

Fishing nets from Berenike (Egyptian Red Sea Coast)

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This paper presents the fishing nets, recovered from Berenike, the Ptolemaic and Roman harbour site at the Egyptian Red Sea Coast. The objects are described, as well as the production method (the knotting) of the nets. Furthermore, other fishing equipment found at the site as well as the analysed fish remains are discussed. Finally a survey of fishing in ancient Egypt (looking at representations) is presented. The information is combined with the recovered artefacts and discussed.

Este artículo presenta las redes de pesca descubiertas en Berenice, el puerto ptolemaico y romano creado en la costa egipcia del Mar Rojo. Se describen los objetos así como el método de producción de las redes (los nudos). También se presentan brevemente otros aperos de pesca encontrados en el yacimiento y los restos de peces analizados. Por último se presenta un breve análisis de la pesca en el Egipto antiguo (basada en representaciones). Esta información se combina con los artefactos recuperados en Berenice y es discutida.

KEY WORDS: *Ptolemaic and Roman Period, Red Sea, Berenike, working Tools, fishing*

Relatively much is known about fishing on the Nile; many scenes in tombs and references in texts illustrate this particular activity. Our knowledge of sea fishing in ancient Egypt is far more limited; no representations are known and archaeological evidence has hitherto been absent. It is only in the last decades that the Red Sea coast has seen a steady increase in archaeological research. The excavations at Berenike¹ have produced many instances of fishing gear and fish remains. Among the cordage excavated at Berenike are various pieces of fishing nets of different appearance, varying considerably in overall size as well as the size of the cordage and mesh. The nets originate from eight different trenches, although the bulk of the material has been recovered from the northeastern part

of the site (figure 1). This area is known to be an early Roman trash dump area (Sidebotham, 2000: 107; Sidebotham, in press), dated to the first century AD. The six trenches in this area produced by far the most net fragments. The few remaining fragments originate from the fifth century AD-contexts and later. In this article the archaeological material is presented and combined with the results of an introductory survey of fishing in ancient Egypt.

MATERIAL, THE PIECES OF FISHING NETS²

Description

A total of 75 pieces of fine net fragments have been excavated (table 1); only seven of these

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1. The excavations at Berenike were conducted by the University of Delaware (co-director S. E. Sidebotham) and the Leiden University (co-director W. Z. Wendrich) between 1994-2001.
2. Technical cordage terms are explained in detail in Wendrich (1991, 1999); a discussion and evaluation of .../...

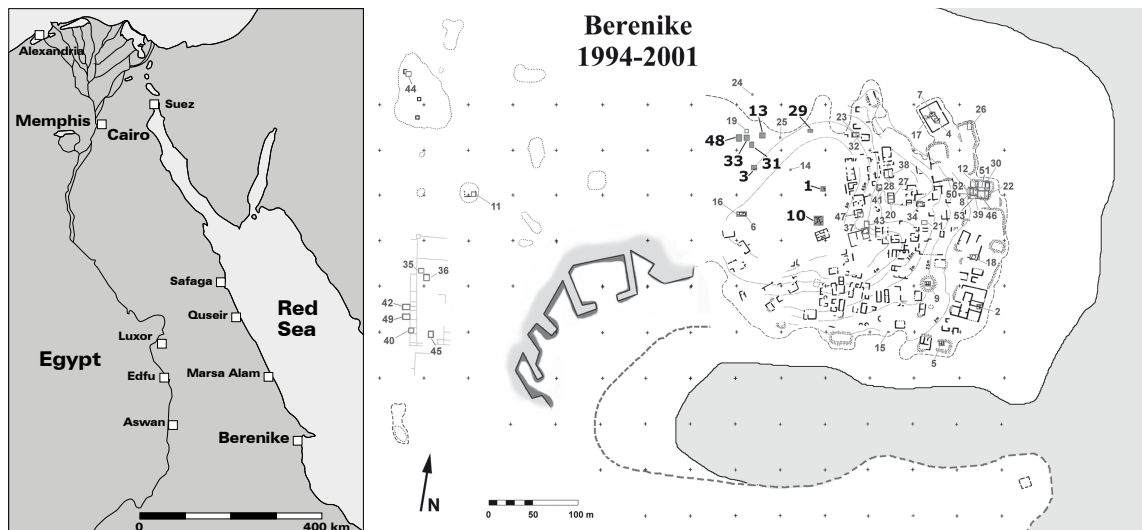


Figure 1. Map of the Ptolemaic and Roman harbour site Berenike, with trenches that produced cordage indicated in grey. Inset: the location of Berenike at the Red Sea Coast of Egypt. Map after A. M. Hense.

originate from fifth to sixth century AD-contexts (two trenches, marked with * in the table). All pieces of which the material could be determined showed being made of flax cordage³.

The three pieces from trench BE94/95-1 originate from three different nets because two of them, which display the same composition of the cordage (sZ_2), have been made differently. One of these has been made with mesh knots in Z orientation (figure 2) whereas the other one with mesh knots in S orientation (figure 3). It is not possible to determine whether the rows were alternating obverse and reverse knots (figures 2a & 3a) or whether all knots faced the same side (figures 2b & 3b; see also below). The third piece of net has been made with sZ_3 -composed cordage⁴. The diameter of the meshes in these three pieces varies from 14.8 mm up to 24.8 mm, which also suggests that the pieces did not originate from one and the same net because mesh size is, in general, very regular.

The four pieces from trench BE96/...-10 (table 1) show comparable diameters, the same composition and the same mesh knots but the differences in diameter of the meshes of two pieces of net (21.4 mm and 23.2 mm) and a third one (16.3 mm) seem to be too large in order to have belonged to one and the same net. Besides, the loci are separated distinctly.

The remaining 68 fragments (table 1) originate from the first century AD dump. Thirty pieces have been made with zS_2 -cordage. The diameters of the cordage vary from 0.3 mm up to 2.4 mm for the yarn and 0.6 mm up to 2.3 mm for the ply. The 'cord index of ply' (from now on referred to as CIP), which gives an indication of the strength of the cordage, varies from 43 up to 86. The size of the meshes varies from 7.8 mm up to 36.2 mm (average of 22.7 mm). The knots used for making the nets are predominantly mesh knots in the S orientation (figure 3), although it could not be established whether the row of knots were

this terminology can be found in Veldmeijer, 2005; the terminology in this latter will be followed here. On knots on the cordage corpus from this site, see Veldmeijer, accepted a.

3. 46 pieces, of which two are possibly flax; the condition of the remaining pieces proved too bad to be able to identify the material.
4. The orientation of the knots were not identified.

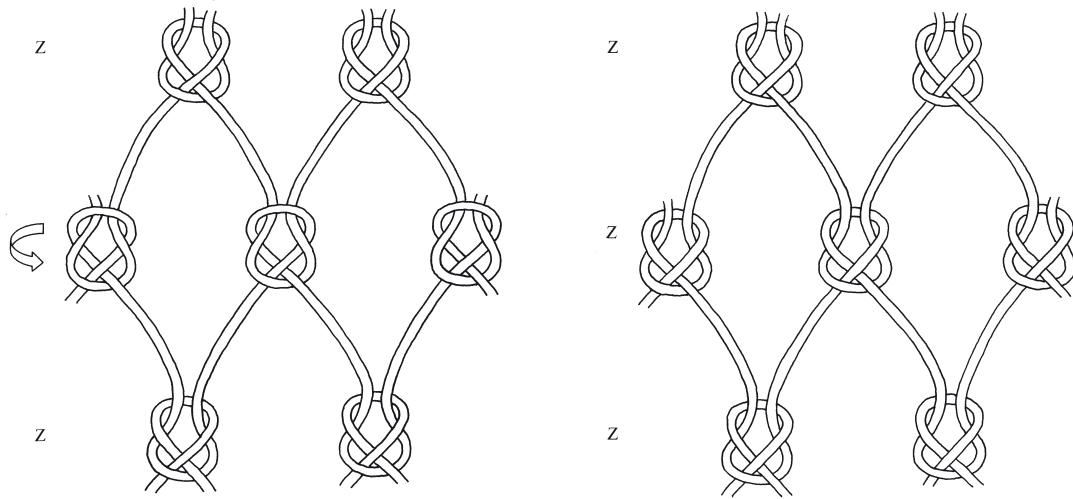


Figure 2. Fishing nets were (and still are) made with mesh knots. Mesh knots can be Z-orientated, either in rows of which the knots face in opposite direction (figure 2a, left) or of which the knots face the same direction (figure 2b, right). Drawings by E. Endenburg. Not to scale.

alternating rows of obverse and reverse knots due to the bad preservation.

Seventeen pieces of net have been made with sZ_2 -composed cordage. The diameters of the cordage vary from 0.2 mm up to 0.6 mm for the yarn and 0.8 mm up to 1.3 mm for the ply whereas the CIP varies from 33 up to 50. The knots are predominantly mesh knots in the S

orientation, but one piece has been made with Z-orientated mesh knots (figure 2). The pieces of net made with sZ_2 -cordage shows in general smaller meshes, ranging from 8.3 mm up to 18.8 mm with an average of 13.6 mm.

Eighteen pieces of nets have been made with sZ_3 -composed cordage. The diameters of the cordage vary from 0.4 mm up to 0.5 mm

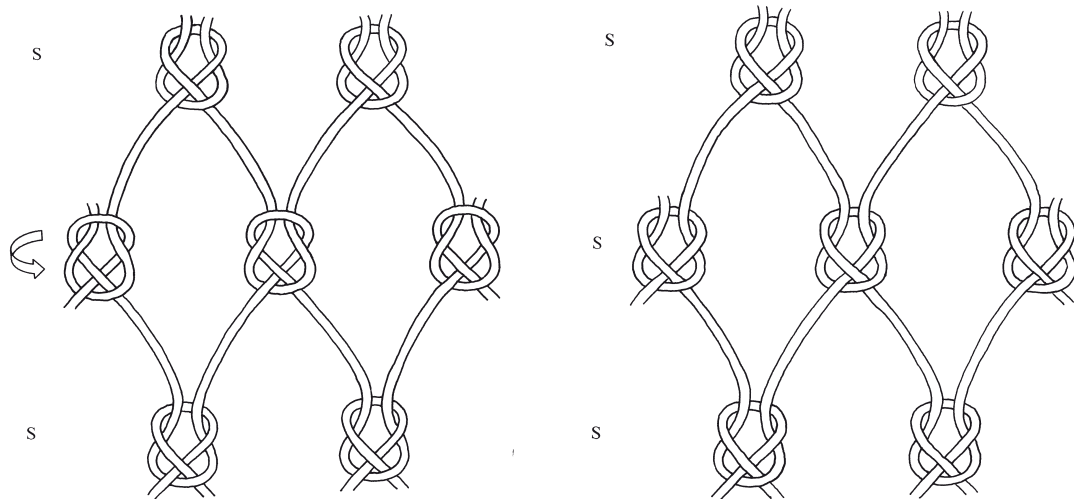


Figure 3. Fishing nets were (and still are) made with mesh knots; mesh knots can be S-orientated, either in rows of which the knots face in opposite direction (figure 3a, left) or of which the knots face the same direction (figure 3b, right). Drawings by E. Endenburg. Not to scale.

context & PB	identification	number/size	composition	diameter (yarn/ply)	CIP	material	mesh circum- ference	opening mesh (circ./pi)
#*BE94/95-1.026 42	0443-h-0848	1/90×110	sZ ₂	0.7/1.5	55	soft fibre	69.6	22.2
#*BE94/95-1.029 45	0451-H-9029	1/-	sZ ₃	0.5/1.0	-	flax	78.0	24.8
BE95-3.015 39	0747-h-0470	8/20×110-80×680	zS ₂	1.3/2.0	59	soft fibre	113.6	36.2
BE95-3.tc 45	0958-h-0473	1/140×150	zS ₂	1.4/2.3	49	soft fibre	110.8	35.3
*BE96/...-10.013 37	2294-h-1123	1/80×110	sZ ₂	0.5/0.9	56	flax	67.2	21.4
*BE96/...-10.008 38	2495-h-1245	1/50×110	sZ ₂	0.5/1.0	53	flax	72.8	23.2
*BE96/...-10.006 21	1587-h-1597	2/25×40-65×80	sZ ₂	0.6/0.9	45	flax	51.2	16.3
BE96/97-13.002 10	0801-h-1807	2/30×60-220×340	sZ ₃	0.4/0.8	44	flax	120.8	38.5
BE96/97-13.002 09	0740-h-1845	1/90×190	sZ ₂	0.3/1.0	33	flax	46.8	14.9
BE96/97-13.002 08	0736-h-1891	1/30×170	sZ ₂	0.5/1.0	50	flax	59.2	18.8
BE96/97-13.002 08	0736-h-1892	1/15×170	sZ ₃	0.4/1.0	47	flax	46.0	14.6
BE96/97-13.002 14	1527-h-1962	6/35×40-65×140	sZ ₂	0.2/0.5	42	flax	26.0	8.3
BE96/97-13.002 14	1527-h-1963	2/40×65-100×110	sZ ₃	0.4/1.3	75	flax	50.0	15.9
BE96/97-13.002 21	2280-h-1977	1/70×130	sZ ₂	0.5/1.2	50	flax	48.0	15.3
BE96/97-13.002 15	1607-h-2073	2/65×100-100×115	sZ ₄	0.5/1.6	-	flax	95.6	30.4
BE96/97-13.002 16	2170-h-2111	1/50×60	sZ ₂	0.3/0.8	-	flax	50.4	16.0
BE96/97-13.002 16	2170-h-2112	1/15×30	sZ ₂	0.3/1.1	-	flax	32.0	10.2
BE96/97-13.002 27	3395-h-2385	1/10×40	sZ ₃	0.4/1.0	57	flax	-	-
BE96/97-13.002 27	3395-h-2388	4/50×75-190×230	sZ ₃	0.4/0.9	47	flax	45.6	14.5
BE96/97-13.002 16	1968-h-2498	1/200×300	sZ ₄	0.4/1.2	-	flax	36.8	11.7
BE99-29.006 07	0529-h-3299	2/-	zS ₂	0.8/1.4	86	soft fibre	68.4	21.8
BE99-29.010 13	0853-h-3339	1/-	zS ₂	0.8/1.1	57	soft fibre	24.4	7.8
BE99-29.006 07	0529-h-3395	1/-	zS ₂	0.7/1.4	81	soft fibre	54.0	17.2
BE99-29.002 04	0387-h-7291	1/30×60	sZ ₃	0.5/1.5	56	flax	41.6	13.2
BE99-31.012 20	3292-h-3235	6/-	sZ ₂	0.6/1.3	46	soft fibre	36.2	11.5
BE99-31.007 04	2465-h-3267	4/-	zS ₂	0.3/0.6	43	soft fibre	48.4	15.4
BE00-33.018 26	1646-h-3485	1/40×60	zS ₂	1.4/2.0	55	flax?	-	-
BE00-33.008 23	1291-h-3643	4/-	z	1.1	n/a	?	27.2	8.7
BE00-33.008 16	1329-h-7277	7/-	sZ ₃	0.5/1.2	-	flax	24.4	7.8
BE01-48.005 06	1133-h-7145	1/40×60	sZ ₄	0.4/1.2	-	flax?	17.6	5.6
BE01-48.005 06	1133-h-7146	7/35×60-120×80	zS ₂	1.0/2.1	53	flax	80.0	25.5

Table 1. Fishing nets from Berenike. The entries marked with * (trench BE94/95-1 and BE96/...-10) originate from a fifth to sixth century AD deposit; the others originate from a first century AD deposit.

The entries marked with # are made with Z-orientated mesh knots; all others have been knotted with S-orientated knots (see figure 2 and 3 respectively).

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for the yarn and 0.8 mm up to 1.5 mm for the ply whereas the CIP varies from 44 to 75. The mesh knots are ‘S-orientated’, of which eight pieces show an alternation in rows of obverse and reverse meshes (figure 3a). The pieces of net made with sZ₃-cordage shows in general smaller meshes than nets made with zS₂-cordage but slightly larger than nets made with sZ₂-cordage. The mesh size ranges from 13.2 mm up to 38.5 mm, with an average of 17.4 mm.

The other four pieces of net are made with sZ₄-cordage of which the diameter varies from 0.4 mm up to 0.5 mm for the yarn and 1.2 mm up to 1.6 mm for the ply. CIP’s could not be calculated due to the irregularity of the ply. The mesh knots are S-orientated (figure 3); at least one piece has alternating rows of obverse and reverse mesh knots (figure 3a). The mesh size varies from 5.7 mm up to 30.4 mm with an average of 15.9 mm.

Production

The production of nets made with mesh knots has been described in detail by Wendrich (1999: 293-295) and will not be repeated here but additional comments will be made. The production of nets with non-alternating rows of mesh knots (see figure 2b and 3b) differs from the nets Wendrich describes because the rows of mesh knots in the nets she presents shows the obverse and reverse sides (see figure 2a and 3a). She gives two possibilities in knotting such nets (Wendrich, 1999: 294): “Either the whole net is turned around at the end of each row of knotting, or the net maker works from left to right with a different stitch than from right to left. The latter seems more obvious”. Wendrich gives no explanation for nets that consist of non-alternating rows of knots. There are, however, various ways to make such nets. The net maker could start each row new from one side, finishing it at the other side. Another possibility would be that the maker knots the next row with a different technique in the opposite direction. This latter option however seems unlikely

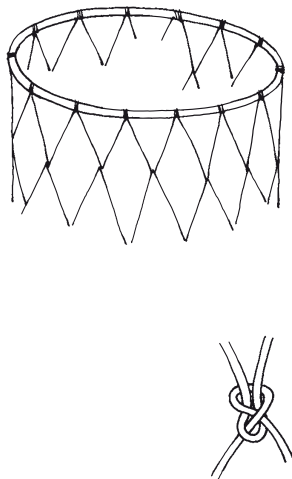


Figure 4. A possible way of making nets 3-dimensionally. This method would be most suitable for smaller nets or pots. Drawing by E. Endenburg (after Ahsley, 1993). Not to scale.

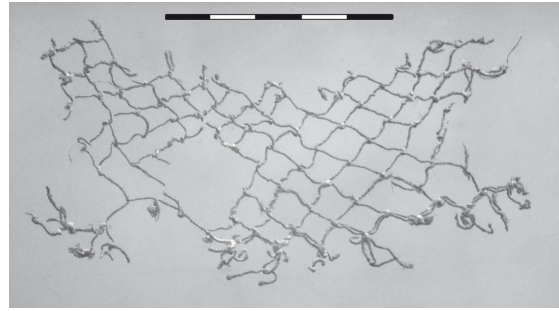


Figure 5
Piece of nets (BE96/97-13.002 1527-h-1962f) with reinforced edge in the same way as modern net.
Courtesy of the University of Delaware / Leiden University / UCLA Berenike project.

because it would mean that they would have to knot against the natural working direction of the knot; the natural condition would result in a knot with the opposite orientation. Another way might be that the net was not a flat, two-dimensional piece but rather a three-dimensional cylindrical piece (figure 4). This is made without changing direction of knotting or turning the net. However, it seems unlikely that large nets were made this way.

None of the recovered pieces of net show traces of a border string/rope. Only one piece of net has reinforced edges. The piece of net, seen in figure 5⁵, has an edge that is made with a double string. Modern fishing nets used by fishermen in the area show exactly the same way of connecting the netting to the border string/rope. The forces exerted at the thick border string/rope (lost in the fragment) due to the constant pulling require reinforcement of this side of the net.

The addition of weights or floaters to fishing nets depend on the use of it. Few examples of weights are recovered despite the relatively large number of pieces of fishing net. However, weights might not be recognised as such because anything small but heavy could have

5. BE96/97-13.002 1527-h-1962f.

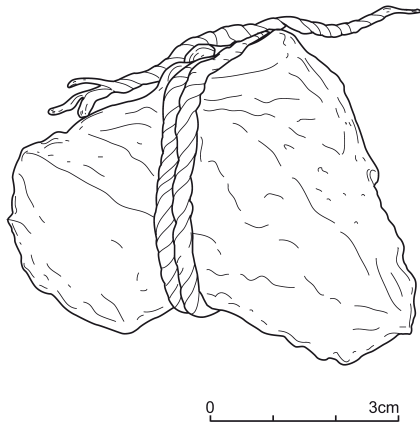


Figure 6

Possible weight with string still attached (BE00-33.005 1138-h-...). Drawing by M. H. Kriek.

functioned as a weight. An example of a weight from Berenike is shown in figure 6⁶. Examples from Abu Sha'ar are, besides one lead weight, pieces of pottery, stones and coral (Wendrich & Van Neer, 1994). Also larger items might have functioned as weights. Room 34 of the Cairo Museum houses a showcase with a large weight of stone, which is according to Sahrhage (1998) a net weight. The situation with floaters is much the same; any light item that floats, for instance made of cork or *jerit*, might have functioned as floater⁷.

MATERIAL, OTHER FISHING GEAR

Pots and traps

It is unlikely that the object CB0058 from Quseir al-Qadim is a fishing pot (Richardson, 2001; 2002). These kinds of objects are registered at Berenike as well and interpreted as pottery carriers (Veldmeijer & Van Roode, 2004;

cf. Veldmeijer, 1999), because these are made with different knots (reef knots or half knots; fishing nets with mesh knots). Furthermore, fibres such as grass, are far less suitable for using in water. When soaked, they are heavy and more susceptible to deterioration (Wendrich & Veldmeijer, 1996), worsened by the, in general, low CIP of grass cordage of this composition (Veldmeijer, in review). It would have made more sense using flax or rushes to make traps and pots, which far better withstand the deteriorating forces of water, can be twisted more tightly (higher CIP) and are thus stronger. Brewer & Friedman (1989) also mention traps made of reeds, sticks or wicker work. There is no evidence from Berenike of fish-traps like those recovered at Abu Sha'ar (Wendrich & Van Neer, 1994).

Fishhooks

A total number of 134 fishhooks (figure 7), fragments and complete specimen alike, have been registered (Hense, 1995, 1996). These include surface finds as well as specimens excavated from stratigraphic layers. Although occasionally iron hooks were encountered, the vast majority have been made of copper alloy. The context of 64 of these fishhooks are dated and of these, 26 are dated to the first century BC to first century AD⁸. Twelve of these hooks have been recovered from trenches from which no cordage or nets has been recovered (trenches BE94/95-2 and trench BE95-4 respectively). Others have been recovered from trenches that contained cordage as well, although the loci from which the hooks were recovered, did not contain any nets (the loci of trench BE94/95-1 and BE96/...-10). Other trenches from which fishhooks have been recovered did not yield any nets (trench BE95-4, trench BE95/96/97-5,

6. BE00-33.005 1138-h-... Possible weights from Berenike are BE98-17.113 4101-D and BE99-31.nbc 3939-r (bar-shaped small worked stone fragment).

7. Possible floaters are BE94/95-1.095 2782-Q (made of cork), BE98-17.060 2978-Z (made of pumice).

8. Five of these (parts of) fishhooks are dated to late first to early second century AD. The dating varies: some are dated within 25 years like 75-100 AD whereas others are dated first to second century AD.

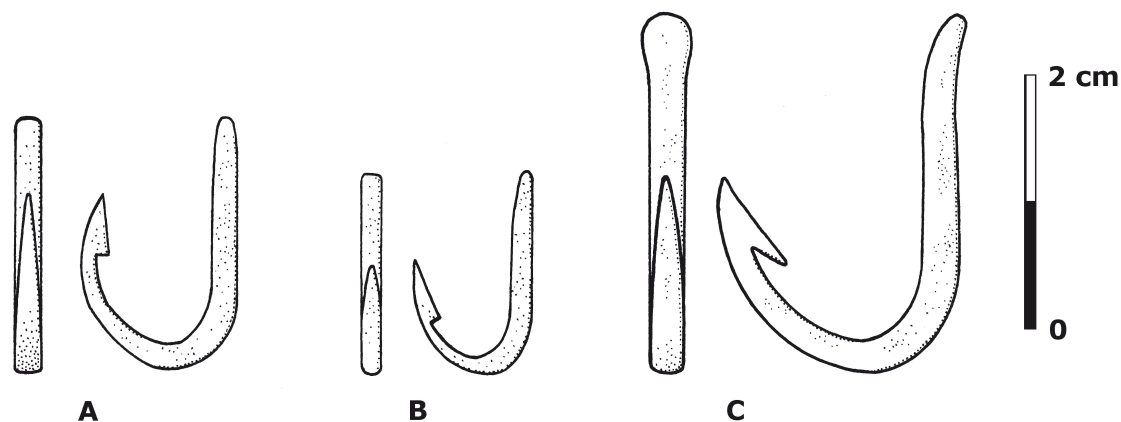


Figure 7

A: 1386D7267, BE00-40, Loc 02, PB 002, 2nd century BC

B: 2835D6168, BE99-31, Loc 07, PB 013, 1st century AD

C: 1413D8324, BE01-48, Loc 05, PB 016, 75-100 AD

Drawing by A. M. Hense

trench BE6/16, trench BE96-9) or cordage in general (trench BE96-8, trench BE00-39, trench BE01-43). The remaining of these 26 hooks originate from trenches that are excavated in the early Roman trash dump area. It is difficult to give precise indications of the height of the hooks due to their largely fragmented state. However, generally they seem to vary in length from 20 mm up to at least 27 mm.

The context of the remaining 38 are dated mainly to the fourth to fifth century AD or later⁹. The dimensions of the hooks are comparable to those of the early Roman era.

Fish remains

Fish remains have been recovered in abundance at Berenike (Van Neer & Eryvnc, 1998, 1999; Van Neer & Lentacker, 1996), the majority of which are the remains of sea fish. This group is separated by the archaeozoologists on the basis of their habitat, resulting in fish to a more or lesser extent connected with coral reefs, fish typical for sandy bottom and open

sea fish. The scholars state that some open sea fishes are frequently signalled with coral reefs as well. Sweet water fish (Nile fish) comprise only a small portion of the encountered fish remains. Other fish remains are encountered as part of the famous Roman fish sauce (*garum*), which might have been made of locally obtained fish (Van Neer & Lentacker, 1996), although no evidence is encountered yet of a saltery, which would be expected since salting fish went usually alongside with the production of fish sauce (*ibidem*, 1996: 352). The majority of fish remains came from fish living with coral reefs (see below). According to Van Neer & Eryvnc (1998) the Serranidae, the Carrangidae, the Lethrinidae and the Scaridae are the most frequently occurring fish in Early Roman Berenike, the period from which almost all nets have been recovered.

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FISHING

A short introductory overview of fishing in ancient Egypt¹⁰ as well as fishing in present day Egypt is presented to have an idea of how fish

9. Here too is variation in exactness of dating.

10. Brewer & Friedman (1989) as well as Sahrhage (1998) give nice overviews of the different techniques used in ancient Egypt.

might have been caught in Berenike. According to Ashley (1993, 64): “Nets and seines are made in many different forms for different conditions and different fish, but although the nets of different continents, countries, and localities show a diversity of form, the Mesh Knot itself is universally the same.” There is, however, evidence that there is difference in knotting as explained above. Problems of determining the form of the nets are due to the fragmentary state and no different nets could be determined in Berenike. Some re-use of nets has been reported from Myos Hormos (Richardson, 2002).

The history of Egypt is very long and obviously one has to be careful to draw conclusions on the basis of analogies with much earlier or later periods even though there is evidence that fishing techniques did not alter substantially through the ages. The same reserve must be taken into account regarding the spatial differences¹¹. Furthermore, one must be aware of the way ancient Egyptian reliefs and paintings should be read. In order to gain insight in the variety of fishing nets, an excursion to scenes from older periods of the Egyptian history proves fruitful.

The assumption is made that fishing in Berenike in the Roman era did not differ substantially from fishing in pharaonic times. However, it must have been adapted to suit the specific environment of the Red Sea. The ancient Egyptian scenes relate to fishing on the Nile and the waters of the Delta. Fishing at sea might, but not necessarily, require other equipment. In general, it is assumed that the basic equipment is the same, but that variation on this basic equipment occurs rather than a completely different method (Ashley, 1993). The substantial coral reefs of the Red Sea however, might have

required a different technique or an emphasis on fishing without nets, as the nets would definitely have been torn on the sharp coral reefs. Nevertheless, the majority of the fish remains are from reef fishes.

Spearing fish is often depicted in tombs. Although the act is highly symbolic, the discovery of spears proves that this type of fishing was known. Spears with one or multiple points are depicted. Sahrhage (1998) however, suggests that the multiple pointed spears only had a symbolic significance. Catching fish with bidents must have been too difficult. Brewer & Friedman (1989) remark that the bidents are only known from representations. Harpoon fishing was probably done as well, especially for the large Nile perch (*Lates niloticus*), although Brewer & Friedman (1989) warn that no distinction can be made between fish harpoons or hunting harpoons. They state that (*ibidem*: 22) “the smaller harpoon heads may have been designed for use against these large fish [the Nile perch]; the larger heads for the pursuit of the hippo and crocodile.” No fishing spears or points of harpoons have been recovered at Berenike despite the fact that big fish, which could have been caught with spears and harpoons, certainly inhabited the Red Sea.

As discussed previously, fishhooks (for fishing with lines and/or fishing rods) are encountered in Berenike. The cordage will not be recognised as fishing lines if encountered without the hooks or wooden rods. The Old Kingdom tomb of Niankhkhnum and Khnumhotep, Saqqara (Moussa & Altenmüller, 1977) shows a large trap but the scene does not reveal whether the traps are made of nets or basketry. As presented above, traps from sites at the Red Sea Coast are reported and are made of rushes.

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11. For instance, fishing netting in Stone Age North Europe were already made with mesh knots (Sahrhage, 1998). Fishing scenes from the Old Kingdom in Egypt (2575-2134 BC) does not differ substantially from those of the New Kingdom (1550-1070 BC) despite the huge difference in time period (dates from Baines & Málek, 1981). And even today the non-mechanical fishing techniques are pretty much the same. Only fishing with cast-nets seem to be practised not before Roman times (Sahrhage, 1998).

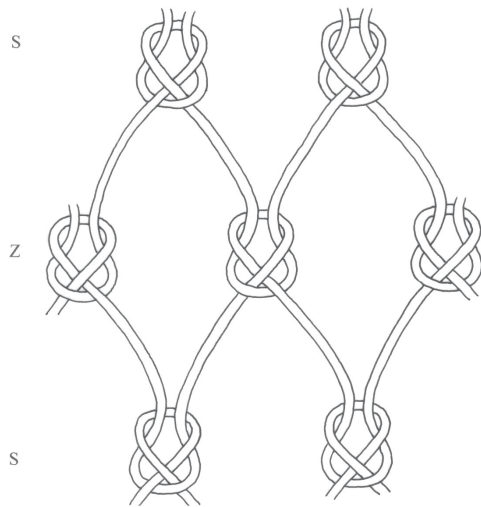


Figure 8. Many of the Roman fishing nets from Myos Hormos have been made with alternating rows of S- and Z-orientated mesh knots. Drawing by E. Endenburg. Not to scale.

The cast net is used by one man and probably introduced as late as Roman times (Sahrhage, 1998)¹². Hand nets are often depicted in tombs of especially the Old and Middle Kingdom. According to Brewer & Friedman (1989) they were used to catch small to medium sized fish in shallow water or fish that occurred in the surface area of deeper water. Sahrhage (1989) distinguishes the seine net (*Waden*) and the dragnet (*Schleppnetz*). A good instance of this latter type is provided by the model from the tomb of Meketre from the eleventh dynasty in the Egyptian Museum, Cairo. Seine nets are ‘walls’ of nets that are set out in sea and pulled in by the fishermen, mostly from the shore. The dragnets are sacks, which are pulled through the water. The meshes of these sacks are smaller towards the end. Seine nets are equipped with floaters and weights to keep the wall in an upright position but the dragnets are equipped with these items as well¹³.

The major difference between ancient and modern small scale fishing is the material.

Modern nets are often made with synthetic fibres. Besides this, nowadays fishing is also done with large trawlers (*merkab gar*) and power driven nets (*shebbak*). Based on a pilot study by Wendrich & Van Neer (1994) fishing in the Red Sea is done with hooks and nets. These nets, so-called *ghazl*, are nets of 1.50 m by 12 m and set out in a half a circle and pulled in. The authors present a table with the present day methods and the fish caught by these methods. Many other of the ancient fishing techniques are still used in modern day Egypt, like the *Stülpkorbe* in for instance Elephantine (Sahrhage, 1998) and the seine netting in modern Alexandria (pers. obs.).

DISCUSSION

No different types of nets could be determined, due to the fragmentary nature of the finds. The lack of published nets from sites in the Nile Valley as well as the Red Sea coast prevents a detailed comparison, although various studies are forthcoming. Preliminary results of comparisons by the author with the many net fragments from Qasr Ibrim (*contra* the one fragment reported by Wendrich, 1999) suggest a predominant occurrence of the reversed orientated mesh knot (all net fragments but two showed S-orientated knots in Berenike versus predominantly Z-orientated knots in the Qasr Ibrim material). Although it is tempting to suggest that net makers in the Nile Valley used other orientated knots than the net makers at the coast, it is too early for definite conclusions. Richardson (2001, 2002) reports that the large number of Roman fishing nets were made with alternate Z and S mesh knots (figure 8); the nets from Berenike all seem to have been made with one knot, either alternating obverse-reverse or non-alternating. Undoubtedly, this observation is partly due to the preservation,

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12. Brewer & Friedman (1989) make note of a possible cast net from the tomb of Sebeknakht but there is much discussion on the interpretation of this relief.

13. Brewer & Friedman (1989) do not make the difference between seine nets and dragnets.

making identification of the knots often very difficult if not impossible. But here more research is needed too, to see if this difference might have something to do with the sociocultural background of the two harbours.

The differences in mesh size of the nets made with string of different composition may be related to the function of the nets. The various nets may have been used to catch fish of different sizes, but a correlation has yet to be established. Van Neer & Lentacker (1996: 352) suggests that the smallest meshed nets are “too small for an efficient capture of the major fish groups [...]. Most likely these nets were used for the capture of small schooling fish, such as sardines and anchovies.” The main types of fish in the record are reef fish,

which are predominantly caught by means of fishhooks nowadays (Wendrich & Van Neer, 1994). This seems to conflict with the large number of pieces of net from the early Roman period. Perhaps fish were hunted down by the boatsmen beating on the water with their paddles. Another explanation might be that the pieces originate from fish-traps; a possible three-dimensionally preserved instance of a trap is BE96/97-13.002 1968-h-2498. Representation of traps do not reveal the material from which these traps have been made. From late Roman times, almost no nets have been recovered suggesting a reliance on other fishing techniques, a shift in focus from the sea to the desert (which has also been suggested on the basis of other evidence) and/or the nature of the deposit was not sea related.

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