



Port communities and the Erythraean Sea trade

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The Eastern Desert was part of the fluctuating and blurred border of the Roman Empire, with the Kushite Meroitic dynasties and Blemmyean Kingdom to the south, and changing nomadic Arab tribal affiliations and the Nabataean Kingdom to the east (Fig. 1). The ancient desert landscape was criss-crossed with roads and peppered with forts, wells, quarries, mines and semi-permanent camps (Maxfield 1996, 10; Sidebotham and Zitterkopf 1995, 40; 2000, 118; Sidebotham et al. 2004, 8–9; Fig. 2).

The Graeco-Roman geographies of the Red Sea provide us with useful accounts of the ports' political, military and trade history. They do not provide great detail on the ports' inhabitants. The Graeco-Roman characterisation of the indigenous coastal Ichthyophagi, literally 'fish-eaters,' and nomadic desert tribes—the Trogodytes, Blemmyes, Colobi, Megabaroi and Arabs—were based on the colonial accounts of explorers, such as the 3rd century BC account of Simmias recorded by Agatharchides:

They do not come into contact with other tribes nor does the strangeness of the appearance of those who visit them influence the natives, but, gazing at them intently, they remain impassive with their senses unmoved as though no one was present. For not even if someone draws a sword and strikes at them, do they flee; nor, if they suffer insult or blows, do they become angry. Further, the people as a whole do not share in the anger of the victims. Sometimes, even when their children or women are slaughtered before their eyes, they remain unmoved by what has happened, giving no indication of anger or, again, of compassion. In general, even if they experience the most fearful horrors, they remain calm; looking intently at what is happening and nodding their heads to each other. For this reason, people also say that they speak no language, but that they signify everything necessary by imitative gestures of their hands (Agatharchides, *On the Erythraean Sea*, 41b, 78–80).

This passage, like other derogatory characterisations of these people, is a product of the Graeco-Roman 'theory of ethnicity' (Astuti 1995).¹ Such accounts seek to distinguish non-Greeks from Greeks through a 'rhetoric of otherness' (Hartog 1988, 205, 237, 259; Hall 1989, 191). Their authors describe the way of life, environment, economy, diet, laws, language, political structure, burial practices, dress and ancestry of the 'other' in terms that are ethnically significant (Hartog 1988, 259; Agatharchides, *On the Erythraean Sea*, 32–40, 66; Herodotus, *Histories* 5.49.3 and 8.144.2; Diodorus *Library of history*, 3.15.15). There are clear parallels between Agatharchides' account of Simmias and episodes from Herodotus. These accounts sought to describe other peoples as deficient and uncivilised barbarians to illustrate

¹ Astuti argues that an ethno-theory approach recognises alternate constructs of identity and difference.

the superiority of Graeco-Roman culture. Fantastic stories with mythical elements became central to the Graeco-Roman characterisation of these peoples, such as the cave-dwelling, lizard-eating, bat-voiced Trogydites and headless Blemmyes in 4th century AD narratives (Solinus, *De mirabilibus mundi*; Heliodorus of Emesa, *Aethiopica* 8.16.4) that draws heavily upon the more dubious fantastic elements in earlier accounts (Herodotus, *Histories* 4.183; Gaius Plinius Secundus, *Natural History* 6.163–89; Pomponius Mela, *De Chorographia* 1.22–48). The Trogydites and Blemmyes became an analogy for godless barbarians in Christian writings from the 4th to 7th centuries and continued to be popular well into the Medieval period (Eusebius, Bishop of Caesarea, *Onomasticon* 6.17–21).²

A vocabulary of ethnic difference is also found in documentary texts. Roman military correspondence dating to the 2nd century AD refers to the desert populations as ‘nomads’ and ‘barbarians’ during a period of increasing conflict between the nomads and the Roman military (De Romanis 2003, 118). By the 3rd century, the Kingdom of the Blemmyes, one of these Eastern Desert groups, had acquired large sections of the Eastern Desert from the Romans, controlling access to its emerald and gold mines (Olympiodorus of Thebes, *History* 1.37 in Photius, Patriarch of Constantinople, *Bibliotheca*; Eide et al. 1998, *FHN* 309). It is clear from the Graeco-Roman sources that two distinct ethnic groups shared the Eastern Desert Red Sea coast with Roman subjects working there and that they were seen as distinctly different. However, scholars must exercise caution when attempting to identify these groups in the archaeological record.

By the end of the 1st century BC, numerous ethnic groups were represented in Egypt (Bagnall and Frier 1994). The most common ethnic categories of Egyptian (*Aigyptoi*), Greek (*Hellēnes*) and Roman (*Rhōmaioi*) are difficult to distinguish despite, or perhaps because of the fact that the administrative, fiscal and legal statuses attached to ethnic labels were permeable in some circumstances, allowing people to move from one category to another (O’Connell 2004; Clarysse and Thompson 2006, 138–48). In other circumstances, for example, in the *Gnomon of the Idios logos*, claims to Roman identity were strictly policed (*BGU* V 1210; Bowman and Rathbone 1992, 110–14; Goudriaan 1992, 89). This was the case at least up until AD 212 when the Antonine Constitution extended Roman citizenship to all free men and women in the Roman Empire (*P.Giss.* 40). In Hellenistic and Roman contexts, the term *Aigyptioi* (Egyptian) implied ‘administrative, fiscal and cultural inferiority ... (and) aimed to demarcate a privileged, urban-based “Hellenic elite” through which they (Rome) could rule and exploit the native population (the *Aigyptioi*)’ (Bowman and Rathbone 1992, 110, 114). If it is not always easy to distinguish between *Aigyptoi*, *Hellēnes* and *Rhōmaioi* in the texts, it is even more difficult to do so from the archaeological record. Whereas the material culture of people bearing these three ethnic labels is treated as a single unit below, it may be possible to identify other distinct groups from the archaeological evidence at Roman port sites.

After introducing the Red Sea port sites and the evidence for diverse populations known

²For discussion of the following authors, see Thomas 2010a, 24–26: Epiphanius, Bishop of Salamis, *Panarion*; Theodoret, Bishop of Cyrrhus; Philostorgius *Ecclesiastical history*, in Photius, Patriarch of Constantinople, *Bibliotheca*; Antoninus Placentinus, Bishop of Beirut, *Itinerarium*; John of Ephesus, Bishop of Constantinople *Ecclesiastical history*; Cyril of Scythopolis, *The Lives of the monks of Palestine*; John Moschos, *The spiritual meadow*).

through documentary papyri and other inscribed objects, this contribution will examine the non-textual evidence for Egyptian, Greek or Roman individuals as well as the indigenous inhabitants of the Red Sea coast and Eastern Desert who do not fall into these categories. Consumption practices will be distinguished through pottery and faunal remains, whilst maritime artefacts represent activities associated with certain consumption practices. The localization of this material culture representing different consumption practices and activities within ancient port sites demonstrates the clustering of distinct populations, even if we cannot recognize the specific ethnic labels with which these groups would have self-identified.

The Red Sea ports of the Eastern Desert and their populations

The Red Sea ports of the Eastern Desert were part of a transport and military network linking the ports with Koptos and Edfu in the Nile valley. Primarily built in the Ptolemaic period to transport war elephants from East Africa and to extract gold from the desert, these ports were part of a busy network of roads linking forts, quarries, mines and ports facilitating the extraction of emeralds, amethyst, gold, galena, stone and the importation of expensive spices and incense from the East (Meredith 1952, 94–111; Meredith 1953, 95–106; Meredith 1957, 56–70; Meredith and Tregenza 1949; Sidebotham 1986, 2011a; Sidebotham, Hense and Nouwens 2008). Traders and their goods moved along Eastern Desert roads guarded by forts and linking the main Red Sea ports of Myos Hormos and Berenike with Koptos and Edfu in the Nile valley (Sidebotham and Zitterkopf 1995; Bülow-Jacobsen 1998). Following the foundation of Antinoopolis by Hadrian, the Via Hadriana linked the Red Sea ports with this new city and to each other with this coastal route. In the northern Red Sea, Aila connected the Red Sea trade with Nabataea, called *Arabia Petraea* after its annexation by Rome, and Clysma joined the Red Sea to the Nile via a seasonally active canal re-excavated by Trajan (Fig. 2; Cooper 2009).

The two major Roman ports in the region were **Berenike and Myos Hormos**, both Ptolemaic foundations. The excavations at Berenike and Myos Hormos have produced numerous inscriptions, seals (Thomas 2011a, 11–34; Tomber et al. 2011), ostraka and papyri that provide languages, names and ethnonyms to help identify specific communities in the Red Sea ports. Egyptian hieroglyphs, Demotic, Coptic, Greek, Latin, Aramaic, Palmyrene (Aramaic), Nabataean (Aramaic), South Arabian, Hebrew, Ethiopic, Syriac, Tamil-Brahmi and Sanskrit are all represented and found in association with artefacts from across the Mediterranean, East Africa, Arabia, the Persian Gulf and Western India. The names represented on papyri and ostraka from both sites were mostly Greek, Egyptian or Graeco-Egyptian (mixed) (Bagnall, Helms and Verhoogt 2000; 2005).

Between Berenike and Myos Hormos, several minor ports are recorded in Claudius Ptolemy's mid-2nd century AD *Geography* (4.5–7), but only a small number have been identified. Limited excavations at Marsa Nakari suggest that the fortified port site is ancient **Nechesia** (Seeger 2001). **Leukos Limen** has never been confidently identified, leading some to speculate that Claudius Ptolemy confused Leukos Limen with the Nabataean port of Leuke Kome

in Saudi Arabia (Bülow-Jacobsen, Cuvigny and Fournet 1994, n. 7; Cuvigny 2003, 28–30; Tomber 2008, 58); however, Marsa Imbarak is very close to where Claudius Ptolemy located the port,³ a fine anchorage recommended by modern Red Sea pilots where ‘a few white ruins on the north shore are visible’ (Davies and Morgan 1995, 213). A marble quarry at Gebel Rockham (Harrell and Storemyr 2009, 50; Klemm and Klemm 2008, 312–14), limestone quarries along Wadi Siqdit and Wadi el-Miya and a gypsum quarry at Wadi el-Anba’ut (Harrell 2010) provided the building material that may explain the site’s ancient name, ‘Leukos Limen’ (white village). The founding of the site may be explained by a route along Wadi Mubarak that leads to a nearby ‘Roman station’ called Kodaboro (Floyer 1893, 427–28) and a Ptolemaic gold mine called Umm Howeitat (Alford 1901, 12; Sidebotham and Zitterkopf 1995, 225; Barnard 2012), a route that also leads to further gold mines and steatite quarries. Marsa Imbarak was a well-positioned anchorage with useful resources, connected to the Berenike-Coptos Road by the nearby *hydraeuma* (i.e., fortified well) of Abu Greiya, probably ancient Jovis (Sidebotham and Zitterkopf 1995; 2000) and to the Via Hadriana by the nearby *hydraeuma* at Marsa Dabr (Sidebotham and Zitterkopf 1998). Further ports await discovery, such as Philoteris the port north of Myos Hormos (Claudius Ptolemy, *Geography*, 4.5; Van Rengen 2002, 53–54, *O.Myos* 512), but at present we are limited to the two major Roman ports in the region, Berenike and Myos Hormos, that have been the subject of extensive archaeological research.

Berenike (Berenice)

Ancient Berenike was first identified in the 17th century and was the subject of investigations during the 19th and 20th centuries (Wellstead 1838). Berenike and the surrounding area were extensively researched by teams from the University of Delaware and Leiden University from 1994 to 2001 that confirmed the site’s identification with epigraphic evidence and from 2009 to the present day by a joint University of Delaware and University of Warsaw team. Berenike is on the west coast of the Red Sea, 300km east of Aswan and 800km south of Suez. Excavations at Berenike have revealed a substantial settlement occupied from its founding in 275 BC by Ptolemy II, who named it after his mother, Berenike I, to the 6th century AD (Sidebotham 2011a). Founded to facilitate the extraction of war elephants from East Africa, this sheltered port with its established infrastructure developed as a trade port during the late Ptolemaic period when the Erythraean Sea trade picked up. Berenike’s role as a military, religious and administrative centre was key to its long use, although major demographic and physical changes to the fabric of this polis occurred over time.

At Berenike, fifty-two Greek names (including Macedonian, theophoric and common Greek), seventy Egyptian (with a strong Coptic cultic influence), fifteen mixed Graeco-Egyptian, thirty-one Roman (Latin and Etruscan), two Gallic or Germanic, five Semitic, three Palmyran (also Semitic) and one Tamil Indian name were found in the documents from the 1996–2001 excavations (Bagnall, Helms and Verhoogt 2000; 2005). Ethnonyms present on

³ Claudius Ptolemy placed Leukos Limen at 0.75 degrees latitude and 375 Attic stadia (he calculated a degree to be 500 Attic stadia) or 69km (185m per Attic stadia) south of Myos Hormos; Marsa Imbarak is 0.64 degrees latitude or 71km south of Quseir al-Qadim. Local folklore claims the site has some antiquity (Davies and Morgan 1995, 213) and hotel developments encircle walls, graves, cairns and Roman pottery sherds that demand a comprehensive archaeological investigation.

ostraka at the port sites are more useful than the derogatory examples found in the Roman forts that distinguish Eastern Desert nomads as ‘Barbarians’ (De Romanis 2003). In some cases Greek exonyms, such as ‘Ichthyophagi’ and ‘Trogodyte’ are used by members of these groups in the Roman run ports.

Myos Hormos (Quseir al-Qadim)

Quseir al-Qadim, ancient Myos Hormos, is five miles north of the modern town of Quseir and has been visited by archaeologists since the 19th century. The site was positively identified as Myos Hormos when excavations by Southampton University in 1999 to 2003 discovered a papyrus loan contract naming the site (Van Rengen 2011, 336), confirming earlier suggestions (Peacock 1993; Bülow-Jacobsen, Cuvigny and Fournet 1994) that questioned the commonly held interpretation that the site was Leukos Limen, suggested by the University of Chicago team that excavated there from 1978–1982 (Whitcomb and Johnson eds 1979; 1982; Whitcomb 1996). Originally known as ‘Aphrodite’s harbour,’ Myos Hormos was built in the Ptolemaic period and is first mentioned in the 2nd century BC by Agatharchides, probably based on earlier reports of the 3rd century BC (Agatharchides, *On the Erythraean Sea*, 5.83; Peacock and Blue 2011, 345). It became a port of great importance in the early Roman period for the Indo-Roman trade, but was abandoned during the period of economic and political difficulties faced by the Roman Empire in the mid-3rd century AD⁴ (Sidebotham 2011b, 354). Today, the port has silted up, but would have boasted a fine sheltered inlet and anchorage with lagoon, islands and mangroves. During the Augustan period an amphora platform was built over a mangrove swamp in the northwest, with a stone and hydraulic cement ~~sea defence~~ revetment for mud-brick warehouses (Blue 2011, 35–38; Thomas 2006, 87–94).

In the western part of the site, a 2nd century AD ostrakon records the request of one Pakubis, Ichthyophagos, for a permit to move his fishing boats (*schedia*) to a port to the north called Philoteris (Van Rengen 2002, 53–54; Thomas 2007, 149–60).⁵ Another ostrakon in an adjacent trench mentions a Pet[...], Trogodyte, (Trench 8, Van Rengen 2002, 53–54; Tomber 2005; Thomas 2006; 2007, 149–60). Nevertheless, such documents are rare and not unproblematic (O’Connell 2004). Thus, an approach utilising more readily available archaeological evidence was developed to complement the textual evidence on Red Sea port communities. This approach compares the archaeological evidence for maritime activities with consumption practices: what and how people were eating in the Red Sea ports (Thomas 2007, 149–60; 2008, 64–73; 2010a).

Consumption practices and maritime activities

Consumption practices are an important part of displaying group identity (Appaduri 1986). Diets and how foods were prepared, served and eaten are culturally significant (Sahlins 1976; de Boeck 1994, 258; Falk 1994; Serjeantson 2000) and consumables can mark ‘food bound-

⁴ Coin no. 26 dated to AD 222–275, but probably AD 244–260, provides a *terminus post quem* for the abandonment of Myos Hormos.

⁵ Philoteris has not been identified, but is probably around the region of the fort at Abu Shar.

aries' differentiating peoples (Appaduri 1988, 15; Falk 1994, 75; Peckham 1998, 172). Consumption practices have been explored in other Roman provinces (King 1985, 187; Okun 1989, 124; Mattingly 2006, 220–22), and the range of fauna from the Nile valley, Eastern Desert and Red Sea regions has been discussed in relation to its potential ethnic significance (Wattenmaker et al. 1979; Wattenmaker 1982; Van Neer and Lentacker 1996; Van Neer and Ervynck 1998; 1999; Hamilton-Dyer 2001; 2011a; 2011b; Leguilloux 2003).

This contribution will provide supporting evidence: the consumption of liquids (on amphora stoppers see Thomas and Tomber 2006; Thomas 2011a, 11–34) and the use of tableware ceramic forms (Meadows 1995; Fincham 2002; Hawkes 2002). This methodology is used to detect if there are distinctively different consumption patterns present in the fauna and ceramics that were associated with specific populations. These consumption practices are closely associated with the presence or absence of specific maritime activities or vocations identifiable in the archaeological record by the presence of maritime artefacts of fishing and sailing equipment. Whilst one would expect the presence of fishing equipment to have an impact upon the diet of a population, the specific fishing technologies and strategies used (sometimes indigenous) and the sailing technologies used can also be culturally significant. I will first explore how such maritime artefacts are distributed at Berenike and Myos Hormos.

Indigenous Red Sea technologies are one way that indigenous groups may be represented archaeologically. C. S. Phillips describes a tradition of shellfish technology, including shellfish scrapers, used by *Ichthyophagi* of the Red Sea littoral, found in a number of shell middens dating up to the 5th century BC (Charpentier, Mery and Phillips 2004; Phillips 2004). However, this technology is not found in the Roman ports of Myos Hormos or Berenike because the indigenous population had already adopted technologies available in Egypt. Instead we have a range of shellfish artefacts, such as items of jewellery, including pendants, rings and shell beads and, most interestingly, a range of shell eating utensils, shallow bowls or dishes and scoops that likely represent a continuation of earlier *Ichthyophagi* shell technology tradition (Fig. 3).

Fish and fishing equipment

A major component of the port economy was fishing, supplying food to the port's inhabitants as well as to the surrounding region (Thomas 2010b, 155–58). The faunal remains of numerous fish species from open water, sandy and reef environments have been found at both Myos Hormos and Berenike. Due to the species' diets and habitats, different fishing techniques were used to catch them. The most common species caught was parrotfish, although up to thirty different species could be found in any single deposit (Hamilton-Dyer 2011a, 267, 258–60). Ethnographic studies of traditional and modern fishing techniques in the Red Sea region and the Persian Gulf have also provided useful information as to how fishing equipment relates to faunal remains in the archaeological record (Wendrich and Van Neer 1994; Hamilton-Dyer 2001; Beech 2004). It is clear that a mixture of line, net and trap techniques must have been used in a number of different environments to catch the large range of species consumed at each of the Red Sea ports (Thomas 2010b; Thomas 2011b). The faunal remains suggest that the most successful fishing techniques—i.e., fishing pots or creels, basket traps and permanent corral fish traps—are also the ones least well represented in the archaeological

record (Thomas 2010a, 155). Demand for fresh fish included the ordering of specific, popular species, such as parrotfish, rock mullet, small fish and shellfish, all recorded in ostraka from the Eastern Desert forts and settlements (Thomas 2010b). These fish were often preserved to prevent putrefaction and also to cater to popular demand for salted, dried, smoked and fermented fish sauces. This trade was extensive, reaching the Nile and well into the Levant, supplying desert mines and forts as well as the elite tastes of urban, land-locked populations such as in Petra (Van Neer et al. 2004; 2006; Thomas 2010a). At Mons Claudianus, Greek speakers called Arabs supplied fish to the fort (*O.Claud.* 529, 830). At Myos Hormos one of these fishermen, Pakubis, identified himself as Ichthyophagos. The specialist fishermen were, in these examples, the indigenous inhabitants of the Red Sea coast known to the geographer Claudius Ptolemy as the *Arabaegypti Ichthyophagi* (Ptolemy, *Geography* 4.5.101).

A large range of fishing equipment has been found at Berenike and Myos Hormos, including hooks, floats, weights, nets, net tools and basket traps (Fig. 4; Thomas 2010b, 146–150; Thomas 2007, 149–60; Thomas 2011b, 211–20). The form of the weights and the gauge of the nets allow us to reconstruct which fishing methods were used on the Red Sea. At Berenike and Myos Hormos, the nets were made from flax and came in two sizes, fine-meshed with a gauge of 12mm used as casting nets for catching small fish such as sardines and coarse-meshed with a gauge of 35mm to target larger fish species as drag or seine nets (Veldemeijer 2004; Thomas 2010a, 148; 2011b, 211–12).

Fishing hooks for line fishing came in three varieties. Small, barbed copper alloy hooks up to 2cm long predominate and were made in a forge on the southern foreshore of Myos Hormos (Fig. 4, top middle; Copeland 2011, 115; Blue, Whitewright and Thomas 2011, 186–88). These hooks were used on multiple-hooked lines to target shoals of small fish. Rare, large iron hooks up to 5cm long were used on single-hooked lines and baited for larger fish species. The gorge (Fig. 4 top left) is a straight piece of tamarisk or mangrove wood 4cm to 8cm long, sharpened at one end and notched at the other, where they are attached to a line, baited and laid parallel with the line. Large fish or sharks taking the bait are caught by making the line go taut, causing the gorge to stick in its throat or belly. This is a Red Sea technology and had not been used in the Mediterranean since the Neolithic, although gorges have also been found in the Persian Gulf (Thomas 2010a, 151). Fish traps were also used, such as fishing pots or creels, basket traps and permanent corrals, with a large example visible on Google Earth at Ras Qulun between Myos Hormos and Berenike (Thomas 2010a, 150).

Ship technology

The primary maritime activity at these ports was shipping, and elements of these ships are preserved at Berenike and Myos Hormos (Blue, Whitewright and Thomas 2011, 179–210; Whitewright 2007a, 77–88; 2007b, 282–92). The ships were of Mediterranean technology with hull first and mortise-and-tenon plank construction. The brailed, square sails and rigging elements are also preserved as well as chips, shavings and off-cut by-products of the shipwrights' craft. The planks were predominantly of Indian and East African teak and blackwood, although the poor quality, local lagoon or desert species—acacia, mangrove, palm and tamarisk—were occasionally used for less important pieces, and some planks of Mediterranean pine, conifers, oak and elm were imported to Berenike (Vermeeren 2000a,

1–11; 2000b, 311–43).

Across Berenike and Myos Hormos, fragments of lead sheeting and copper alloy ‘sheathing tacks’ were found (Fig. 5), the discarded remnants of ship repairs and regular maintenance. Although lead was cheap in antiquity, the transport of this heavy material across the desert region was not, and there is no evidence that any of the lead sources available in the Red Sea region were used to produce lead during the Roman period (Blue, Whitewright and Thomas 2011, 186–88; Copeland 2011, 120). Hull sheathing was applied as large lead sheets 2mm thick over planks sealed with a pine pitch or bitumen and textile sealant. It was common on Mediterranean wrecks of the 5th century BC to 3rd century AD and prevented the loss of sealant and the growth of barnacles and seaweed. It also protected against marine borers, sagging and rot, greatly prolonging the life of a ship’s hull (Blue, Whitewright and Thomas 2011, 186). Acorn barnacles manually removed from boat hulls, with pitch and wood impressions still visible, were found in the harbour of Myos Hormos. This antifouling was important because only six months of barnacle and seaweed growth can reduce the speed of a sailing vessel by up to 40% and weaken the hull (Blue, Whitewright and Thomas 2011, 186).

Rigging and sail elements were also found as discarded broken and worn fragments or as stored spares in warehouses (Fig. 5; Whitewright 2007a, 77–88; Whitewright 2007b, 282–92; Blue, Whitewright and Thomas 2011; Handley 2011b). Wooden blocks such as the large deadeye block depicted in Fig. 5 (bottom right) were part of the standing rig used to spread the attachment of the rope, called shrouds, fixing the mast to the hull. Sheaves from running blocks used to change the direction of running rigging that moves or manipulates the sail were also found (Fig. 5 bottom left). Brail rings were attached to the front of a square sail to guide the ropes that manipulate the sail, typical Mediterranean sailing technology of the time (Fig. 5 middle left). The wooden blocks and brail rings were made from East African and Indian wood and local horn (Hamilton-Dyer 2011a, 155–66; Gale and van der Veen 2011, 221–26). Sails were made from imported Indian cotton (Handley 2011a, 321–34), and the materials used to replace or repair the sails and rigs at Myos Hormos and Berenike were from East Africa and India. Some of these vessels may have even been constructed outside of Roman territory (Blue, Whitewright and Thomas 2011 and forthcoming). It appears that Mediterranean shipbuilding tradition was preferred to indigenous sewn or dugout traditions used on the Erythraean Sea.

We know from Graeco-Roman sources and ostraka found in the Eastern Desert that a range of more than twenty ship and boat types were used on the Red Sea and wider Indian Ocean (Thomas 2010b; Van Rengen 2011, 335–36; *P.Myos* 4; *O.Myos* 512; *O.Max.* 175; *O.Ber.* 129; *O.Ber.* 86; Diodorus, *History*, 3.39–43; Strabo, *Geography* 2.5.12, 16.4.18, 16.4.23; Pliny, *Natural history*, 4.34, 6.105; *Periplus* 3–4, 7, 10, 15–16, 18–19, 27, 32–33, 36–37, 39, 44, 52, 56, 60) although we cannot distinguish between them from the fragmentary archaeological record at present, other than to note that variation existed in the sailing rig (Blue, Whitewright and Thomas 2011, 197, 209).

To summarise, when we look at the distribution of maritime artefacts, specifically fishing and ship equipment, from Myos Hormos (Fig. 6) and Berenike (Fig. 7), we understand better how different areas within the ports were utilised and who was involved in the maritime activities that these artefacts represent. At Myos Hormos maritime artefacts were

common and represented in every area excavated. The six hundred maritime artefacts were a high proportion (11%) of all finds in these Roman areas. Abundant evidence of ship hull maintenance, antifouling and ballast were found by the harbour. To the west of the site, fishing artefacts were found in low status areas of the site. The finer, two-storey warehouse (ground floor) and residence (first floor) structures at the east end of the settlement had rigging and sail elements stored and possibly repaired there. At Berenike nearly 1,200 maritime artefacts were excavated from the 1994–2001 seasons, although they represent only a small proportion (3%) of all artefacts. Berenike appears to have had more going on militarily, administratively and religiously than Myos Hormos which may explain the less significant role maritime activities played at this site. Different activities were undertaken in different areas of the site.

Diet and dining

Wine as well as oil and fish sauce amphora seals were most commonly found in the large domestic and warehouse complexes at the eastern end of Myos Hormos and represent a higher wine consumption in the same area as artefacts associated with shipping, than those in areas with artefacts associated with fishing and limited or no maritime activities (Thomas 2007; 2011a). The traders' names, specifically of wine traders and estate owners, are preserved on the red-painted wine amphora seals (Thomas 2011a, 23). The wine trade was carried out by Greek-speaking peoples, sometimes with mixed Graeco-Egyptian, but usually Greek names, and sometimes freedmen of the emperors Claudius and Nero, presumably running imperial estates in Egypt (Thomas 2011a, 25), which would explain the bias of Graeco-Egyptian trader access to these commodities. However, different consumption practices across both ports were most clearly represented in the faunal and ceramic records. Published quantified faunal remains from Myos Hormos and Berenike, as well as contemporary Aila and Roman and Nabataean forts in the region, are displayed in the triangle plot Fig. 8.⁶ All diets consisted of varying reliance on three major food groups (Thomas 2007; 2010b; for discussion, Van Neer and Ervynck 1999; Van Neer and Lentacker 1996; Van Neer and Ervynck 1998):

- In red, diets reliant upon fauna from the Nile and transport animals, including pig, cattle, chicken, Nile fish, donkey, camel and horse. This was common in the Roman forts of the Eastern Desert of the 1st to 2nd centuries AD and in some areas of Berenike and Myos Hormos.
- In blue, diets reliant upon Red Sea fish, turtles and sea mammals. Present in some Berenike and Myos Hormos deposits dating from the Ptolemaic period to the late Roman period.

⁶ Published from the sea ports (circles) of Aila (Toplyn 1995), Myos Hormos (Wattenmaker et al. 1979; Wattenmaker 1982; Hamilton-Dyer 2001; 2007; 2011b, 245–88) and Berenike (data from Van Neer 1994; Van Neer and Lentacker 1996; Van Neer and Ervynck 1998; 1999; Van Neer et al. 2004; 2006; Van Neer and Parker 2008) and Roman forts (squares) in the Eastern Desert (Leguilloux 2003) and Roman and Nabataean forts in Nabataea (yellow squares, data from Desse-Berset and Studer 1996; Lepiksaar 1995; Lerna 1986; Toplyn 1987; 1995; 2006; Van Neer et al. 2004; Studer 1994; Van Neer and Parker 2008). This plot excludes mollusc data (see Hamilton-Dyer 2011b).

- In yellow, diets reliant upon domestic or wild desert fauna, such sheep, goat, gazelle and ibex. Common and almost exclusive diet found in Eastern Desert settlements of the 3rd century AD onwards at Berenike as well as all Nabataean and subsequent Roman forts and settlements within the Nabataean kingdom.

These diets were associated with different table-wares, including Roman red-slipped, faience, thin-walled and Eastern Desert wares (Fig. 9). Quantified ceramic data on the presence of different forms at Myos Hormos and Berenike (Hayes 1995; 1996; Tomber 1998a; 1998b; 1999; 2000a; 2000b; forthcoming) suggest that the complexity or simplicity of table-ware assemblages in different areas of these ports was significant. The repeatable and robust metrical criteria for identifying specific forms as a beaker, cup, bowl, dish or platter are based on Darling's guidelines for archiving Roman pottery (Webster 1969, 8–11; Darling 1994, 8). In a table-ware assemblage of simple bowl and dish forms made of ceramic or shell, or alternatively made of a variety of complicated forms, such as plates, cups, beakers and jugs, show to what degree the assemblage represents a population that has fully adopted the Roman table-ware service that had become readily available and in demand across the Roman world and beyond from the Augustan period. This does not mean that the group of individuals who produced the deposit owned a complete matching *terra sigillata* service (Ettlinger et al. 1990; Hayes 1985, 44), but that, through mixing and matching, they collected a more complicated variety of forms of table-ware that they could use *as a service* (Thomas 2007).

To compare a variety of finds groups, faunal remains, table-wares and maritime artefacts, this study has been limited to describing the harbour (trenches 7, 7A) central (trenches 2, 17), west (trenches 8, 6G) and north (trenches 6A, 6D) areas of Myos Hormos and the north (trench 13), northeast (trench 4) and south (trenches 2, 5) areas of Berenike that have suitable contextual information and quantified data (Thomas 2010b; 2007). However, this approach could be applied to larger assemblages when the contextual information is good and all artefacts and faunal remains have been studied and quantified.

This study shows a strong correlation between the use of simple dishes and bowls and reliance on Red Sea fauna diet (Fig. 10). This was also linked with a high occurrence of maritime artefacts, particularly fishing equipment. Shell bowls and scoops also found in these contexts may represent indigenous material culture. Fishing equipment included both indigenous Red Sea gorge technologies and net and hook technologies used widely across the Mediterranean. Limited wine and oil consumption is suggested by the relative scarcity of amphora stoppers in the same deposits (Thomas 2007; 2011a). The anomaly of the northeast area of Berenike can be explained by the small sample of table-wares available in this mixed deposit. In the case of the western area of Myos Hormos (trenches 8 and 6G) associated with fishing activity (Thomas and Masser 2006, 138–40), two ostraka naming a Trogodite (*O.Myos* 543) and an Ichthyophagos (*O.Myos* 512) show that the inhabitants of that area had strong links with indigenous populations at some point, if they were not part of that group themselves. Ceramic and shell bowls were used by those dependent upon Red Sea fauna and were also associated with fishing activities.

There is a clear correlation between the use of a wide and complicated variety of forms as

a table-ware service (mostly *terra sigillata* or faience ware services) and the consumption of a more varied diet that incorporated expensive transported 'Nile fauna' (Nile fish, pig, cattle), low status transport animals (camel, donkey, horse) supplemented with locally available sheep, goat and hunted ibex and gazelle (Fig. 11). These same assemblages also had a high level of wine and oil consumption, as represented by frequent amphora stopper finds (Thomas 2007; 2011a). Whilst areas containing large assemblages of ship elements were commonly associated with 'Graeco-Roman services and Nile fauna' (Fig. 12), this consumption pattern was not exclusively associated with maritime activities (Fig. 11). This is partially due to the greater wealth and diversity of small finds found in the areas inhabited by this population, but also because the 'Graeco-Roman services and Nile fauna' consumption practice was also associated with Roman forts and military contexts (Fig. 8).

The large difference between maritime artefact occurrence at Myos Hormos (11%) and Berenike (3%) may be explained by sampling strategy and context. Alternatively, the difference may be explained if the sites had different populations and activities taking place. Certainly by the 3rd century AD, there was an increased occurrence of Eastern Desert ware bowls, produced by and for the desert nomadic population of the Eastern Desert, who consumed an exclusively desert fauna diet and were not involved in any maritime activities at Berenike. This suggests that a new desert-based population had moved into some areas of Berenike, who did not facilitate maritime activities at the port but instead represent an increased focus on the immediate hinterland for provisioning the settlement and possibly overland trade.

Conclusion

The textual evidence suggests that there were many different ethnic groups living and working at the Red Sea ports, although non-Graeco-Egyptian peoples were rare. The archaeological evidence suggests that quarters or ghettos existed in the ports, inhabited by different ethnic groups whose roles, wealth, diet and belongings varied greatly. These distinct populations were distinguished from one another by their diet, table-wares, their role and the area they inhabited within each port. Sometimes these can be associated with textual evidence of specific ethnic groups. This textual evidence is still the only way of identifying individuals, small groups or the brief settlement of groups of Palmyrans, Indians, Nabataeans, Gauls or Germanic peoples that would otherwise be invisible in the archaeological record. However, careful excavation and intra- and inter-site analysis of the little things left by everyday actions and related to specific vocations within these ports lead us to identify a number of people who lived and worked in these diverse cosmopolitan ports, perhaps the most important people facilitating the Erythraean Sea trade, who would otherwise be invisible in the documentary record and impossible to quantify or qualify in their role and significance.

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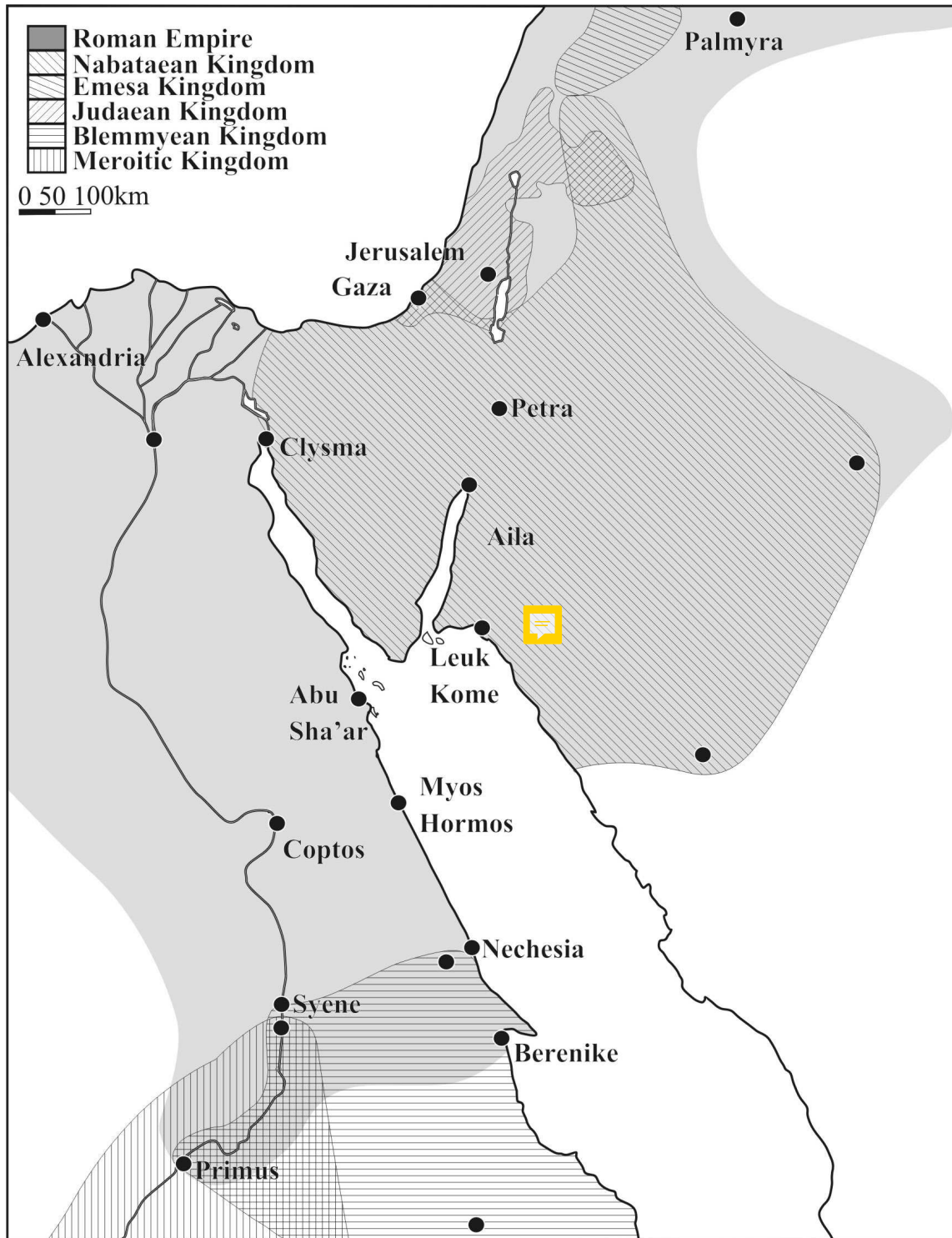


Fig. 1: Political geography of the northern Red Sea in the 1st to 3rd centuries AD (after Ball 2000, 33, 48, 61; Kirwan 1974, 45; Anderson, Parsons and Nisbet 1979, 128).

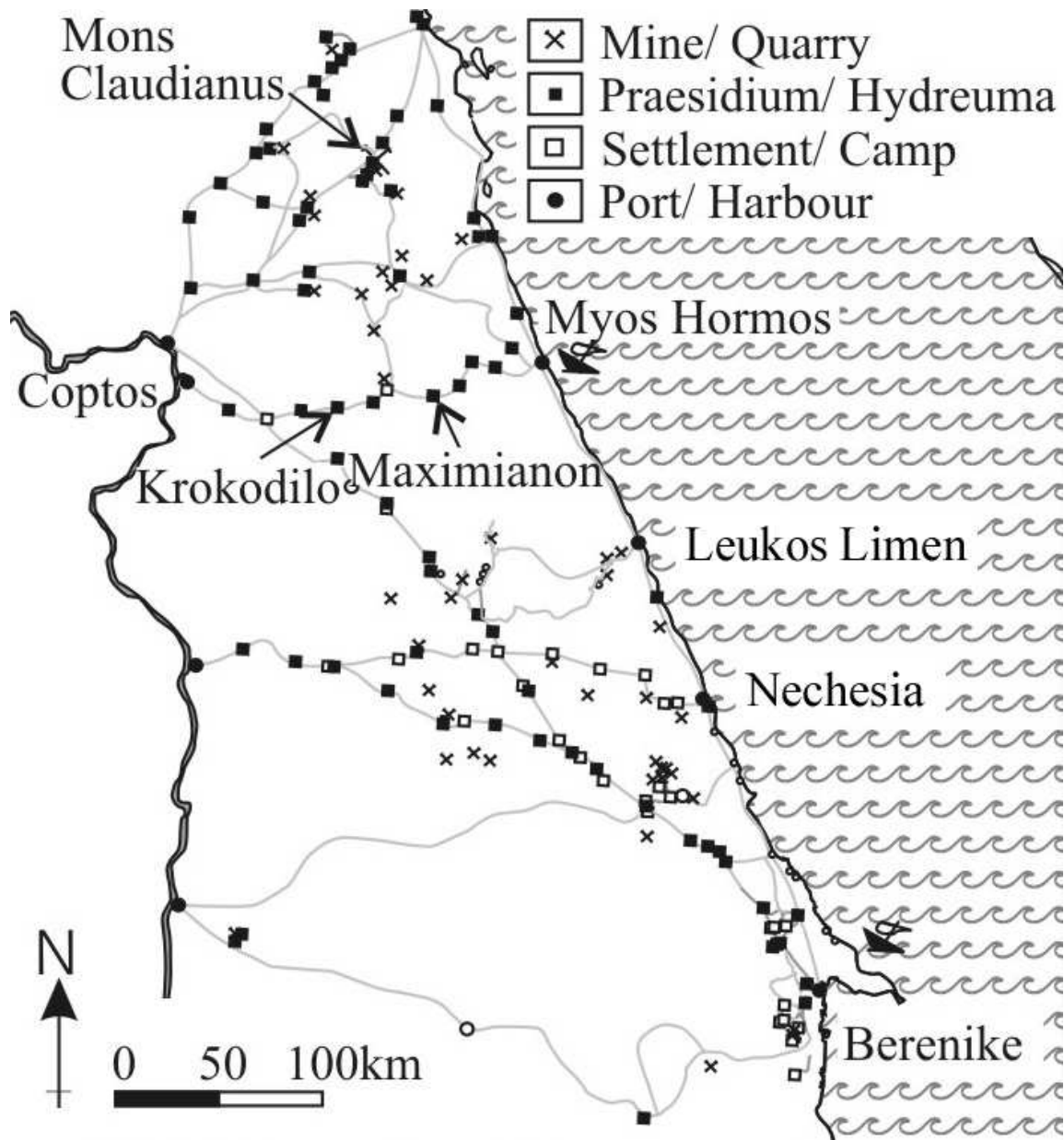


Fig. 2: Eastern Desert settlements of the first three centuries AD (after Maxfield 1996, 10; Sidebotham and Zitterkopf 1995, 40; 2000, 118; Sidebotham et al. 2004, 8–9; see also Sidebotham, Zitterkopf and Riley 1991; Sidebotham, Zitterkopf and Helms 1999; Sidebotham and Zitterkopf 1997).



Fig. 3: Shell tools from Myos Hormos (Courtesy of Southampton University).



Fig. 4: Fishing equipment from Myos Hormos (Courtesy of Southampton University).



Fig. 5: Ship elements from Myos Hormos. Southampton Quseir al-Qadim finds archive.

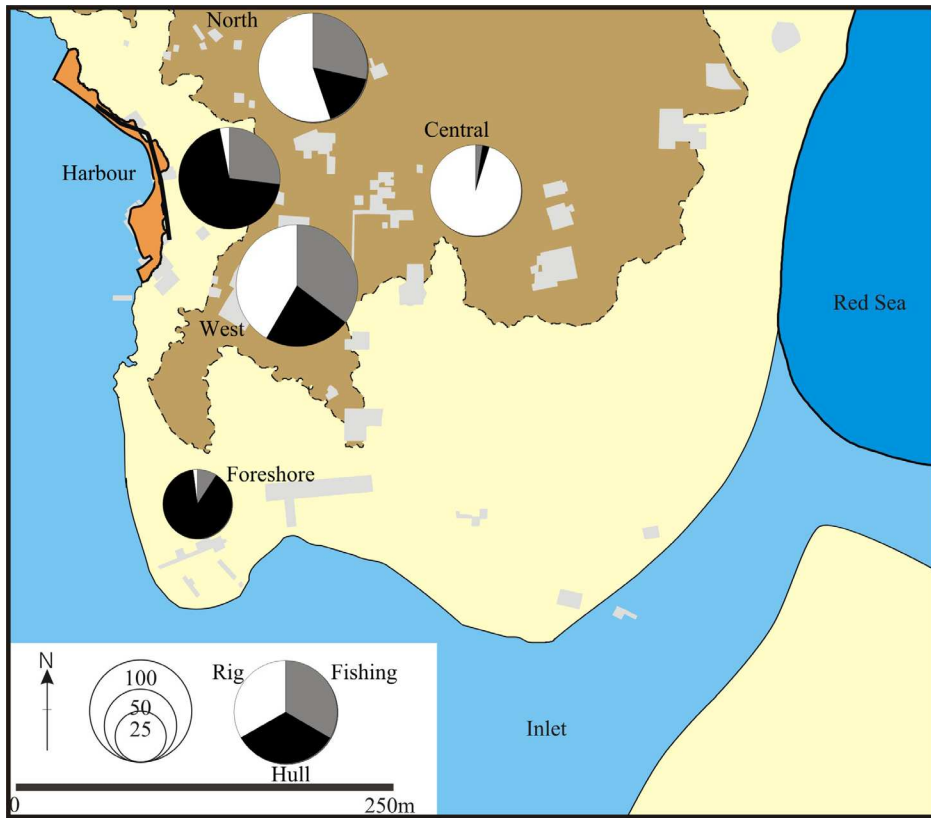


Fig. 6: Distribution of maritime artefacts across Myos Hormos (after Earl and Glazier 2006, 35–36; Blue 2006, 59).

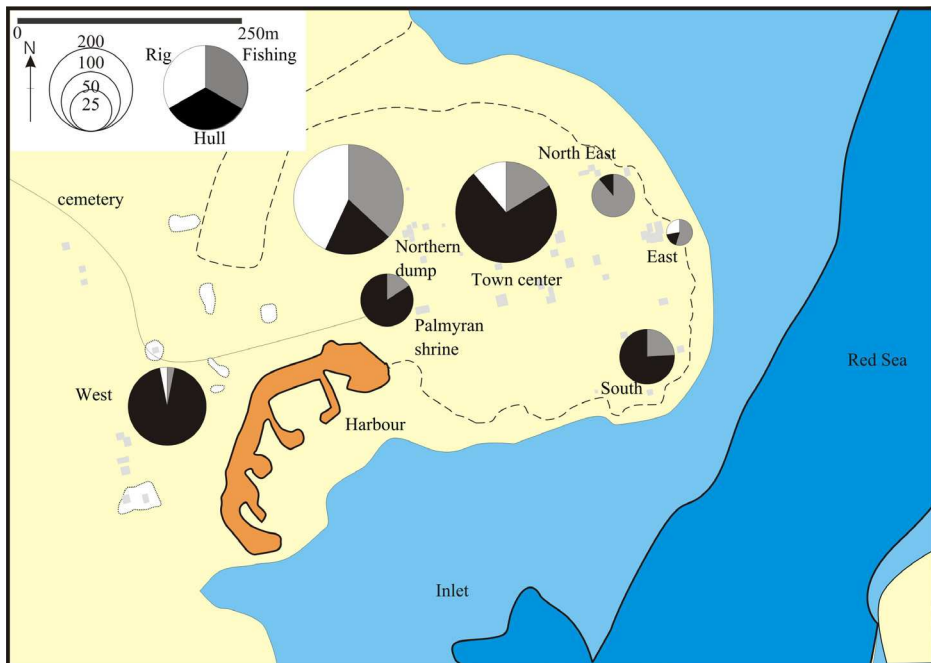


Fig. 7: Distribution of maritime artefacts across Berenike (after Sidebotham and Wendrich 1996; 1998; 1999; 2000; 2007).

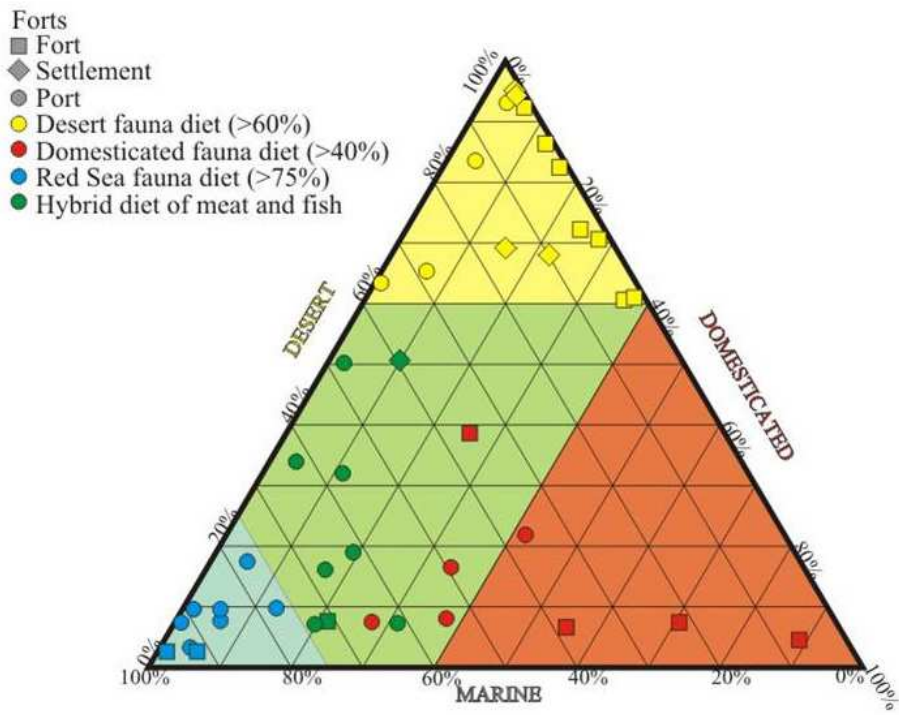


Fig. 8: Faunal consumption patterns.

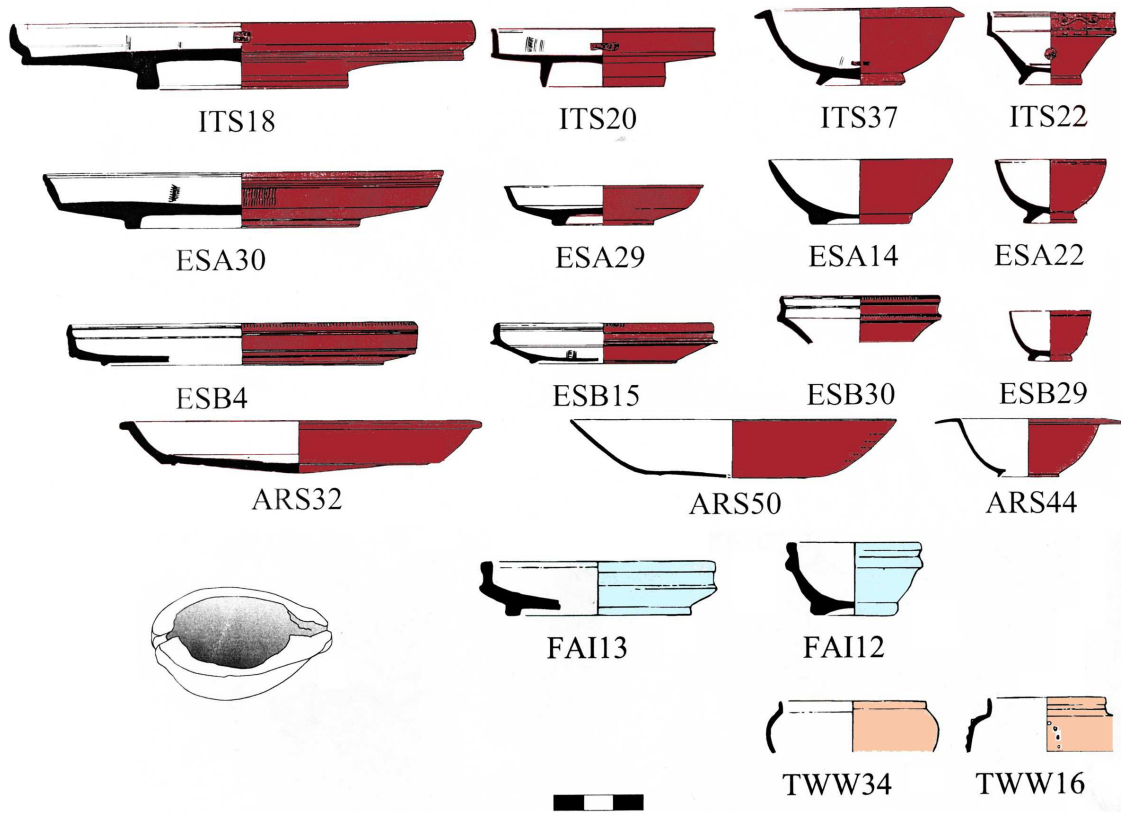


Fig. 9: Table-ware varieties. (after Ettlinger 1990; Hayes 1972; 1985; Tomber 2007).

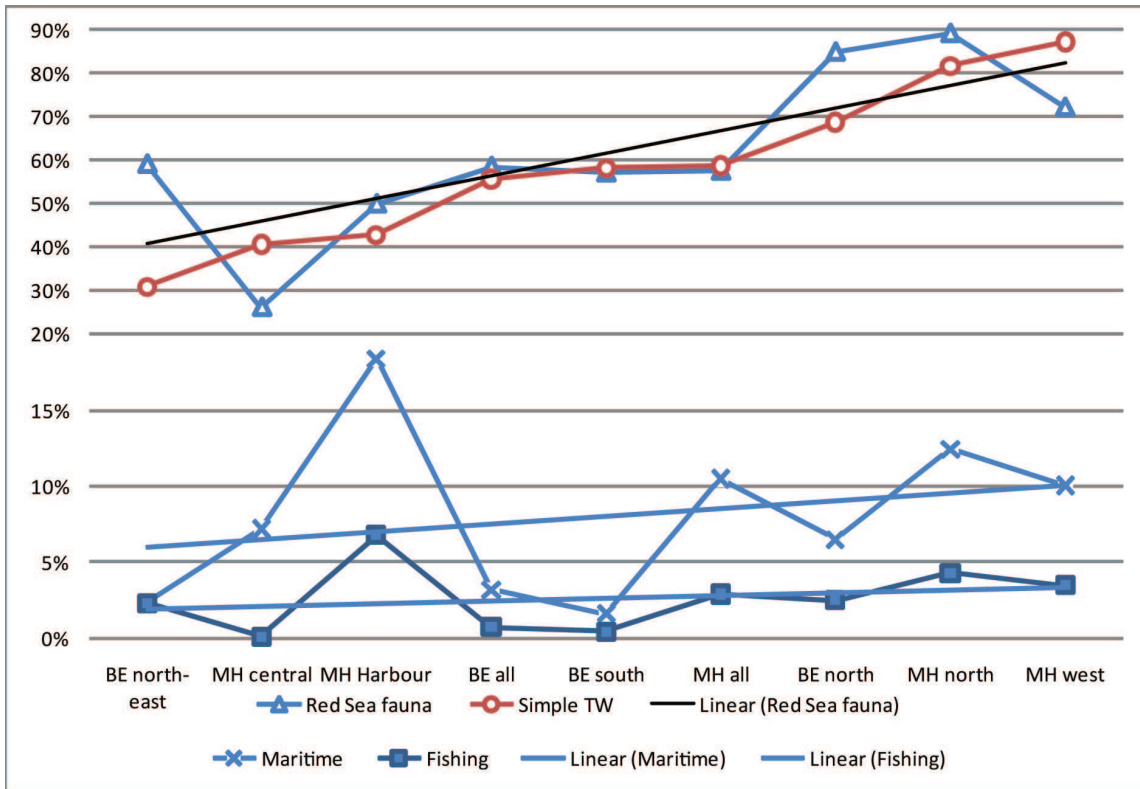


Fig. 10: Areas of Berenike and Myos Hormos with different percentages of table-wares that are simple bowl forms (red circles), percentages of fauna consumed that are from the Red Sea (blue triangles) and percentages of all small finds that are maritime artefacts (blue crosses) and fishing equipment (blue squares). Linear trend lines also shown. Ordered by table-ware simplicity.

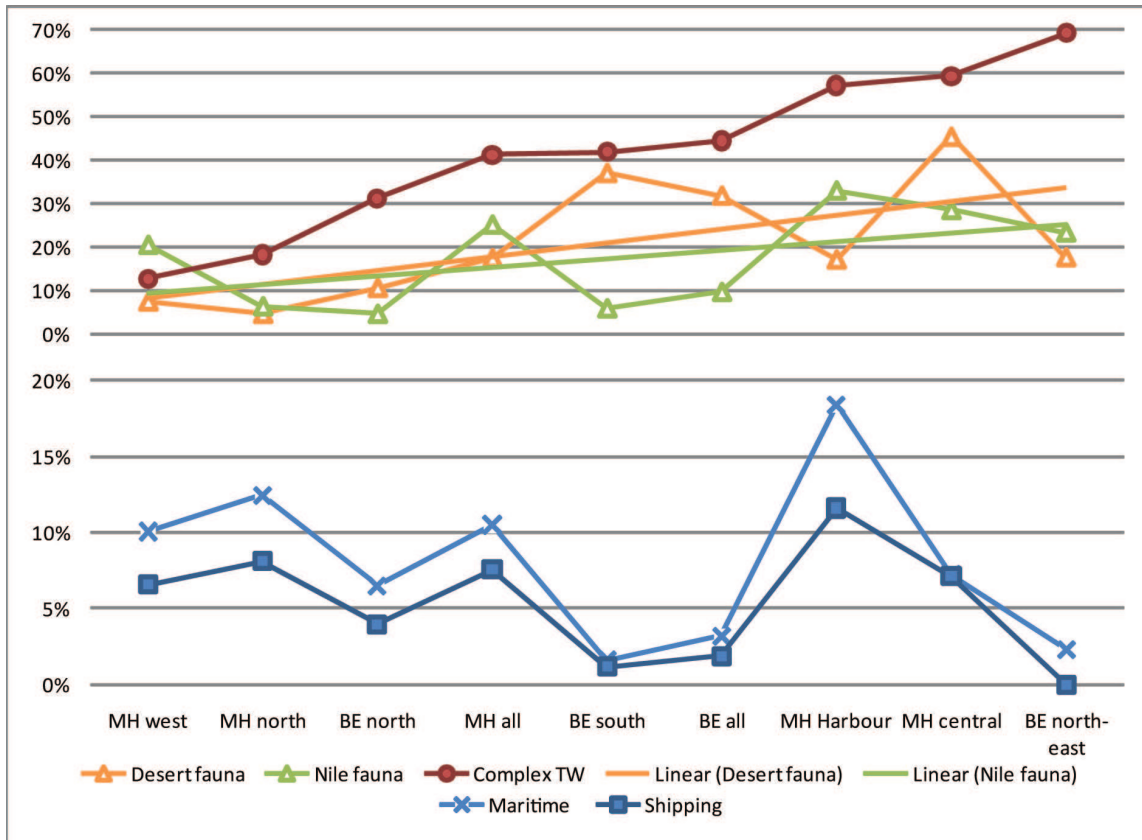


Fig. 11: Areas of Berenike and Myos Hormos with different percentages of table-ware that are complicated service forms (platters, plates, beakers, cups, jugs, dark red circles), percentages of fauna consumed that were Eastern Desert species (orange triangles) or Nile-raised (green triangles) and percentages of all small finds that are maritime artefacts (blue crosses) and shipping equipment (blue squares). Linear trend lines also shown. Ordered by table-ware complexity.

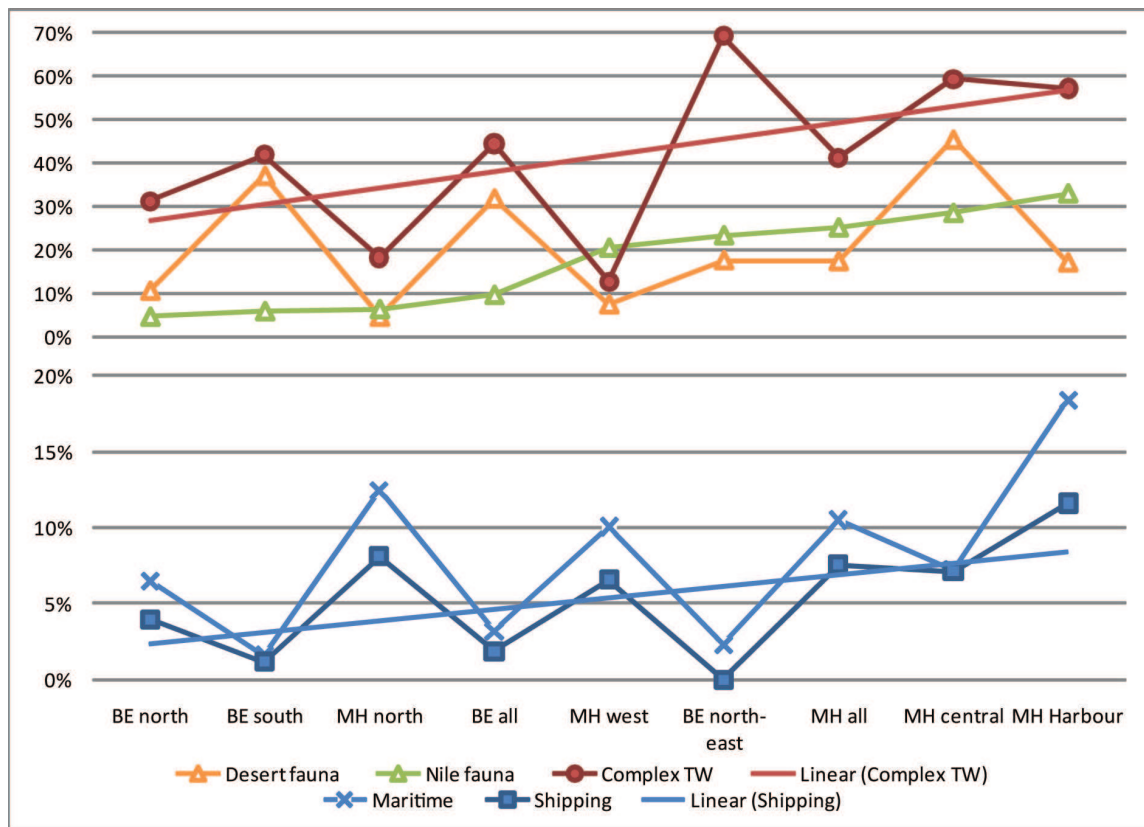


Fig. 12: Same data as in Fig 11, but ordered by percentages of Nile fauna.