

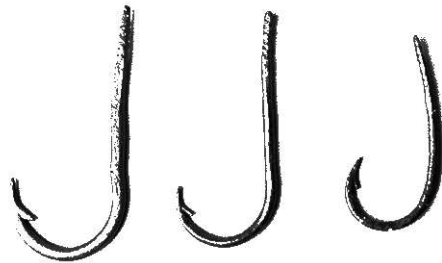
ANCIENT NETS AND FISHING GEAR

PROCEEDINGS OF THE INTERNATIONAL WORKSHOP ON
“NETS AND FISHING GEAR IN CLASSICAL ANTIQUITY:
A FIRST APPROACH”

CÁDIZ, NOVEMBER 15-17, 2007

Edited by

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and
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Cover image: Fishing with casting-net – Rota, Cádiz, November, 2007 – (D. Bernal)
Fishing scene from Gallic pottery (Hermet, 1934, pl. 28)

Rear cover: Mosaic from Thugga (Bardo Museum, Tunis)
Detail of the dragnet at Conil (Hoefnagel sixteenth century, facsimile)

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Darío Bernal Casasola & Tønnes Bekker-Nielsen

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5. Nets and Fishing Gear in Roman Mosaics from Spain

GUADALUPE LÓPEZ MONTEAGUDO¹

Some of the most frequent representations in Roman mosaic art are related to water and fishing activities: live marine fauna as a motif of banquet scenes (*xenia*); different styles and techniques of fishing: from boats, land, or by diving, and to a lesser extent involving oyster farms; the marketing and consumption of sea food. Thus, Roman mosaics, together with other art forms such as painting, ceramics, glassware and metalwork, can be seen as important documents, along with literary sources, that shed light on the different aspects of fishing in Roman times.

This type of pavement was generally used in *piscinae* and fountains, covering not only the floor itself but also the walls; the effect was vivid, above all in the case of stepped areas, where the movement of the water further enhanced the realism of the aquatic scenes.

In the early third century AD, Aelian (12.43) – complementing Oppian (3.73-78, 80-87) who around 180 AD had written a treatise on fishing, *Halieutika* – described the four fishing techniques used in his time in the following order: nets, harpoons, fish traps and hooks. All these, as well as lobster pots, were already documented in Egyptian art dating back to the second half of the third millennium, in Greek ceramics, and were particularly abundantly represented in Roman mosaic art, especially in *Africa Proconsularis* and in *Tripolitania* (López Monteagudo, 2006, 219-267).

The most comprehensive representations of the different modes of fishing are found in the two mosaics in the museum of Sousse (ancient *Hadrumetum*) on the Tunisian coast (Sousse Museum, inv.no. 57.204, 57.095; Foucher, 1960, pl. XLVI, XXI): the mosaic from the *hypogeum* of *Hermes* (late second century) and that from

¹ This work has been undertaken under research projects HUM2004-01056 and HUM2007-61878.

the “House of Virgil” (c. 200-210). The former depicts (see p. 192), in one and the same scene, four pairs of fishermen in four boats floating on a sea crowded with a variety of marine fauna: fish, crustaceans and molluscs. Three of the boats are anchored and the fishermen are using nets, rods, and a series of fish traps resembling woven baskets to catch octopodes. In the fourth boat, whose anchor has been raised, one man is rowing and the other is about to throw a round casting-net. In the mosaic of the House of Virgil (also known as the “Arsenal House”) which is very similar to the previous one, fish traps (creels) and harpoons are also shown.

The different modes of fishing mentioned in the sources also appear on the Tunisian mosaic from the triapsidal hall of the “House of the Chariot of Venus” at *Thuburbo Maius* (end of the third or beginning of the fourth century) and now preserved at the Bardo Museum. Here, several boats are depicted on a sea replete with ichthyofauna as well as several fishermen with nets, round-nets and rods (CMT II, 3. Tunis 1987, 83-88, fig. 8, pl. XXXIV-VII and LXI). A variant with *erotes* fishing is found in a mosaic at Piazza Armerina (fourth century) in which there are several fishing scenes with rods and line, nets, harpoons, lobster pots and fish traps in front of a sea-side *villa* (Carandini *et alii*, 1982, 249-258, figures 149-152, 154-155, pl. XXXVII, 79).

According to Aelian (12.43), nets were made of plant fibres, in general esparto or white and black linen fibres. Oppian (3.80-84) distinguishes two types of net. One of them is the casting net (*amphiblēstron*), a conical net that is cast from a boat and closed by means of a drawstring once it had reached the bottom. Among others, this type of net is depicted in the Sousse and Piazza Armerina mosaics mentioned above. In the Algerian mosaic of the Marine Venus of Kamissa, conserved at the Guelma Museum, third to fourth century AD (Lassus, 1965, 175-192, figure 4; Ferdi, 1998, 140-141), there is explicit documentation for this type of net: it has just been closed by pulling on the drawstring and brought out of the water by the young fisherman resting on a rock, while another three blond, naked fishermen are fishing in a sea replete with all kinds of marine creatures: with a rod and line, one of them has just caught a large fish; another has harpooned a squid with a trident, and is holding a lobster pot in his left hand, while the third, standing on the Goddess’ shell, is casting a round net; the last one, also on a rock, is pulling on a net full of fish that he has closed with the drawstring.

The other type of net described by Oppian is the drag-net (*griphos*), a rectangular fabric with weights made of pieces of ceramic or stone and disc-shaped floats made of wood or cork. It is also documented in the Orpheus mosaic from the Roman factory of *Leptis Magna*, probably from the end of the second century. In one of the depictions accompanying the central mythological scene, there are three fishermen in a boat, one of them rowing and the other two pulling on the drag-net, full of fish; in the foreground, another two are fishing, one with a rod and line, with which he has captured an eel, while the other has caught some kind of crustacean with a lobster pot (Aurigemma, 1960, 52-54, pl. 107-111). The same type of net

is depicted on an Algerian mosaic from the “House of Isguntus” in the port city of Hippone (ancient *Hippo Regius*) dated to the first half of the third century. The mosaic shows a fishing scene in a sea replete with marine life, with a city visible on the coastline; from a sailing boat that is towing a smaller vessel, of the *rostrado* type, two fishermen are drawing on a drag-net in the presence of another man dressed in a short tunic – perhaps he is the owner or a person in charge of controlling the fishing activities (Marec, 1958, 109-112).

Both types of net were used in a strictly littoral setting and are widely documented in mosaics from all periods, as is the mode of fishing involving the setting of nets between two boats. In the *Odyssey* (22.384-387), Homer mentions fish brought to the shore by fishermen using “nets of many meshes”. Harpoons or fishing spears (*Od.* 10.124-125) and underwater fishing (*Il.* 16.746-748) are also mentioned by the Greek poet.

Harpoons and tridents, reported by Aelian (12.43) as fishing techniques carried out from boats “by sturdy arms”, from a shallow reef or from the shore, were used to spear fish, octopi and squid, even sea urchins. In some mosaics this type of fishing gear is combined with others (the mosaics at Sousse, Piazza Armerina and Kamissa, mentioned above) and also with other activities related to fishing. Some Tunisian examples are conserved at the Bardo Museum; among these, the pavement from El Alia is outstanding. This has been dated to the beginning of the second century and depicts fishing scenes on a bay, with buildings on the shore. Fishing is taking place using a trident from a boat, while from the shore, four fishermen are pulling on the rope of the net, aided by two oxen, while another person is transporting the catch in two baskets suspended from a pole across his shoulders (Yacoub, 1993, 144, figure 112). In a mosaic from the “House of Ulysses” in Dougga (ancient *Thugga*) dating from the mid-third century and conserved at the Bardo Museum, two mythological episodes – Dionysios and the pirates of the Tyrrhenian, Odysseus and the Sirens – are interspersed with scenes of real-life fishing.

In the Dionysios scene, two fishermen in a sailing boat are struggling to pull the net out of the water, while a third harpoons an octopus; to the other side, two *erotes* cast their fishing-traps into the water. In the lower part, we see a fisherman sitting on a shallow reef or rock fishing with a hook and lobster-pot; at the centre, a comrade in a boat is pulling up the anchor to begin fishing with a hook and line, while a third one to the right is mending his net. In the panel of Odysseus and the Sirens, a fisherman is standing in a boat, holding a large lobster; the lower part shows a naked fisherman kneeling on a rock and harpooning a squid with his trident. Another naked fisherman is launching his boat out to begin fishing, as one deduces from the fishing rod in the boat, next to the catch basket, while a third one is about to cast a round net (Poinssot, 1965, 219-230, figures 16-20).

An extremely interesting example is the Tunisian mosaic from the “Sidonius Baths” at Sidi Abdallah (near Bizerta) of the late fourth or early fifth century, which depicts

several fishing scenes from a shore, lined with the huts of the fishermen. There are four fishermen in a boat pulling on a large net full of fish, and a man on the top of a rock or cliff is harpooning a squid (Yacoub, 1993, 143, figure 111). A trident and harpoon are also being used by the fisherman on a pavement in the Greek island of Kos (now at the Castle of Rhodes) in his attempt to spear a large fish; at his feet is a basket for the catch (Kankeleit, 1999, 69-79, pl. XIV). Sea urchin fishing with a harpoon is documented in a mosaic at *Utica* from the beginning of the third century, preserved in the British Museum (Hinks, 1933, 119, no. 44, figure 136).

On other occasions, it is *erotes* who are involved in the different fishing operations, such as the above-mentioned mosaic of the *erotes* of Piazza Armerina, in which one of them is trying to spear a fish with a trident.

The fish-traps (*kyrtoi*) cited by Oppian (3.85-87) were made from dried marine rushes and seaweed and was cast from boats, equipped with cork floats and weights, as documented on the pavements in Sousse (from the catacomb of Hermes and from the House of Virgil/House of the Arsenal; in the latter case, fish traps are used in combination with harpoons), and in a mosaic on a pool wall from the same city (now in the museum in Sousse), first half of the third century, featuring two *erotes* (Inv. Sousse 57.159; Foucher, 1960, pl. XXXV b-c). This fishing gear has its antecedent on a Greek red-figure kylix by Ambrosios, c. 480 BC, now in the Museum of Fine Arts in Boston, which also depicts a fisherman using a hook, with some fishes in a fish-trap in the water beside him, and is documented as far back as the second half of the third millennium BC in a painting in the tomb of Ti at Saqqara (López Monteagudo, 2006, pl. VII,1).

Regarding fishing with hooks, according to Oppian (3.73-78) and Aelian (*N.A.* 12.43), the rods were made of plant material, while the line was horse mane, boar bristles, esparto grass, wool or flax. Oppian tells us that several hooks could be attached to a flax line at the same time (*polyankistron*). This type of multiple-bait fishing gear is documented from prehistoric times and also represented in ancient Egyptian art in the painting from the tomb of Idut at Saqqara, c. 2300 BC. In some fishing scenes in Roman mosaics, the rod has been replaced by a simple stick, as may be seen in the mosaic of Orpheus in *Leptis Magna*, or in the mosaic of *Invidiosus* at Ostia, first half of the third century, conserved *in situ* (Becatti, 1961, 218-19, pl. CLXIII). Both depict the technique described by Homer in the *Iliad* (24.80-82) as the most elementary form of fishing gear, a fine line equipped with a weight and a hook at the end, made of ox horn, as repeated in the *Odyssey* (12.25), or without a rod and perhaps with a small stick at most. This is what is shown on the above-mentioned red-figure kylix by Ambrosios. This rudimentary mode of fishing is still practised today, generally by children, who roll a line around a piece of cardboard tube or similar object.

According to Aelian (12.43), fishing with a hook is the most perfect and most appropriate mode for free men, and indeed we know that it was one of the recreational activities of the Roman elite. Pliny the Younger (*Ep.* 9.7.4) fished for sport

at his *villa* on lake Como, using a rod and line directly out of his window, *paene etiam de lectulo*, “almost from his bed”; this must have been a common practice, as we learn from the ironic words of Martial (*Ep.* 10.30) concerning other people. The use of this type of fishing gear, depicted in mosaics, was the most frequent technique and was practiced both from boats offshore and from the shore, and it is seen not only in realistic scenes of fishing but also in those in which the agents are *erotes*, *putti* or pygmies.

In Hispanic-Roman mosaic work, fishing scenes are not very frequent and here we must refer in particular to scenes of fishing performed with the modes described in ancient literary sources, since the marine fauna is well represented in many mosaics from all periods and geographic zones of *Hispania*, both bichrome (Povôa de Cos in the Lisbon Museum, Córdoba, Gilena and Cuesta del Rosario in Seville) and polychrome (Córdoba, preserved at the Archeological Museum, the *Villa* de Santa Rosa in Córdoba, *Tarraco*, La Vega Baja de Toledo), sometimes combined with fantastic species (the bichrome mosaic at Cortijo del Alcalde in Córdoba), or accompanying gods and people related to water: *Oceanus* (Carranque, in which real fish share a place with mythological animals, and Écija), *Thetis* (Bruñel), Neptune (Itálica), Europe (Écija), nereids (Écija and Mérida), marine centaurs (Conímbriga), tritons, etc., motifs that recur throughout the rest of the Empire (San Nicolás Pedraz, 2004-2005, 301-33; López Monteagudo, 2008, 2547-2568). All these scenes document the ancient familiarity with the different species as well as the importance of fishing and fish consumption in the economy of Roman *Hispania* – apart from the artistic value of such mosaics as decorations for places featuring water since, as in the rest of the Empire, this type of pavement was generally used in baths (*thermae*) and in peristyles, *impluvia*, fountains, *piscinae* and ponds, covering not only the floor but also the walls. This is seen in the examples at Milreu, Pissões and Balazote, dating to the third-fourth century. It may be assumed that these water-related areas must have been very impressive, especially when the pools contain steps, as in the House of the Waterfall in *Utica*, second to third centuries AD (CMT I/1, 19-56, pl. VIII-IX, XVII, XXV, LXIII). The effect produced by the water running down the different levels generated the impression that the water was full of live fish and marine animals in constant movement, producing greater realism.

Whether from the realistic or the mythological point of view, the representations related to fishing activities in Roman mosaic art of *Hispania* cannot be compared either in number or in variety with those found in North Africa, in particular Tunisia. As in the rest of the Empire, fishing scenes in Hispano-Roman mosaics also feature fantasy figures, such as *putti*, *erotes* and pygmies.

Currently, depictions of fishing modes are documented in only six mosaics from the second to fourth century in Spain, and not specifically in coastal zones, as might be expected: all of them are at sites inside the Peninsula, the pavements at Itálica being those closest to the coast. Nearly all of them, however, are related to places

with water: baths, ponds, fountains, *piscinae*. Among the types of fishing gear, there is a predominance of the use of rods and lines from the shore and boats, but also nets; there are few scenes, however, depicting the use of tridents or harpoons or in which lobster pots or fish traps are being used. Also, as in other zones of the Empire, in *Hispania* the different types of fishing gear may be combined in a single mosaic. Fishing with rod and line is depicted in the mosaics at Itálica, Seville, Balazote, La Vega Baja de Toledo and Noheda. Nets appear in those at La Vega Baja de Toledo, Balazote and Noheda. The trident and harpoon are represented at Itálica and Noheda. The lobster pot or the fish trap at La Vega Baja de Toledo. In these scenes, the aquatic medium is indicated by straight or wavy lines or black tessellae, stepped lines, broken or toothed lines, zigzags, E- or F-shaped lines, triangles formed by parallel lines, swirls, the so-called water flies, etc.; all of them figures generated by water coming and going, although there are also neutral-coloured or slightly bluish-tinged floors, and the lines of water in which the figures in the pavement of the boats at Toledo swim.

One of the most complete Hispanic mosaics with regard to marine activities is that in the Roman villa of La Vega Baja de Toledo, third-fourth centuries, which paved the bottom of an octagonal *impluvium* or *piscina*, most likely of an *atrium* or peristyle (CMRE V, 1982, 36-40, no. 25, pl. 16-19 and 4; López Monteagudo, 1993, 1241-57). On this deteriorated pavement, there are different scenes of ports, fishing and transport in littoral waters (figure 1). In the part of the mosaic that has been preserved, we see a semicircular construction on pillars, flanked by two towers, which could be interpreted as the quay, since at one end lies an oared ship; the pier and lighthouse; a naval trophy; and three obelisk-like structures or commemorative columns; three quadrangular edifices with angled roofs and steps down to the sea, very probably sanctuaries; a circular, crenellated edifice, possibly intended to represent an amphitheatre; a cylindrical construction in rough-hewn stone with a conical roof, probably a fisherman's hut of the kind represented in the mosaics of Neptune at Itálica and at the House of the Amphitheatre in Mérida. On the shore or on reefs in the sea there are five fishermen. Four are angling with rod and line, two sitting on the pier and lighthouse, another two standing up on a reef in front of the naval trophy. Meanwhile, a fifth fisherman is about to cast an object, a very large spherical lobster pot or perhaps a circular scoop net, from the small lighthouse or column at the entrance to the port.

Regarding the sea, full of fish of different sizes, there are two figures swimming between the horizontal lines that represent the water, an *ostriarium* or *cetaria*, and eight fishing or marine transport boats, four of them with different types of sails, one with two people, and another towing a smaller vessel. A boat without sails is propelled by four oarsmen sitting down, directed by a man standing up in the poop. A six-oared boat is tied to the quay and from another, of which only a piece of prow is left, we see the fishing net (figure 4). It may be assumed that the owner

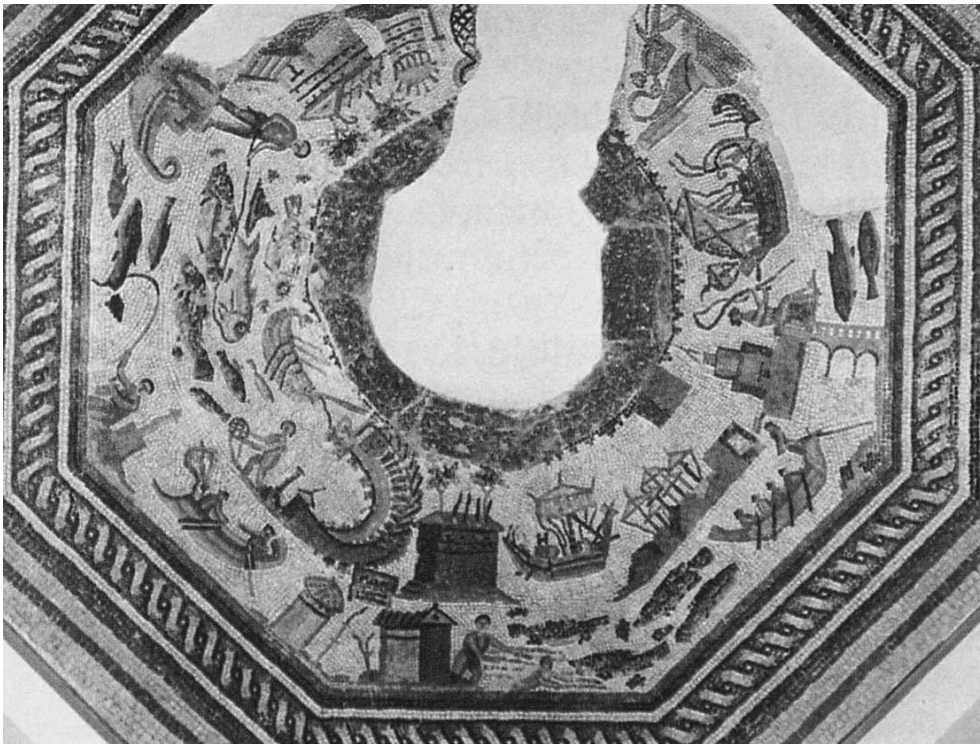


Figure 1. Mosaic from the Roman villa “La Vega Baja de Toledo”. Toledo, Archaeological Museum (photo G. López Monteagudo).

of this villa was in some way engaged in trade along the *Tagus*, perhaps he was a *navicularius*, since the anchor is represented in another mosaic of his mansion.

Among the boats, two are directly related to fishing, since in the others it is not possible to identify elements characteristic of fishing, as distinct from transport, vessels. Likewise, other Hispanic mosaics show boats, but these cannot be specifically identified as fishing or transport vessels. This is the case with the bichrome mosaic at Mataró (near Barcelona), dating from the end of the second or the beginning of the third century, that paved a large semicircular room surrounded by a bench; only a few fragments with a figured scene have been preserved, showing a vessel whose prow has the shape of a bird’s head (Barral i Altet, 1978, no. 118, pl. LXXIII). In a mosaic fragment from Milreu preserved at the National Archaeological Museum in Lisbon there is a rowboat, probably related to fishing or trade in salted goods (e.g., *garum*) in the area since the archaeological site in question has provided many mosaics, most of which are conserved *in situ*, decorated with fish (Hauschild, 1994, 285-291, pl. CLXXXVII-CXC; Dos Santos Duran Kremer, 1999, 509-519; Teichner, 1997, 106-162) (figure 2). Another vessel was represented in a mosaic from Fuente Álamo (Puente Genil, Córdoba) that is now lost and known only from a drawing preserved at the Royal Academy of History (figure 3). The details of its dis-

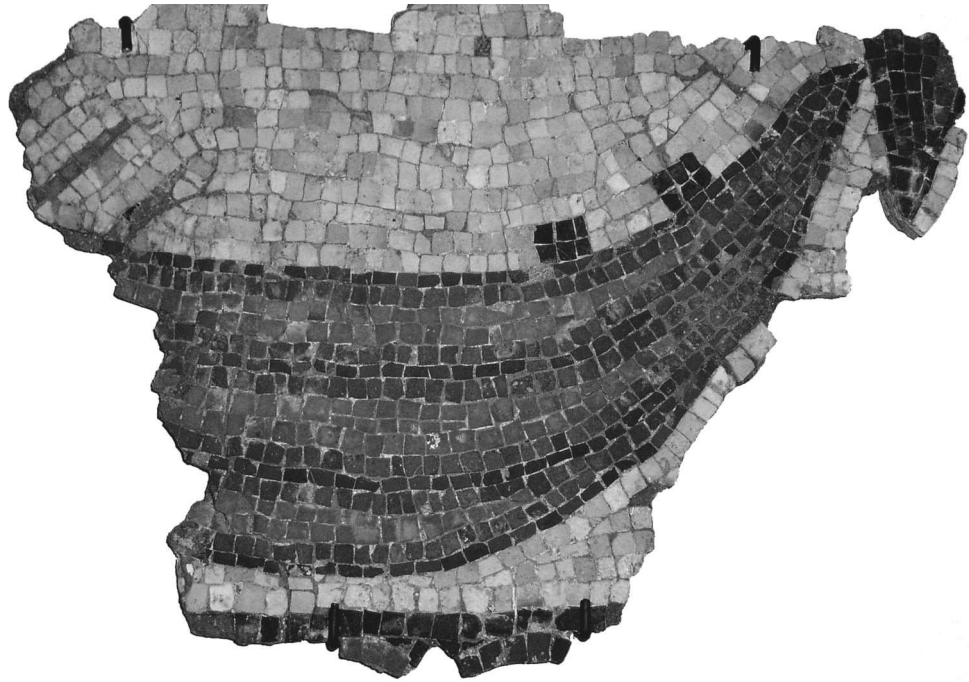


Figure 2. Mosaic fragment from Milreu. Lisbon, National Archaeological Museum (photo G. López Monteagudo).



Figure 3. Lost mosaic from Fuente Álamo (Puente Genil, Córdoba). Drawing preserved at the Royal Academy of History.

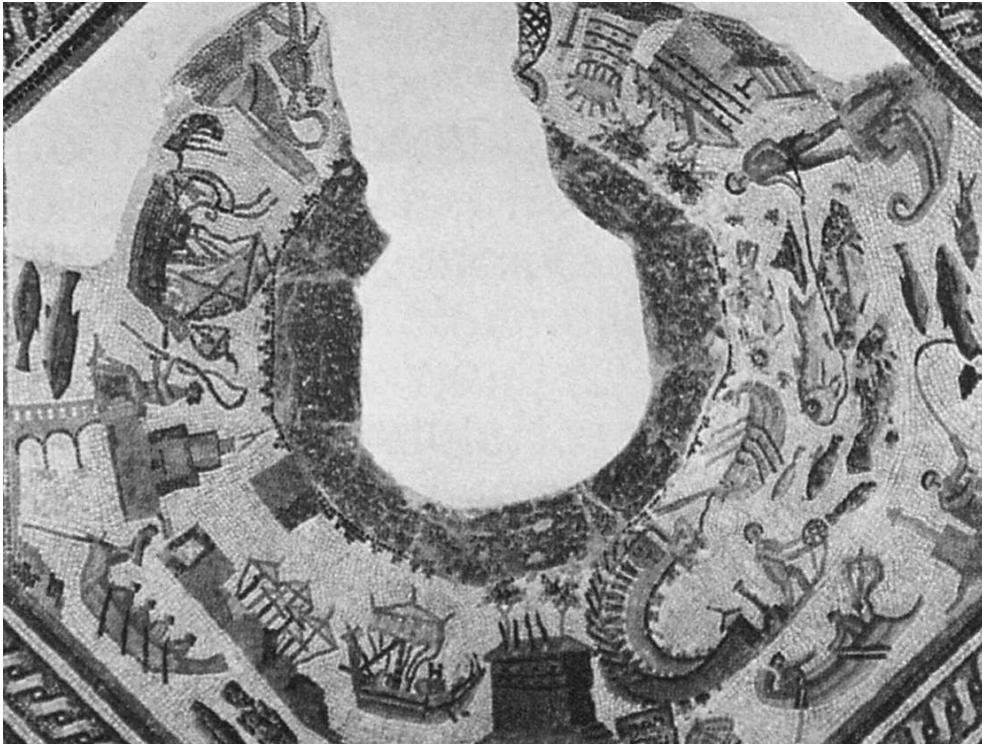


Figure 4. Mosaic from the Roman villa “La Vega Baja de Toledo”. Toledo, Archaeological Museum. Probably fishing scene with an enclosure-net (photo G. López Monteagudo).

covery, which occurred in the second half of the nineteenth century, are unknown, although in view of the theme it can in all probability be related to the bath complex of the Imperial period, antedating the construction of the fourth-century *villa*. The depiction is one of mythological marine figures (a triton, a sea-horse, perhaps ridden by a nereid) and the sail of a vessel (López Palomo, 2007, 145-156, pl. I). It is possible that a fragment of mosaic with the representation of a fish, preserved at the Museum of Puente Genil, formed part of this pavement.

Outside *Hispania*, the theme is found on a Libyan mosaic in *Tripolitania* (third century) showing several fishing episodes in a sea populated by real and fantastic fauna, in which several fishermen can be seen. Two of them are aboard a vessel whose sails are swollen by the wind, one of them handling the steering-oar and the sail while the other is catching a large fish with a hook. Another two fishermen are in a launch rowed by one while the other is about to use his trident. Nearby, a further fisherman, standing on a reef with a rod, line and basket, has just caught a fish; the same mosaic depicts a basket with the catch (Aurigemma, 1960, 44, pl. 69-70).

In the most deteriorated part of the Toledo pavement, there are the remains of a fragmented scene of great interest, since it is possible to identify a fishing scene involving two vessels using a seine (figure 4). Scenes of the same type, showing

seine fishing, can be found in other mosaics of the *pars occidentalis* of the Empire, such as that from the House of *Scorpianus* in Carthage (second quarter of the second century), now in the Museum of Carthage, in which different types of fishing gear are represented (net, hook and trident, or harpoon). In the background, lacustrine vegetation is shown, with two water fowl; at the sides, we see one man with a fishing rod and another spearing an octopus with a harpoon; in the centre, a seine fishing scene involving two vessels. The net, which is full of fish, has been set by two fishermen in two boats, each propelled by two oarsmen (Gauckler, 1910, 819). In the similar third-century Venus mosaic from Sousse the figures are *erotes* (Inv. 57.025; Foucher, 1961, pl. III) as in the previously mentioned fourth-century mosaic from Piazza Armerina, in which the different types of fishing gear are also combined (Carandini *et alii*, 1982, 249-58, figures 149-52, 154-155, pl. XXXVII, 79). Another scene showing seine fishing, this time performed by *putti*, can be found in the mosaic of the Triumph of the Sea Venus at Djemila (fourth-fifth century). Of special interest in this mosaic is the scene depicting a seine of the tuna-fishing type: a large net has been cast from two vessels, each holding three naked fishermen, apparently *putti*. The net is almost full of fish, which can be seen through the mesh; on each side, two people are pulling on the rope passing along the upper edge of the net that serves to close it (Blanchard-Lemée, 1975, 65-69, pl. XI).

In the mosaic of Vega Baja de Toledo, mentioned earlier, there are four fishermen using rods; two are sitting down fishing, one of them on the quay, next to the lighthouse, is just about to cast, the other is sitting down next to a light-house or a column; a third is on a reef next to a boat, hauling a large fish out of the water with his line. Yet another is standing on a reef crowned by a naval trophy. In Roman mosaics of all periods, the figure of the sitting fisherman is repeated over and over, following the model that had already appeared in a Greek red-figure *pelike* by the Painter of Pan (fifth century BC) found at Cerveteri and now in the Kunsthistorisches Museum in Vienna.

In North African mosaic art, to cite but a few examples, we see such fishermen sitting on the quay and often wearing a straw hat in the Tunisian mosaics conserved at the Bardo Museum, from the House of Fishing at Althiburos, end of the third or beginning of the fourth century (Yacoub, 1995, 236-38, figure 120 a-b); from the House of Neptune at *Thuburbo Maius*, of the same period, showing a fisherman wearing some kind of headgear, using a rod and line to fish from a rock (CMT II/1, Tunis 1980, 158-161, figure 9, pl. LXIV-V and LXVII); in a Libyan mosaic, (late second or early third century) from the Villa of the Nile in *Leptis Magna* there is a scene of intense fishing activity. Among and between the reefs, we see two fishermen with rods and lines. One is sitting down baiting his hook, taking the bait from a small basket resting on a rock to his left. Next to him, another fisherman, dressed similarly and with his head protected by a broad felt hat (*petasos*), has just caught a large fish with the rod he is holding in his left hand and is

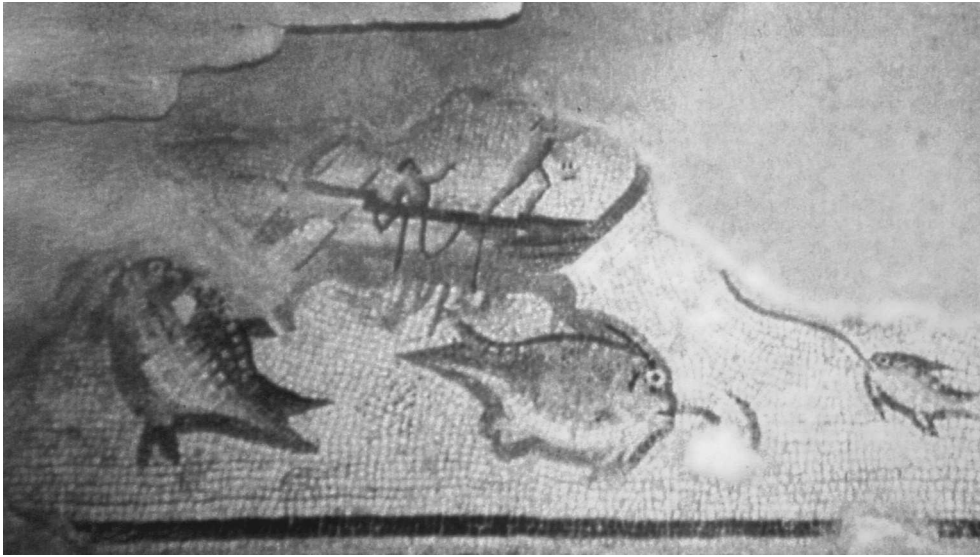


Figure 5. Mosaic from the Roman port of Hispalis, Seville. *In situ* (photo G. López Monteagudo).

now trying to transfer it to a scoop net that he is holding in his right. In the background, a third fisherman, in the water, is pulling on a net, the floats on the upper edge clearly visible. Another three naked fishermen are struggling to pull a net full of fish on to the rocky shore (Aurigemma, 1960, 49, pl. 94-97).

Similar scenes, showing fishermen sitting or standing, fishing with rod and line from the shore, are repeated in two Algerian mosaics of the Triumph of the Sea Venus (Ferdì, 1998, 100-1, 108). One of the third or fourth century, was found at Khenchela and is now at the Museum of Constantine: in it, we see the typical anglers, one of them old and the other young, wearing *petasoi*, standing on reefs in a sea teeming with fish, molluscs and a lobster. The old man seems to be resting, the young man is watching him while casting with the rod and holding in his left hand a basket filled with their catch. The other mosaic paved the *frigidarium* in the roman Baths of Sétif and is dated to the fifth century. This time the two fishermen have cast lures, one of which has been taken by a bream-like fish (*dorada*), while the other one is apparently being shaken by the fisherman who has the basket in his left hand. The same iconic type of a sitting fisherman with rod in hand appears in a mosaic in the House of the Desultor at *Volubilis*, conserved *in situ*, where the legs of the fisherman can be seen through the water (Limane *et alii*, 1998, 38).

Fishing with rods was also done from boats, where the fishermen are portrayed either sitting or standing, sometimes with a hat for protection. This type of rod fishing from a vessel is documented in two Hispanic mosaics from Sevilla (*Hispalis*) and Balazote (Albacete, figure 6).

Of the marine mosaic discovered in the zone of the Roman port of *Hispalis*, dated to the second or third century, only a fragment remains. This represents a scene

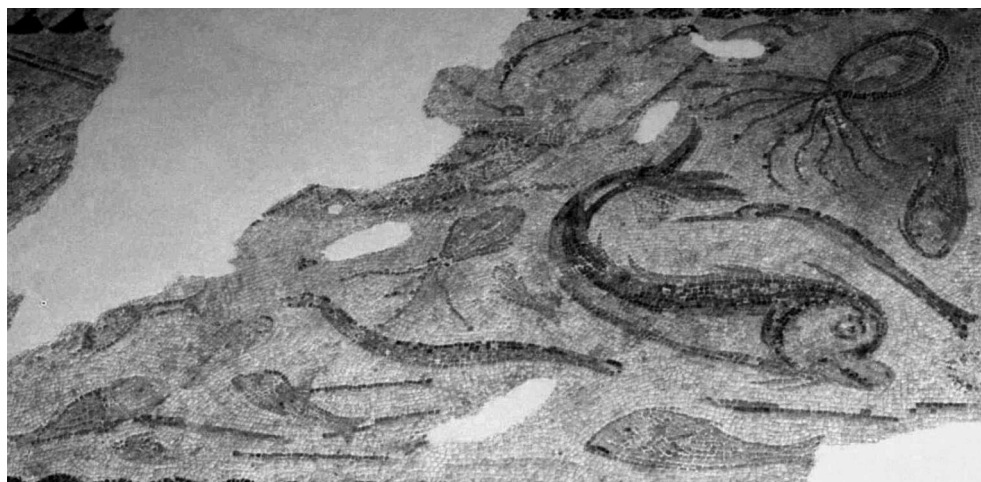


Figure 6. Mosaic from the Roman villa “Camino Viejo de las Sepulturas”, Balazote (Albacete). Albacete, Archaeological Museum (photo G. López Monteagudo).

with two fishermen in a boat, one of them sitting and who seems to have cast the nets, and the other, with a brimmed hat (*petasos*), probably of straw, is standing up and holding a basket in his left hand. He has caught a large fish (López Monteagudo, 2006, 238-239, pl. VII, 2) (figure 5). The pavement formed part of the *thermae* discovered when the Los Seises Hotel was being built in the neighbourhood of the Cathedral of Seville, at the site where the Roman port must have been, judging by the recent find of important architectural structures indicating the existence of a large building of the early Imperial period, along with remains of wooden building elements, pavements, decorated stucco, and plaques of marble, as well as later constructions from the Severan period, when the area was given over to industrial activity. These finds fit well with a public setting of commerce and goods storage in the port area of *Hispalis* and point to the vitality of the place between the end of the first century BC and the beginning of the third century AD (Ordóñez Agullá, 2003, 59-79). The large number of inscriptions referring to *scapharii*, *navicularii*, *diffusores oleum*, *corpus oleariorum*, *negotiantes olearii*, etc. in the zone harbouring the Cathedral of Seville led A. Blanco to consider that this place probably hosted a “Forum of Corporations” or harbour *forum*, similar to that at Ostia (Blanco, 1972, 3-22; Blanco, 1979, 133-35).

In the pavement from Room XXXIII in the roman Baths of the “Camino Viejo de las Sepulturas villa” at Balazote (Albacete), third to fourth century AD, there is a large, although deteriorated, fishing scene. Fishing is taking place from two boats in a sea containing a large number of marine species, among which we can identify a moray, a dolphin, an eel, an octopus, a squid and a sea urchin (figure 6). Also preserved is a part of a vessel, located to the centre-right of the composition, from which someone is angling (this figure has not been preserved, but judging by the



Figure 7. Mosaic from the Roman villa “La Vega Baja de Toledo”. Toledo, Archaeological Museum. Fisherman casting a large lobster pot (photo G. López Monteagudo).

position of the line, the person must have been sitting in the boat) and perhaps part of another vessel that would have occupied the centre of the lower part. The water is represented by short lines, some continuous and others broken up with black *tessellae* (CMRE VIII, 1989, no. 31, pl. 12, 23-25).

Similar scenes, in which fishermen are angling with rod and hook, either standing or sitting, with or without *petasoi*, are seen in several North African mosaics, sometimes combining different fishing techniques in the same manner as the mosaic from Seville. Among these are the Tunisian mosaic of Orpheus and Arion from La Chebba conserved at the Bardo Museum (Tunis), first half of the third century (Dunbabin, 1978, 254) and the above-mentioned pavement in the triapsidal room of the House of the Chariot of Venus, also at the Bardo, from *Thuburbo Maius* (above, p. 162). The same kind of fishing, but performed by *erotes*, appears in the Late Imperial Italian mosaics at Piazza Armerina (above) and *Aquileia* (below). Many boat fishermen wear a hat, almost certainly made of straw, such as the man in a *vegeia* or *placida* boat in the only fragment, now preserved at the Sousse museum, of an apsidal mosaic discovered in the excavations of a house in *Hadrumetum* in 1952, decorated with a fishing scene from the end of the Severan period showing four fishermen in boats (Inv. no. 57.261; Foucher, 1961, pl. LXII a).

On other occasions, it is the fishermen on the shore who are wearing hats for protection. Among others, we find them on one of the panels depicting a fishing



Figure 8. Mosaic from the Roman villa “La Vega Baja de Toledo”. Toledo, Archaeological Museum. Swimmers and ostriarium (photo G. López Monteagudo).

scene accompanying the above-mentioned Tunisian mosaic of Dionysius and Ulysses (found at Dougga and now in the Bardo Museum) where it is clearly possible to see the straw used to make the hat. The fisherman is using a rod, which he holds in his right hand, while the left-hand one holds a lobster pot, and at his side is the basket for his catch. In a mosaic from Khenchela, third-fourth century, preserved in the Museum of Constantine, the anglers, one standing and the other sitting on some rocks, are wearing a curious pointed hat, in all probability made of straw, that resembles the shells of certain molluscs (Ferdì, 1998, 143-44).

The Toledo pavement shows another way of fishing: using a fish trap (*nassa*) or lobster pot. We see a fisherman about to cast a large lobster pot into the water from a small lighthouse or column situated on a stepped base at the entrance to the port (figure 7). These also appear in some North African mosaics – following same model as a red-figure Greek kylix in the Museum of Gela – for instance, those appearing on the panel at Dougga (above), on the mosaic portraying the *erotes* at Sousse and that represented on a mosaic fragment in the Bardo Museum, in which a fisherman has just caught a very large lobster (Donati & Pasini, 1997, 61).

In another of the maritime scenes of the Toledo mosaic, two people are swimming in the sea, the water being indicated by bluish lines (figure 8). In our opinion, these characters, depicted with the iconography elsewhere used to represent the River



Figure 9. Nilotic border of the Neptune mosaic from Itálica (Seville). Pygmy fishing with a rod and line. *In situ* (photo A. Blanco-J.M. Luzón).

Orontes (LIMC I, s.v. “Antiocheia”; LIMC III, s.v. “Axios”; LIMC IV, s.v. “Fluvii”), should be interpreted as sponge- and oyster-divers, a practice documented in literary sources. Their use must have been common, as seen from a famous passage in the *Iliad* (18.414), in which the smith-god Hephaistos is cleaning soot off himself with a sponge before welcoming the sea-goddess Tethys. During such immersions, oysters were gathered, as we also learn from the *Iliad* (16.745-748). Both sponges and oysters are represented in the Hispano-Roman mosaics among the varieties populating the marine depths – especially oysters, which appear in nearly all fish mosaics from the third and fourth century, above all from Galicia, the Portuguese littoral and around Milreu on the Algarve coast. However, oysters are also found on pavements in the interior of the Peninsula, for example at Noheda (Cuenca). Oyster consumption is documented, too, in Hispanic *xenia* mosaics from the first century in Marbella (Málaga) (CMRE III, no. 55, figure 23, pl. 62); Campo de Villavidel (León), fourth century (CMRE X, no. 5, pl. 4, pl. 25) and Vega de Ciego (Asturias), fifth century (CMRE X, no. 32, pl. 20). Outside *Hispania*, oysters are shown being consumed, together with the *garum* contained in amphorae, in the mosaic showing three port scenes and the head of *Oceanus*, paving the apsidal *triclinium* of the third-century Roman *villa* at Bad Kreuznach in the *limes* zone (López Monteagudo, 2006, 262-63, pl. XVIII, 5; López Monteagudo, 2008, 2547-2568).

Within the context of fishing, figures swimming in water are seen in Roman mosaic art from an early date (first to fifth centuries AD). In the *caldarium* of the baths at the House of Menander in Pompeii, there is a very interesting almost bichrome pavement, dated to the end of the first century BC, representing a swimmer and another person fishing with a trident (Maiuri, 1933, 146, figures 68-70). Swimmers also appear alongside dolphins, together with both realistic and fantastic fauna, in other bichrome mosaics on the Italic peninsula, such as that from Este, (first half of the first century AD), several pavements of marine *thiasos* at Ostia, the mosaic of the Baths of the Cisiari in Ostia (120 AD) and the Triumph of Neptune mosaic at Ostia (mid-third century) (Becatti, 1961, 26-27, 173-174, pl. CLXI-CLXII, CLXIV-CLXV). North African mosaic art also shows swimmers in the polychrome Nilotic mosaic from El Alia (above, p. 163), in this case a male and female swimmer; in the bichrome pavement of the Museum at Constantina (Algeria), second or third century (Ferdì, 1998, 175); in the above-mentioned Tunisian polychrome mosaics of Dionysios and the pirates of the Tyrrhenian Sea from Dougga, and finally from Sidi Abdallah with the portrayal of a coastal scene showing some buildings and a shore. Apart from the fishermen it is possible to see people swimming, one of them being swallowed by a large fish and others jumping into the sea from the cliffs. The image of the person being swallowed by a fish in the mosaic of Sidi Abdallah was used in Christian mosaic art to represent the biblical episode of Jonah being swallowed by a whale, twice represented on the pavement of the Basilica of Aquileia (Marcuzzi, 1993, 20-22).

To the upper left of the swimmers of Vega Baja de Toledo (figure 8), a quadrangular object can be seen. This is identified as an *ostriarium*, a floating oyster farm (López Monteagudo, 1993, 1251-1257, figures 3-4) of the type of those represented and identified by their name on the Puteolanean glass vessels produced at the end of the third and beginning of the fourth century and found at Populonia, Rome, Odemira, Ampurias and Prague, where the inscription *ostriaria* appearing over the installations leaves no doubt as to their use as oyster farms (García y Bellido, 1954, 212-226, figures 1-5). Real *cetareae* or *vivaria*, some of them devoted to the production of the famous *garum*, are documented in coastal towns of *Hispania*, such as Vilamoura, in the Portuguese Algarve, and also at *Baelo Claudia*, in the province of Cádiz (Arévalo & Bernal, 2007). Oyster nurseries and fish-ponds date back to the late second century BC, and are referred to by Pliny the Elder, Cicero and other authors. It seems to have been *Sergius Orata*, the owner of a *villa* at *Baiae* – whose *cognomen*, according to Varro, was taken from his favourite fish, the goldbream (*Sparus aurata*) – who began building *vivaria* around 108 BC, using the coastal lagoons of the Phlegrean Fields near Naples, in particular the Lucrine lake. Several politicians, among them *Licinius Murena* (whose *cognomen* was also related to a fish species) are known to have been involved in fish farming; Cicero maliciously referred to them as *piscinarii* (*Ad Att.* 1.19.6; 1.20.3).

However, the Romans of the *pars occidentalis* did not only know how to breed oysters, their favourite mollusc, and other fish species but also how to preserve the fish. In general this refers to exotic species brought from other part of the Empire, which were kept in fishponds to ensure their availability regardless of the season of the year good for fishing, since it is known that during winter navigation and fishing activities were suspended. It was therefore crucial to keep the fish alive so that they would always be available fresh, although they were also kept in brine as another type of preserve. According to Pliny the Elder (*N.H.* 9.171), the first person to organise a *vivarium* for morays was Gaius Lucilius Hirrus, a gentleman from Campania. His success was so great that he was able to provide six thousand of these for the public banquets organised by Caesar to celebrate his triumph in 45 BC. And although the golden age of the *vivaria* was between the end of the first century BC and the end of the first century AD – which is when fish figured among the most important elements of banquets, what Tacitus called the *luxus mensae* (*Ann.* 3.55) – fishponds continued to be used throughout the Empire until the start of the fifth century AD. They were built on rocky coastal zones; that is, protected but at the same time open to the sea currents so that the water would be replenished, as is done today. They were open pools, divided into sectors to separate the different species or different developmental stages of the fauna, and they were equipped with niches, sand, rocks and algae. In *Hispania*, there are marine examples of this type at Campello (Alicante). The first record of the existence of *vivaria* dates back to the third century BC (Varro 3.10; Columella 8.16) and Plautus was the first to use the technical name of *piscinae* to designate the *vivaria piscium* in lagoons, ponds and coastal lakes.

Live fish served not only to bring life to the ponds and pools of gardens; fish were also kept in tanks close to the *triclinia* or in large vessels, such as those found at Pompeii and its surroundings, decorated with fish motifs. On the Iberian peninsula, a tank or pool covered with *signinum* is conserved at the third-century House of the Jets in Conímbriga (Correia *et alii*, 1942, 115; Bairrão Oleiro, 1992, 19-20); this surrounds the head of the *oecus-triclinium* on its eastern side and has been interpreted by excavators as a type of fishpond, with the peculiar feature of amphorae built into its walls, used to keep the fish in while the pool was being cleaned (Correia *et alii*, 1942, 115; Bairrão Oleiro, 1992, 19-20). A similar arrangement is documented at a Gallo-Roman *villa* at Vaison-la-Romaine (Roland, 1958, 406-412). At the third-century Roman *villa* in Pisões near Beja, the floor of the basin in the *triclinium* – probably another fishpond and preserved *in situ* – is covered by a polychrome mosaic featuring fish, including a moray eel, a sea-bream, and a squid (Vargas Costa, 1985, 95-135, figure 9B and 14).

In these *piscinae* and *vivaria* – both fresh and saltwater – the live fish were “caught” directly by the owner of the house and his guests recreationally so that they could test their skills with the hook and line. This is because fishing, like hunting,



Figure 10. Neptune mosaic from Itálica (Seville). *In situ* (photo Junta de Andalucía).

was the remit of the important landowners who would enjoy catching fish either with a hook and line or with a lobster pot, as is done today with the fish and crustaceans in nurseries.

In Spain as in the rest of the Empire, some representations of fishing have a mythological content and those portrayed are not real persons, but *erotes*, *putti* and pygmies, fishing with nets or hooks. Among the older mosaics, two Nilotic bichrome examples from the second century AD are outstanding; they were found in Itálica (Santiponce) and both are connected with hydraulic installations (Blanco & Luzón, 1974, pl. IV, XII, XVIIIB, XVIIIA, XXA, XXIA; García y Bellido, 1979, 94-102, 132, figure 34, pl. XI). In the border of the Neptune mosaic, which paves the main hall of a domestic suite of baths and features a typical Alexandrine landscape, we see a pygmy (figure 9) fishing for eel or lamprey with a rod and line next to a typical fisherman's hut, similar to that portrayed in the Vega Baja de Toledo mosaic; he is wearing a hat and is holding a basket on his left arm; another two pygmies, mounted on two large aquatic birds, are harpooning a crocodile (figure 10). Copied from or inspired by the figures of the previous one, the Nilotic mosaic that paved a small fountain in the House of the Exedra, also preserved *in situ*, portrays a scene with pygmies, cranes and fish in typically nilotic surroundings, all around a large squid at the centre of the composition; a pygmy with a basket in his left hand is sitting fishing with a rod and



Figure 11. Nilotic mosaic from the House of the Exedra at Itálica. *In situ* (photo G. López Monteagudo).

hook; another one astride a crane is harpooning a dolphin (figure 11). Outside *Hispania*, the same theme of pygmies fishing is especially popular in mosaics from North Africa (Foucher, 1965, 137-146).

In the polychromatic pavement of the so-called House of Hippolytus in *Complutum* (Alcalá de Henares, Madrid), coming from what has been interpreted as the *frigidarium* of the *balneum* of the sumptuous residence of the family of the *Annii* and dated to the end of the third or beginning of the fourth century, there are three *putti* fishing with a large net from a *vegeia-* or *placida-*type vessel (figure 12). The vessel is at the centre of an aquatic scene (the water is indicated by straight, stepped, and zigzag lines) populated with numerous marine species, among which are molluscs, crustaceans, sea urchins, up to a total of 24; ten tunas, a swordfish, a grouper, three eels or morays, a shrimp or lobster, a sea urchin, two cuttlefish, two octopodes, while a dolphin, a lobster, and two tunas are trying to escape from the net (Rascón *et alii*, 1995-1997, 39-62; García Entero, 2004, 143-158, figures 4, 5 and 13; Rascón, 2007, 119-152).

Realistic scenes of net fishing being carried out by adults are very frequent in mosaic art, above all in North Africa and the Italic peninsula, and are always, as in *Complutum*, characterized by a sea crowded with marine species. Some examples have already been described, such as the mosaic from the triapsidal hall of the House of the Chariot of Venus at *Thuburbo Maius*, now in the Bardo Museum (above, p. 162). In this mosaic, there are several fishermen in a boat, one of them rowing and the others drawing a net full of fish from a sea teeming with ichthyic fauna, as at *Complutum*, although the closest parallel is probably the one at Sidi Abdallah, mentioned above, portraying a marine scene at whose centre there are four fishermen casting their net from a boat.

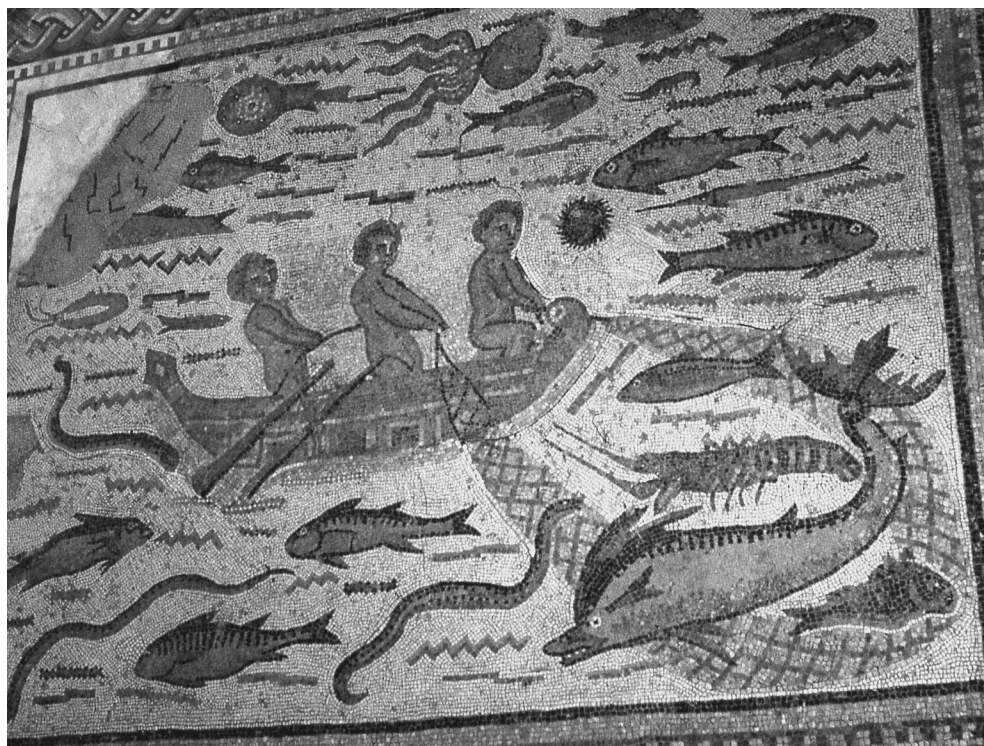


Figure 12. Mosaic from the House of Hippolytus, Complutum, Alcalá de Henares. In situ (photo G. López Monteagudo).

Outside *Hispania*, *erotes* and *putti* fishing with the different types of fishing gear described by ancient sources, generally in an aquatic environment filled with fish and other marine fauna, are very numerous, especially in North Africa and Italy; some of them have already been mentioned. In this connection, let us recall the mosaics of a pool in Sousse; the border of the Venus mosaic from Djemila; in Italy, the mosaics from Piazza Armerina and those of the Roman *villa* in Desenzano, also of the late Imperial period, with *erotes* fishing (Scagliarini Corlaita, 1992, 57, figures 28, 37-38). The same motifs persist in the art of the Paleo-Christian basilicas, such as that in Aquileia (Marcuzzi, 1993, 21, 23).

Recently, an extraordinary find has been made in the Roman *villa* at Noheda (Cuenca). This is a very large polychromatic pavement of 300m², which originally covered the floor of a triapsidal room, in which glass and gold *tesselae* were used. This has been dated to the end of the fourth century. The pavement, which is still being excavated, comprises three zones; the upper two are decorated with mythological scenes while the lower features fishing and pugilistic themes, an almost certain indication that this was the floor of a bath (Sarmiento, 2007, 56-62). In the upper panel, a Bacchic triumph is portrayed. The god is shown in the frontal position, drawn by two pairs of centaurs playing musical instruments; the central part

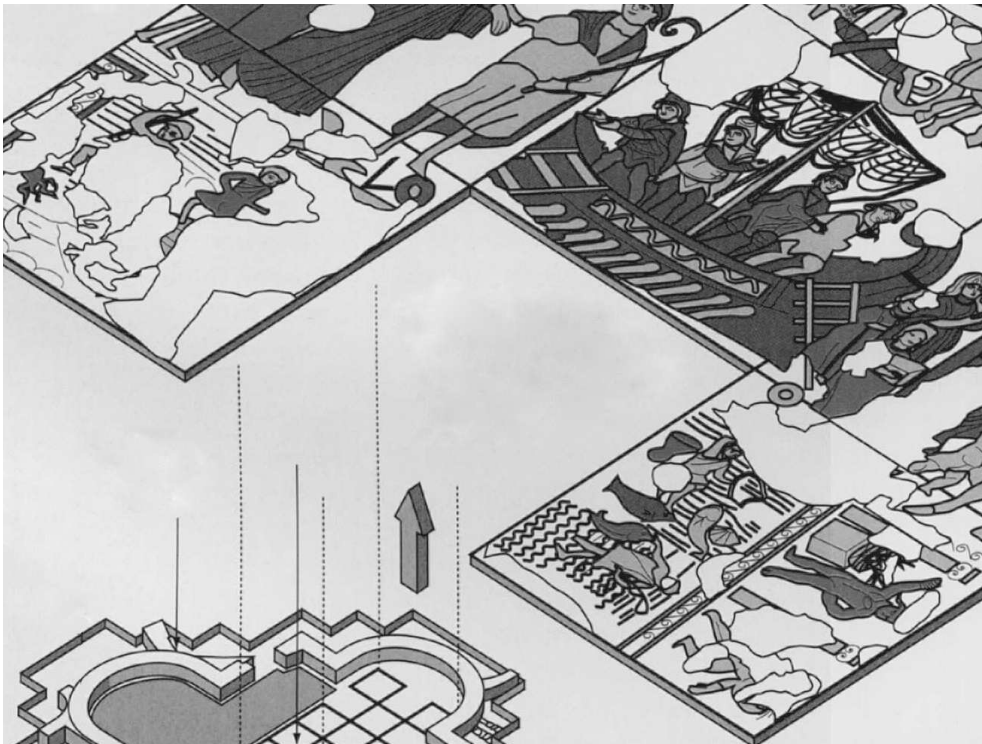


Figure 13. Fishing scenes of the Roman mosaic from Noheda (Cuenca). *In situ* (M. Sarmiento).

is decorated with two scenes, difficult to interpret, of a boat with the sails unfurled. The lower part comprises several panels, one depicting athletic games and the others containing different representations of fishing carried out by *putti* standing on a reef, each of them using a different type of fishing gear in a sea full of different marine species (figure 13). To one side, a *putto* is harpooning an octopus, while the other one must be casting a rod and line or a net. On the other side, a character seems to be using a round or conical casting-net, while the fourth, wearing a straw hat, in his right hand holds a large fish that he has caught with his rod, which he is holding in his left hand with the line and hook furled around it (figure 14). It is likely that in the central zone, which has still not been uncovered there will be an enclosure-net fishing scene.

The interplay between real and mythological themes and the combination of different types of fishing gear, seen in the Noheda mosaic, is common in North African mosaics, such as the above-mentioned Tunisian pavement of the House of Ulysses at Dougga, where the mythological episodes of Ulysses and the Sirens, and Dionysius and the pirates of the Tyrrhenian Sea, are intermingled with real-life fishing scenes. However, the closest parallels for the fishing scenes of the Noheda mosaic can be found in some Algerian pavements of the same period from Kamissa and Djemila, in which fishing scenes are likewise inserted into mythological themes, in par-

ticular those of the Triumph of the Sea Venus, suggesting a relationship between the Goddess and the economic activities of fishing.

The fishing scenes from Kamissa, preserved at the Museum of Guelma, form part of a mosaic with the theme of the Triumph of the Sea Venus, dated to the third-fourth centuries AD. These are of great interest because they show the use of different types of fishing gear by young, blond, naked fishermen in a sea brimming with all types of fish: one has just caught (with a rod) a large fish; another is harpooning a squid with a trident and holds a lobster pot in his left hand; the third one, standing up on the goddess' shell, is about to cast a round net. The last one, resting on a rock, is hauling in a net full of fish that he has closed by pulling on the drawstring (Lassus, 1965, 175-192, figure 4; Ferdi, 1998, 140-141).

Similar scenes are found in the border of the above-mentioned representation of the Triumph of the Sea Venus from Djemila. A fisherman is about to draw a net full of fish into his boat, which is close to capsizing; nearby, another fisherman, standing on a rock, is using a harpoon to spear a large fish, out of which streams of blood gush very realistically; in other scenes, *putti* are angling with rods and lines from a boat and from a reef.

Finally, Hispano-Roman mosaic art shows fishing with the different types of fishing gear used at the time and also, interestingly, the result of the consumption of fish. A fish skeleton is represented in the top right corner of the lower panel of the mosaic of Venus and Eros in the House of the Amphitheatre at Mérida (*Emerita*), with a third-century scene of grape picking – the result of a restoration carried out in antiquity (CMRE I, 1978, no. 39, pl. 72-74)² (figure 15). In terms of imagery, the fish skeleton is comparable to those appearing in the so-called “unswept room” (*asarotos oikos*) mosaics, of which a good example is the *Heraclitus* mosaic conserved in the Vatican Museums (Andreae, 2003, 46-51, figure 49), a copy of the mosaic of Sosos in Pergamon mentioned by Pliny (*N.H.* 26.184). Fish skeletons also appear in a mosaic from *Aquileia* of the first century BC (Cuscito, 1989, figure 54), in the Tunisian *asarotos oikos* pavements from Oudna, towards the end of the first century or the beginning of the second (Yacoub, 1995, 99-100, figure 38), and in the House of Months at El Djem from the first half third century, contemporary with the Mérida mosaic (Foucher, 1961, 291-97, pl. XI-XVIII).

Through the images provided by Roman mosaics it may be observed that in Roman art fishing did not have same the aristocratic connotations as hunting, enjoyed by kings and the privileged classes, rich urban *villa* owners and wealthy farmers – even though we know from the sources available that these also fished for sport and exer-

² I am grateful to Ms Mary Paz Pérez, a restorer at the Institute of Archaeology of the Consortium of the City of Mérida, for these observations and the photo.



Figure 14. Mosaic from Nobeda (Cuenca). Putto angling with a rod. In situ (photo M. Sarmiento).



Figure 15. Venus mosaic from the House of the Amphitheatre at Augusta Emerita, Mérida. Fish skeleton. *In situ* (photo M.P. Pérez).

cise. However, the fishing images that appear in Roman mosaics do not represent a recreational activity confined to members of the elite, who in hunting scenes are shown ostentatiously attired, mounted on richly bridled horses; instead, those using the different types of fishing gear are clearly no more than fishermen, as we see from their clothes. They were humble people, dressed in short tunics and wearing *peta-soi* or conical hats, to protect themselves from the sun. Despite all this, the large number of fishing scenes and marine fauna represented in the mosaics, together with the amount and variety of fish depicted; the fact that they use mythological persons or episodes (Oceanus, Tethys, Venus, Europe, marine thiasos, etc) in order to introduce scenes of fishing from daily life, everyday images, realistic scenes, along with unreal figures such as *erotes*, *putti*, and pygmies fishing. The pictures of *xenia*, in which images of fish and oysters are shown together with animals and products of the land, the processing of marine products and their commercialization indicate the huge importance of fishing in Roman culture and in the diet of classical times, thereby highlighting one of the key sectors of the Roman economy.

Regarding *Hispania*, although mosaics devoted to fishing are not very widespread in Roman mosaic art, especially when compared with North Africa, the large number of mosaics related to fishing itself (even though on occasions the per-

sons fishing are *erotes*, *putti*, or pygmies, and not real people) and also the many mosaics depicting fish, either as a main or secondary motif, in realistic scenes, as motifs of *xenia* or in mythological contexts, is a clue suggesting that we should not overlook the importance of fishing and the consumption of fish and sea food in Roman *Hispania* and also confirming that the Hispanic pavements formed part of the artistic *koinê* comprising Roman mosaic art throughout the Empire, both in the *pars occidentalis* and the *pars orientalis*.

Bibliography

Abbreviations

AA	Antiquités Africaines.
AAE	Arabian Archaeology and Epigraphy.
ABeja	Arquivo de Beja: Boletim da Câmara Municipal.
AEspA	Archivo Español de Arqueología.
AJ	The Antiquaries Journal.
AJA	American Journal of Archaeology.
AJPh	American Journal of Philology.
AMM	Archaeologia Maritima Mediterranea, An International Journal on Underwater Archaeology.
ANSER	Ancient Sea Routes (Anciennes Routes Maritimes Méditerranéennes), Programme Interreg IIIB Medocc.
AntO	Antiguo Oriente.
AR	L'Africa romana.
ASubacq	Archeologia subacquea. Documenti, studi e ricerche.
BAM	Bulletin d'Archéologie Marocaine.
BAR (IS)	British Archaeological Reports, International Series.
BIFAO	Bulletin de l'Institut Français d'Archéologie Orientale du Caire.
BPH	Bibliotheca Praehistorica Hispana.
BSR	British School at Rome.
C&M	Classica et Mediaevalia.
CAS	Cahiers d'Arqueologie Subaquatique.
CASC	Centre d'Arqueologia Subaquàtica de Catalunya.
CASCV	Centro de Arqueología Subacuática de la Comunidad Valenciana.

ANCIENT NETS AND FISHING GEAR

CC	Cahiers Corsica, publiés par la Federation d'Associations et Groupements pour les études corses.
CIETA	Centre International d'Études des Textiles Anciennes.
CIL	Corpus Inscriptionum Latinarum.
CJ	The Classical Journal.
CJFAR	Canadian Journal of Fisheries and Aquatic Research.
CMGR	Colloque sur la Mosaïque Gréco-Romaine.
CMRE	Corpus de Mosaicos Romanos de España.
CMRP	Corpus dos Mosaicos Romanos de Portugal.
CMT	Corpus de Mosaïques de Tunisie.
CoML	Census of Marine Life.
CPh	Classical Philology.
CQ	The Classical Quarterly.
CRAI	Comptes-Rendus de l'Academie des Inscriptions et Belles Lettres.
CSIC	Consejo Superior de Investigaciones Científicas.
DRASSM	Département des Recherches Archéologiques Subaquatiques et Sous-marines.
DS	C. Daremberg and E. Saglio, Dictionnaire des Antiquités Grecques et Romaines, Paris 1873-1919.
GGM	Carolus Mullerus (ed.), Geographi Graeci Minores, Paris 1855-1861.
HMAP	History of Marine Animal Populations.
ICAZ	International Council for Archaeozoology.
ICCAT	International Commission for the Conservation of Atlantic Tuna.
ICES	International Council for the Exploration of the Sea.
IEJ	Israel Exploration Journal.
IGR	Inscriptiones Graecae ad Res Romanas Pertinentes.
IGSK	Inschriften Griechischer Städte aus Kleinasien (= IK).
IJNA	International Journal of Nautical Archaeology.
ILS	Inscriptiones Latinae Selectae.
INA	Institute of Nautical Archaeology.
INRH	Institut National de Recherche Halieutique.
JAS	Journal of Archaeological Science.
JEA	Journal of Egyptian Archaeology.
JRA	Journal of Roman Archaeology.
JRS	Journal of Roman Studies.
KLNM	Kulturhistorisk Leksikon for Nordisk Middelalder.
Lattara	Lattara: Mélanges d'Histoire et d'Archéologie de Lattes.
LIMC	Lexicon Iconographicum Mythologiae Classicae.
MARQ	Museo Arqueológico de Alicante.
MEFRA	Melanges de l'École Française à Rome. Antiquité.

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- MEFRM Melanges de l'École Française à Rome. Moyen-Age.
MM Madrider Mitteilungen.
NESAT North European Symposium for Archaeological Textiles.
NIMA National Imagery and Mapping Agency, Bethesda, MD.
NJZ Netherlands Journal of Zoology.
Paléorient Paléorient: Revue Interdisciplinaire de Préhistoire et Protohistoire de l'Asie du Sud-Ouest.
P. Oxy The Oxyrhynchus Papyri.
Praktika Praktika tis en Athenais Archaïologikis Etaireias.
RE Pauly-Wissowa-Kroll, Real-Encyclopaedie der klassischen Altertumswissenschaft.
REA Revue des Études Anciennes.
RLR Revue des Langues Romanes.
Saguntum Saguntum: Papeles del Laboratorio de Arqueología de Valencia.
SF Statens Fiskeredskapsimport.
SFECAG Société Française d'Étude de la Céramique Antique en Gaule.
SURVAS Synthesis and Upscaling of sea-level Rise Vulnerability Assessment Studies.
TopOO Topoi Orient-Occident.
ZSAK Zeitschrift für Schweizerische Archäologie und Kunstgeschichte (Revue Suisse d'Art et d'Archéologie).

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