, thickened at the edges, semi-finished net sinker of the FRLS type	7.2/10.1/2	D/20/13	
JY308M	Lead	Net sinker, FRLS, decorated with oblique parallel lines	7.2/1.4/0.8	D/100/1	
JY315M	Lead	Net sinker, FRLS	7.2/1.4/0.7	D/Western dump/2	
JY325M	Lead	Sheet, semi-finished net sinker of the FRLS type	5.3/2.5/0.2	D/Eastern dump	
JY358M	Lead	Net sinker, FRLS, decorated	5.2/1/0.5	D/100/1	
JY364M	Lead	Net sinker, FRLS, decorated with a representation of an anchor?	4.5/2.1/1.1	D/100/1	<i>Fig. 2</i>
JY370M	Lead	Net sinker, FRLS	4.7/1/0.5	D/Western dump/2	
JY444M	Lead	Net sinker, FRLS	6.7/1.6/0.6	D/100/1	<i>Fig. 2</i>
JY450M	Lead	Net sinker, FRLS, decorated with oblique parallel lines	6.7/0.9/0.7	Northern dump	
JY456M	Lead	Sheet metal, semi-finished net sinker of the FRLS type, decorated	5.2/1.6/0.6	D/100/1	
JY568M	Lead	Net sinker, FRLS	6.2/0.7/0.6	D/107/1	
JY620M	Lead	Net sinker, FRLS	6/0.9/0.6	D/107/1	
JY642M	Lead	Net sinker, FRLS, decorated with oblique parallel lines	5.8/0.9/0.5	D/107/1	
JY659M	Lead	Net sinker, FRLS	7.9/1.7/0.5	D/107/3	
JY662M	Lead	Net sinker, FRLS	6.1/1.3/0.9	D/44/40	<i>Fig. 2</i>
JY663M	Lead	Net sinker, FRLS	6.7/.3/1	D/107/5	<i>Fig. 2</i>

them on typological grounds alone. The only exception are sinkers with decoration typical of the period, such as crosses or one or more letters. On the other hand, fishing methods unchanged from antiquity have been helpful in reconstructing old fishing techniques and determining types, net sizes etc.

Despite the paucity of descriptions of fishing net sinkers in publications, a number of typologies has been developed. The fullest such classification for the Eastern Mediterranean was presented in 2002 by Ehud Galili, Baruch Rosen and Jacob Sharvit, based on finds from underwater exploration in the vicinity of Haifa (Galili, Rosen, Sharvit 2002). It is widely cited, even in publications concerning other parts of the Mediterranean (e.g., Bernal Casasola 2010: 96–97). A storm near Haifa uncovered, among others, more than 1200 artifacts identified as fishing net sinkers. Most of them were made of lead, although there were a few produced of stone. The classification followed divisions of material, shape and production methods (Galili, Rosen, Sharvit 2002: 182–192). The most important typologies, announced previous to the described one, were that of Peter I. Kuniholm based on finds from a Byzantine shipwreck at Yassi Ada on the Turkish coast and using shape as a division criterion (Kuniholm 1982), and that of John P. Oleson, who distinguished 12 classes among the 155 net sinkers recovered from the harbors in Cesarea Maritima (Oleson [ed.] 1994: 68–73).

The prevalent type of net sinker found on coastal sites in the Eastern Mediterranean, including Jiyeh, is Oleson's class 12, which corresponds to Galili's type L.2.3, referred to in short as FRLS: "folded rectangular lead sinker". Sinkers

of this kind were produced in two steps: rectangular pieces of lead were first cast in stone molds and then they were folded in half along the long axis over the lower line of a net. A stone mold for casting sinkers was discovered at Jiyeh [Fig. 1]. It is damaged, but it is still clear that it was used to cast a number of sinkers simultaneously. The sides were decorated with engraved decoration, including one or more images of fish and an anchor. Examples of casting molds have been recorded in Byzantine layers at Shiqmona and Kastrá (Galili, Rosen, Sharvit 2002: 192, Fig. 13). The Yassi Ada wreck produced a bronze spoon with numerous traces of lead, which indicates that it was repeatedly immersed in liquid lead. Combined with lead waste from a production process of some kind, it



Fig. 1. Casting mold for fishing net sinkers
(Photo M. Gwiazda)

suggests that the crew were making sinkers on shipboard to satisfy current needs (Kuniholm 1982: 309). FRLS were of different size, some were decorated, usually with a series of parallel lines, less often with geometric, drawn and letter patterns. The decoration was carved into the mold, hence the relief decoration on the net sinkers. The condition of the sinkers from Jiyeh does not allow the decoration to be traced in all cases. Some surely bore oblique parallel lines of a kind revealed by the casting mold from Jiyeh. An anchor was depicted on one of the sinkers [see *Fig. 2*, JY13M].

FRLS sinkers are meaningfully superior in number to all other types. To date, only one conical sinker was discovered in Jiyeh compared to 21 of the FRLS type. Of the 159 sinkers found in the 7th century shipwreck at Dor, 153 belonged to this type (Galili, Rosen 2008: 69). Naturally, the sheer number of sinkers as such is hardly surprising considering that a single fishing net would have required quite a few and that sinkers in use are easily damaged when the net is cast and pulled up, and have to be replaced with a considerable frequency. FRLS sinkers weighed down the footrope or bottom rope of a net to stabilize it. Light fishing nets cast by hand would have had 17–18 sinkers each. The number was estimated by W.M. Flinders Petrie on the grounds of finds from a late Bronze Age tomb at Tell el-Ajjul near Gaza and confirmed by a group of 18 sinkers from the same period, found in a single context in a shipwreck off the Gelidonia Cape in Turkey (Pulak 1988: 32–33). The shipwreck at Ulu Burun, also off the Turkish coast, contained 107 FRLS sinkers in three scatters, twice 21 artifacts and once 35; it can be assumed that the scatters corresponded to three separate nets. Bigger nets could have taken even a few

hundred sinkers. The size of a net can be estimated also based on the rope openings in the sinkers. According to E. Galili, if the opening diameter in the sinkers was about

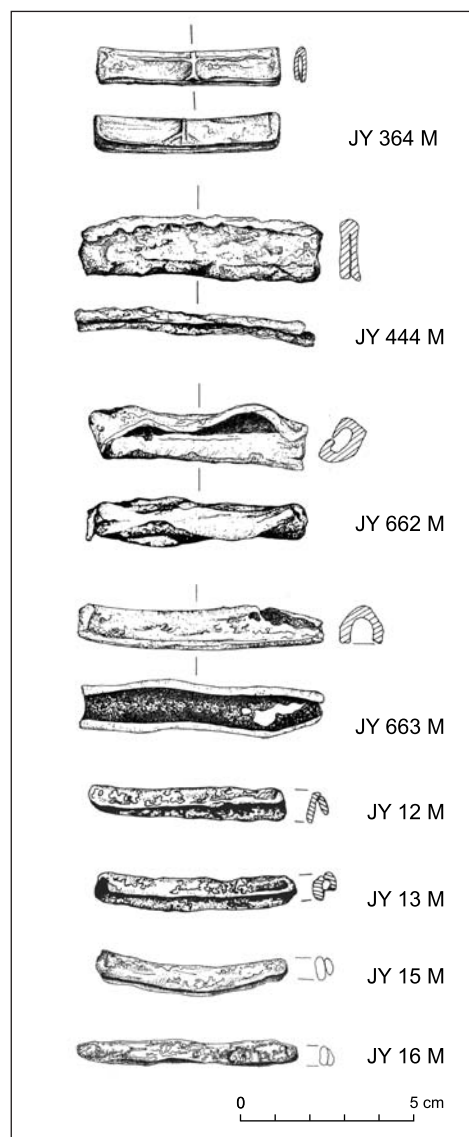


Fig. 2. Fishing net sinkers from the site of Jiyeh (Drawing A. Błaszczuk, M. Makowska)

1 mm, the net would have been a cast net. Diameters of 8–10 mm and more were typical of large nets, like dragnets /beach seines (Galili, Rosen, Sharvit 2002: 195–199). Examples of large nets were recorded in a shipwreck surveyed off Ashkelon, dated to the Hellenistic/early Roman period (Galili *et alii* 2010). All of the FRLS sinkers from Jiyeh belonged to the first and smallest category. The majority of rectangular net sinkers from Levantine coastal sites was made of lead, although there are some examples cast of copper or copper alloys, e.g., artifacts found at Tel Michal, in layers from the Persian period (Herzog *et alii* [eds] 1989: 281–282, Fig. 25.9).

Fishing hooks also did not change much over the ages. According to A.J. Parker, the oldest shipwreck to contain fishing hooks in the recorded assemblage is the Late Bronze Age ship from Ulu Burun (Parker 1992: 439). Through 2010 the excavations at Jiyeh had not yielded one hook that could be securely identified as fishing gear, but a few more or less complete bronze artifacts of this type can be seen in the material excavated in 1975 and now stored in Beirut. The same can be said of tools used to repair nets. Well preserved examples of

a bronze fishing hook [Fig. 3] and a net-repairing tool [Fig. 4] were discovered during Polish excavations at the inland village of Chhîm.

Almost always fishing hooks were made of copper or copper alloys. They can be classified by size, point and the way the line was attached. The line would be wound around the upper end of the shaft, which was grooved for a better hold. Such grooving is observed on the hooks from Jiyeh and Chhîm, as well as Ulu Burun, for example (Bass *et alii* 1989: 5–7, Fig. 9). The shaft end could have been flattened

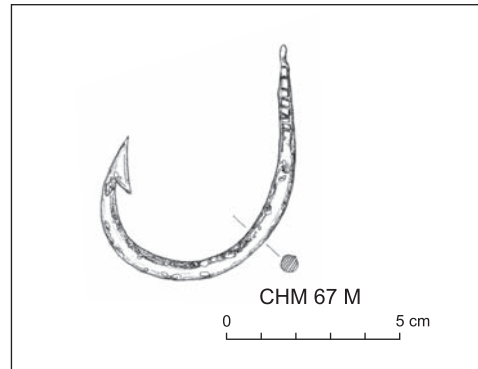


Fig. 3. Fishing hook from the village of Chhîm (Drawing A. Błaszczuk)

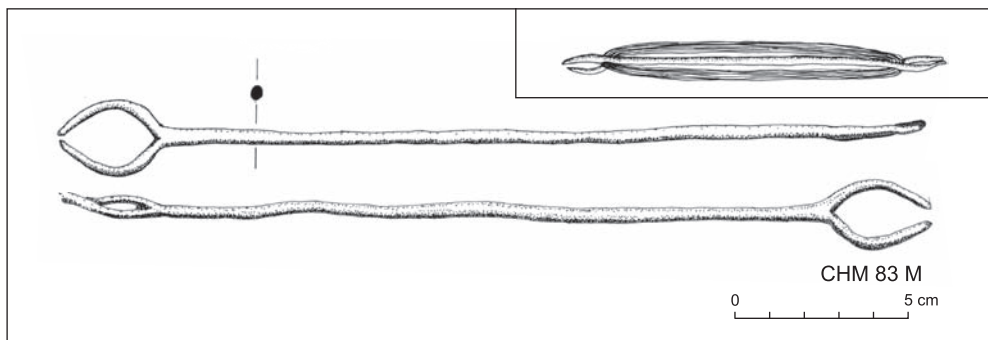


Fig. 4. Net-repair tool from the village of Chhîm; inset, reconstruction of the way in which the net-repair tool was used (Drawing A. Szulc-Kajak; reconstruction after Alfaro Giner 2010: 64, Fig. 3)

and examples with such flattened endings are known from the Caesarea harbor, either Roman or Byzantine in date, although the chronology of these artifacts is not entirely clear (Oleson [ed.] 1994: 67–68, Fig. 21). The line could also have been attached to a loop in the hook, as in artifacts from Egypt, from the Middle Kingdom (Brewer, Friedman 1989: 26–31, Figs 2.8, 2.11). A loop ending was present also on one of the hooks from Caesarea (Patrich 2008: 444, 457).

Bronze net-repair tools are also present in the assemblage from Jiyeh. Nets were easily damaged and it has been speculated that fishermen spent more time repairing nets than actually fishing. Thin long tools with forked endings at either end, the plane of these turned at right angle respective to one another, were used most commonly for such repairs. The forked endings bulged out in the middle, forming a loop shape, and the line used to repair a damaged net was wound onto these endings [Fig. 4, inset]. It is also possible that needles identified as tools for sail repairs were also used to repair fishing nets.

Artifacts representing fishing gear from Jiyeh were recorded mainly in test pits and secondary contexts. Little underwater archaeology has been carried out so far off

the coast of the site. In effect, one cannot estimate the importance of fishing in the economy of the local village inhabitants. The choice of fishing methods is largely dependent on the natural environment. There are no rock shelves at Jiyeh which could have served to fish with a line and line-sinkers, so to catch fish on a hook the villagers would have had to search for a good spot or fish from a boat. On the other hand the sandy and stony beaches at Jiyeh are fairly convenient for fishing with nets cast by hand and this assumption is confirmed by numerous finds of sinkers used on such nets. Such nets cast in shallow waters would have been useful in catching shoals of coastal fish. Nets of this kind could have also been cast from boats. The type of coast at Jiyeh also seems appropriate for fishing with large dragnets, but so far there has been no evidence forthcoming for the use of nets of this kind. While this can be due to the state of research, it is also possible that local sea currents and submerged rocks occurring in places along the coast would have made the use of such nets unprofitable. The stone casting mold from Jiyeh is of particular importance, as it points to a local production of small rectangular net sinkers and, by interpolation, to the common use of such small cast nets in Jiyeh and vicinity.

Agnieszka Szulc-Kajak
szamsun@wp.pl

REFERENCES

Alfaro Giner, C.

- 2010 Fishing nets in the ancient world: The historical and archaeological evidence [in:] T. Bekker-Nielsen, D. Bernal Casasola (eds), *Ancient Nets and Fishing Gear. Proceedings of the International Workshop on "Nets and Fishing Gear in Classical Antiquity: A First Approach"*, Cádiz, November 15–17, 2007, Cádiz: Servicio de Publicaciones de la Universidad de Cádiz, 55–82

- Bass, G.F., Pulak, C., Collon, D., Weinstein, J.
 1989 The Bronze Age shipwreck at Ulu Burun, 1986 campaign, *AJA* 93/1, 1–29
- Bernal Casasola, D.
 2010 Fishing tackle in *Hispania* [in:] T. Bekker-Nielsen, D. Bernal Casasola (eds), *Ancient Nets and Fishing Gear. Proceedings of the International Workshop on “Nets and Fishing Gear in Classical Antiquity: a First Approach”*, Cádiz: Servicio de Publicaciones de la Universidad de Cádiz, 83–138
- Brewer, D.J., Friedman, R.F.
 1989 *Fish and Fishing in Ancient Egypt* [= *Natural History of Egypt* 2], Warminster: Aris and Phillips
- Galili, E., Lernau, O., Zohar, I.
 2004 Fishing and coastal adaptations at ‘Atlit-Yam — a submerged PPNC fishing village off the Carmel coast, Israel, *Atiqot* 48, 1–34
- Galili, E., Rosen, B.
 2008 Fishing gear from a 7th-century shipwreck off Dor, Israel, *IJNA* 37, 67–76
- Galili, E., Rosen, B., Gopher, A., Kolska-Horwitz, L.
 2002 The emergence and dispersion of the Eastern Mediterranean fishing village evidence from submerged Neolithic settlements off the Carmel coast, *JMA* 15/2, 167–198
- Galili, E., Rosen, B., Sharvit, J.
 2002 Fishing-gear sinkers recovered from an underwater wreckage site, off the Carmel Coast, Israel, *IJNA* 31/2, 182–201
- Galili, E., Sussman, V., Stiebel, G., Rosen, B.
 2010 A Hellenistic/Early Roman shipwreck assemblage off Ashkelon, *IJNA* 39/1, 125–145
- Herzog, Z., Rapp, G. Jr, Negbi, O. (eds)
 1989 *Excavations at Tel Michal, Israel* [= *Publications of the Institute of Archaeology* 8], Tel Aviv: Sonia and Marco Nadler Institute of Archaeology, Tel Aviv University
- Kuniholm, P.I.
 1982 The fishing gear [in:] G.F. Bass, F.H. van Doorninck Jr., *Yassi Ada I. A Seventh-Century Byzantine Shipwreck* [= *Nautical Archaeology Series* 1], College Station, TX: Texas A&M University Press, 296–310
- Oleson, J.P. (ed.)
 1994 *The Harbours of Caesarea Maritima. Results of the Caesarea Ancient Harbour Excavation Project 1980–85, II. The Finds and the Ship* [= *BAR IS* 594], Oxford: BAR
- Parker, A.J.
 1992 *Ancient Shipwrecks of the Mediterranean and the Roman Provinces* [= *BAR IS* 580], Oxford: Tempus Reparatum
- Patrich, J.
 2008 *Archaeological Excavations at Caesarea Maritima. Areas CC, KK and NN. Final Reports I. The Objects*, Jerusalem: Israel Exploration Society
- Pulak, C.
 1988 The Bronze Age shipwreck at Ulu Burun, Turkey: 1985 campaign, *AJA* 92/1, 1–37

POLISH CENTRE OF MEDITERRANEAN ARCHAEOLOGY
UNIVERSITY OF WARSAW

POLISH ARCHAEOLOGY
IN THE MEDITERRANEAN

XXII

RESEARCH 2010



CONTENTS

CONTENTS

ACKNOWLEDGMENTS	10
OBITUARIES	
<i>Michał Neska</i>	11
<i>Piotr Parandowski</i>	13
<i>Adam Stefanowicz</i>	15
<i>Zygmunt Wysocki</i>	17
ABBREVIATIONS AND STANDARD REFERENCES	19

PAM REPORTS

PCMA FIELD MISSIONS AND PROJECTS IN 2010 (WITH MAP)	23
---	----

EGYPT

ALEXANDRIA

EXCAVATIONS AND PRESERVATION WORK ON KOM EL-DIKKA. PRELIMINARY REPORT 2009/2010 <i>Grzegorz Majcherek</i>	33
---	----

MAREA

ELEVENTH SEASON OF EXCAVATIONS AT MAREA (2010) <i>Krzysztof Babraj</i> , <i>Hanna Szymańska</i> , <i>Anna Drzymuchowska</i> , <i>Nina Willburger</i> ...	55
APPENDIX: THE HARBOR JETTIES OF MAREA <i>Krzysztof Babraj</i>	67

TELL EL-RETABA

TELL EL-RETABA, SEASON 2010 <i>Stawomir Rzepka</i> , <i>Jozef Hudec</i> , <i>Łukasz Jarmużek</i>	79
APPENDIX: TELL EL-RETABA 2010. PRELIMINARY REPORT ON ARCHAEOBOTANICAL INVESTIGATIONS <i>Claire Malleon</i>	90
TELL EL-RETABA, SEASON 2010: POTTERY REPORT <i>Anna Wodzińska</i>	96

CONTENTS

TELL EL-MURRA

- TELL EL-MURRA (NORTHEASTERN NILE DELTA SURVEY). SEASON 2010
Mariusz A. Jucha, Katarzyna Błaszczuk, Artur Buszek, Grzegorz Pryc 105

TELL EL-GHABA

- GEOPHYSICAL SURVEY AT TELL EL-GHABA, 2010
Tomasz Herbich 121

DEIR EL-BAHARI

- TEMPLE OF HATSHEPSUT AT DEIR EL-BAHARI. SEASONS 2008/2009 AND 2009/2010
Zbigniew E. Szafranski 131
- NEW STONE SCULPTURES OF HATSHEPSUT FROM DEIR EL-BAHARI
Aliaksei Shukanau 152

VALLEY OF THE KINGS

- POLISH EPIGRAPHICAL MISSION IN THE TOMB OF RAMESSES VI (KV 9)
IN THE VALLEY OF THE KINGS IN 2010
Adam Łukaszewicz 161
- APPENDIX: THREE-DIMENSIONAL SPATIAL INFORMATION SYSTEM FOR THE GRAFFITI
INSIDE THE TOMB OF RAMESSES VI (KV 9) IN THE VALLEY OF THE KINGS
Wiesław Małkowski, Miron Bogacki 165

SHEIKH ABD EL-GURNA

- THE HERMITAGE IN SHEIKH ABD EL-GURNA (WEST THEBES): EXCAVATIONS,
STUDIES AND CONSERVATION IN 2009 AND 2010/2011
Tomasz Górecki 171
- PRELIMINARY REMARKS ON THE ARCHITECTURE OF THEBAN TOMB 1152
AT SHEIKH ABD EL-GURNA
Patryk Chudzik 193
- THE GURNA MANUSCRIPTS (HERMITAGE IN MMA 1152),
CONSERVATION REPORT, 2010
Anna Thommée 199

BERENIKE

- THE LATE ROMAN HARBOR TEMPLE OF BERENIKE. RESULTS OF THE 2010 SEASON
OF EXCAVATIONS
Joanna Rądkowska, Steven E. Sidebotham, Iwona Zych 209

SUDAN

DONGOLA

- ARCHAEOZOOLOGICAL RESEARCH ON ANIMAL REMAINS FROM EXCAVATIONS IN
DONGOLA (SUDAN) IN 2010
Marta Osypińska 229

CONTENTS

THE MOSQUE BUILDING IN OLD DONGOLA. CONSERVATION AND REVITALIZATION PROJECT

*Artur Obluski, Włodzimierz Godlewski, Wojciech Kołataj, Stanisław Medeksza,
Cristobal Calaforra-Rzepka* 248

BANGANARTI

BANGANARTI AND SELIB. SEASON 2010

*Bogdan Zurawski, Tomasz Stępnik, Mariusz Drzewiecki, Tadeusz Badowski,
Aneta Cedro, Katarzyna Molga, Katarzyna Solarska, Tomasz Włodarski* 273

APPENDIX: ARCHAEOLOGICAL RESEARCH REPORT FROM SELIB 2 (2010 SEASON)

Roksana Hajduga 287

THE ENCLOSURE WALLS OF BANGANARTI AND SELIB AFTER THE 2010 SEASON

Mariusz Drzewiecki 295

FOURTH CATARACT

HAGAR EL-BEIDA 1. EXCAVATIONS OF THE “ROYAL” TUMULUS (NO. 10) IN 2010

Marek Chłodnicki, Tomasz Stępnik 309

LEBANON

JIYEH

PRELIMINARY REPORT ON THE 2010 EXCAVATION SEASON AT JIYEH (PORPHYREON)

Tomasz Waliszewski, Mariusz Gwiazda 321

FISHING GEAR FROM JIYEH (PORPHYREON). PRELIMINARY REPORT

Agnieszka Szulc-Kajak 334

SYRIA

PALMYRA

REMARKS ON WATER SUPPLY IN PALMYRA. RESULTS OF A SURVEY IN 2010

Karol Juchniewicz, Marta Żuchowska 341

TELL ARBID

PRELIMINARY RESULTS OF THE FIFTEENTH FIELD SEASON OF JOINT POLISH–SYRIAN EXPLORATIONS ON TELL ARBID (2010)

Piotr Bieliński 351

NINEVITE 5 KITCHEN FROM TELL ARBID (SECTOR W)

Andrzej Reiche, Anna Smogorzewska 371

SET OF SECOND MILLENNIUM BC UNBAKED CLAY OBJECTS FROM TELL ARBID

Agnieszka Szymczak 387

DECORATIVE MOTIFS ON EARLY INCISED/EXCISED NINEVITE 5 POTTERY FROM TELL ARBID

Cezary Baka, Jacek Hamburg 421

CONTENTS

ANIMAL BONE REMAINS FROM TELL ARBID (SEASON 2009) — ARCHAEOZOOLOGICAL ANALYSIS <i>Joanna Piątkowska-Matecka, Anna Smogorzewska</i>	439
TELL ARBID. ADAM MICKIEWICZ UNIVERSITY EXCAVATIONS IN SECTOR P (SPRING SEASON OF 2010) <i>Rafał Koliński</i>	451

KUWAIT

AS-SABBIYA

ARCHAEOLOGICAL SURVEY IN THE EASTERN AS-SABBIYA (NORTH COAST OF KUWAIT BAY), SEASONS 2009–2010 <i>Eukasz Rutkowski</i>	479
TUMULI GRAVES AND DESERT WELLS IN THE AS-SABBIYA. PRELIMINARY EXCAVATION REPORT ON THE SPRING SEASON IN 2010 <i>Eukasz Rutkowski</i>	493
TUMULUS GRAVE SMQ 49 (AS-SABBIYA, KUWAIT). PRELIMINARY REPORT ON THE INVESTIGATIONS IN 2009–2010 <i>Maciej Makowski</i>	518
TUMULUS GRAVE SMQ 30 IN AS-SABBIYA – MUGHEIRA (NORTHERN KUWAIT). A REPORT ON THE 2007–2008 INVESTIGATIONS <i>Andrzej Reiche</i>	528

IRAN

KHONE-YE DIV

KHONE-YE DIV. PRELIMINARY REPORT ON THE SECOND AND THIRD SEASONS OF IRANO–POLISH EXCAVATIONS (2009 AND 2010) <i>Barbara Kaim, Mohammad Bakhtiari, Hassan Hashemi</i>	543
--	-----

PAM STUDIES

POTTERY FROM BAHRA 1 (KUWAIT). NEW EVIDENCE FOR THE PRESENCE OF UBAID CULTURE IN THE GULF <i>Anna Smogorzewska</i>	555
GROUND AND PECKED STONE INDUSTRY OF BAHRA 1, AN UBAID-RELATED SETTLEMENT IN NORTHERN KUWAIT <i>Marcin Białowarczuk</i>	569
SHELL OBJECTS FROM TELL RAD SHAQRAH (SYRIA) <i>Dariusz Szeląg</i>	587

CONTENTS

ANTHROPOMORPHIC FIGURINES OF THE SECOND MILLENNIUM BC FROM TELL ARBID, PRELIMINARY REPORT <i>Maciej Makowski</i>	617
EXECRATION AGAIN? REMARKS ON AN OLD KINGDOM RITUAL <i>Teodozja I. Rzeuska</i>	627
THE SOLAR ALTAR IN THE HATSHEPSUT TEMPLE AT DEIR EL-BAHARI <i>Teresa Dziedzic</i>	635
ROMAN CLAY LANTERN FROM BIJAN ISLAND (IRAQ) <i>Maria Krogulska, Iwona Zych</i>	651
ARCHBISHOP GEORGIOS OF DONGOLA. SOCIO-POLITICAL CHANGE IN THE KINGDOM OF MAKURIA IN THE SECOND HALF OF THE 11TH CENTURY <i>Włodzimierz Godlewski</i>	663
MEDIEVAL TRANSCULTURAL MEDIUM: BEADS AND PENDANTS FROM MAKURIAN AND POST-MAKURIAN DONGOLA IN NUBIA <i>Joanna Then-Obluska</i>	679
INDEX OF SITES	721
GUIDELINES FOR AUTHORS	722
PCMA PUBLICATIONS	723