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## Ancient fishing in the Black Sea Region

«....Κήτεά τε μεγάλα ἀνάκανθα,

τα ἀντακαίους καλέουσι, παρέχεται ἐς ταρίχευσιν, ἄλλα τε πολλά θωμάσαι ἄξια...»<sup>1</sup> (Herodotus, *Historiae*, 4.53.2)

## 1. Introduction

Greeks and Romans, rich or poor, were obsessed with food. For most people, life was a perpetual struggle for survival. Among the well-off minority, they have developed an elaborate *haute cuisine* and in reaction, a rhetoric (and in certain contexts, a practice) of rejection or continence, in the service of politics, morality, philosophy, religion or health. In addition, food is at once nutrition, needed by the body for its survival and cultural object, with various non-food uses and accusations.

Historians and archaeologists have long been interested in the material aspects of food in classical antiquity. They have traced the origins, diffusion and evolution of particular foodstuffs and catalogued and discussed what was eaten, from where it came, how it was produced and how it was cooked.

In Graeco-Roman society, food was a marker of ethnic cultural difference. In the literature from antiquity, Greeks were differentiated from barbarians, urbandwellers from rustics, farmers from nomads, and so on, in terms of the food they ate, amongst other things. Furthermore, food reflected the vertical social and economic distinction between rich and poor. Greater purchasing power gave access to foods of superior quality and quantity and of wider range.

Additionally, the appreciation of food in ancient Greece and Rome – by those who had the time and money – marks the beginning of what is known today as gastronomy. Ancient Greeks believed that good health was dependent on maintaining the balance of the body's four "humors"—black bile, yellow bile, phlegm and blood—and that modifications in diet could restore balance if levels got out of whack. Hippocrates, Plutarch and other thinkers have written books on the relationship between food and health, including Galen's *On the Power of Foods*, a title that sounds like it could have been written last year.

In Greek terms any proper meal had three components, *sitos* (the staple: wheat bread or barley mash or one of the pulses), *opson* (the relish: fish, vegetable, cheese, or just olive oil) and *oinos* (wine, the universal drink). Moreover, in the Classical period, the fifth and fourth centuries B.C., Greeks ate two meals a day: a *lighter ariston* (break-fast) late in the morning and a fuller (dinner) in the evening. Dinner was a more serious matter and might well be followed by a *symposion* 

<sup>&</sup>lt;sup>1</sup> Perseus Digital Library, accessed on 17 January 2021,

http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0125%3Abook%3D4%3 Achapter%3D53%3Asection%3D2



(symposium, drinking party). A whole symposion in each detail is recorded in Plato's Symposium<sup>2</sup>.

#### 2. Sources for Production of Greek and Roman Processed Fish

To begin with, for the ancient world, much of our information on fish in general is derived mainly from three types of sources:

i. Literally references

ii. Archaeological remains of salting installation

Based on the above, of particular importance are the gastronomical works, such as the *Hedupatheia* of Archestratos ( $4^{th}$  c.B.C), the *De re coquinaria* of Apicius ( $1^{st}$  c. A.D.) and the *Deipnosophistai* of Athenaios (around 200 A.D.), which relay information on what fish product were eaten and how they were prepared. Moreover, references to fish products come from drama, both comedy and tragedy, such as the extant works of Aristophanes, Plautus and from Athenaios who preserves extracts from the works of many Greek dramatists, such as Nikostratos, whose works no longer exists. They also, come from the epigrams of Martial, the satires of Horace and ancient scholia (Curtis, 1991: 40-41).

What is more, they came especially from medical and veterinary treatises, such as those of Galen, Oribasios, Xenokrates and Pelogonius, from the agricultural manuals of Cato, Varro, Columella and Cassianus Bassus and from the encyclopaedias of Pliny the Elder and Isidore of Seville.

Recipes for making fish sauce, however, are most numerous and come from different periods. The earliest descriptions are the Historia Naturalis  $(31.93-95^3)$  of Pliny the Elder and into the Astronomicon  $(5.656-681^4)$  of Manilios, both of the 1<sup>st</sup> c.A.D. Two recipes of the 3<sup>rd</sup> c. A.D. are found in works attributed to someone else. These include the preparations of Ps- Rufius Festus and of Ps- Gargilius Martialis.

Furthermore, literally sources can tell us how the ancients prepared fish products and often indicate where they were produced, while archaeology, by revealing the physical remains of the installations themselves, can confirm these locations and disclose others. It has been claimed, that ancient sea fishing technology was inherently inefficient, but starting from the most important literally source the *Halieutika* of Oppian ( $2^{nd}$  c. A.D.). In fact, Tønnes Bekker-Nielsen demonstrates that the ancient fishing gear was sufficiently advanced to produce sizeable catches of fish for salting or sauce production.

Based on this theory, the most important constraint on the further expansion of the ancient fishing sector, was the inability to conserve fish for any length of time, a constraint that could be partly overcome by drying, smoking or salting fish, or by converting them into fish sauce, the famous Garum or Liquamen<sup>5</sup>.

<sup>3</sup> Lacus Curtius. Into the Roman World, accessed on 17 January 2021,

<sup>&</sup>lt;sup>2</sup> http://www.enotes.com/food-encyclopedia/greece-ancient, accessed on January 16, 2021

https://penelope.uchicago.edu/Thayer/L/Roman/Texts/Pliny\_the\_Elder/31\*.html

<sup>&</sup>lt;sup>4</sup> The Latin Library, accessed on 24 January 2021, https://www.thelatinlibrary.com/manilius5.html <sup>5</sup> Garum is made in this way. The entrails of fish are placed in a vat and salted. Also they were used whole small fish, especially smelts, or tiny mullets, or small sprats, or anchovies or whatever small fish was available. Salt the whole mixture and place it in the sun. After it has aged in the heat, the garum is extracted in the following manner. A long thickly woven basket Is placed in the vat full of the above-mentioned fish. The garum enters the basket, and the so-called liquamen is thus strained through the basket and retrieved; Civitello, *Cuisine and culture: a history of food and people*, 42;

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Very important to mention is that, approximately one pint of garum cost the same as one pound of pork, lamb, goat, or second-quality fish, and twice as much as a pound beef. The expensive meats were chicken- one-pound cost five times as much as one pint of garum- and goose, which cost more than sixteen times as much (Civitello, 2008: 42).

To continue with, the second category of sources for production of fish products are the numerous remains of salting installations discovered by archaeological excavations conducted mainly in Western Mediterranean and Black Sea regions. As far as it concerns, ancient fishing in Black Sea, extensive excavations in the northern part of the Black Sea, especially in the Crimea at Chersonesos and along the Strait of Kerch at Tyritake and Myrmekion, have unearthed many wellpreserved salting installations.

Unfortunately, these installations are little known outside of Eastern Europe. Indeed, though strongly hinted at, in literary and epigraphic sources salting installations in the Greek East have, generally, yet to be discovered. Although fish salting may have operated in the Black Seas early as the 7<sup>th</sup> c. B.C. but certainly no later than the 5<sup>th</sup> c. B.C. archaeological excavations have yet to prove it.

# **3.** The Archaeological Evidence for Fish Processing in the Black Sea Region **3.1.** Ancient Scholars

The archaeological evidence for fish processing in the Black Sea region in the Greek and Roman period is a vast topic covering finds at a large number of sites and with interconnections to several other related issues. The literature is extensive, scattered but it is available to everyone.

The main reason that fishing processing in Black Sea region has been developed were the numerous and large rivers of the area allowed inhabitants both fishing to live and for trade purposes. This issue can be confirmed with the *The Histories* of Herodotus (4.48.1,3) «... <u>Τστρος μέν, ἐων μέγιστος ποταμῶν πάντων τῶν</u> <u>ήμεῖς ἴδμεν</u> ... <u>δὲ δεύτερος λεχθεὶς Τιάραντος πρὸς ἑσπέρης τε μᾶλλον καὶ ἐλάσσων, ὁ δὲ δὴ Ἄραρός τε καὶ ὁ Νάπαρις καὶ ὁ Ὀρδησσὸς καὶ μέσου τούτων ἰόντες ἑσβάλλουσι ἐς τὸν Ἱστρον»<sup>6</sup>.</u>

Furthermore, another seven rivers (Tyras, Hypanis, Borysthenes, Pantikapeon, Hypakris, Terros and Tanays) strengthen the Black Sea with tones of fish. What is more, almost all ancient scholars mention that Borysthenes river is the most productive; «... τέταρτος δὲ Βορυσθένης ποταμός, ὃς ἐστί τε μέγιστος μετὰ Ἱστρον... τῶν δὲ λοιπῶν Βορυσθένης ἐστὶ πολυαρκέστατος, ὃς νομάς τε καλλίστας καὶ εὐκομιδεστάτας κτήνεσι παρέχεται ἰχθύας τε ἀρίστους διακριδὸν καὶ πλείστους, πίνεσθαι τε ἥδιστος ἐστί...» (Herodotus.Hist.4.53.1-2<sup>7</sup>). It provides the finest and best-

Archaeological sites in southern Spain and around Black Sea regions, confirming the existence of craft to produce garum as early as 8<sup>th</sup> c. B.C.: Dalby and Grainger, *The classical cookbook*, 68-70. <sup>6</sup>Perseus Digital Library, accessed on 17 January 2021,

http://www.perseus.tufts.edu/hopper/text?doc=Hdt.+4.48&fromdoc=Perseus%3Atext%3A1999.01.012 5 and Perseus Digital Library, accessed on 17 January 2021,

http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0125%3Abook%3D4%3 Achapter%3D48%3Asection%3D3

<sup>&</sup>lt;sup>7</sup> Perseus Digital Library, accessed on 17 january 2021,

http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0125%3Abook%3D4%3 Achapter%3D53%3Asection%3D2

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nurturing pasture lands for beasts, and the fish in it are beyond all in their excellence and abundance. Its water is most sweet to drink, flowing with a clear current, whereas the other rivers are turbid. There is excellent soil on its banks and very rich grass where the land is not planted.

In addition to this, Scymnus from Chios (as reported *Periigeses*) and Arrianus (as reported Periplus of Euxeinus Pontus) have mentioned that Tyras river gives lots fishes for trade processing. More specific writes Scymnus: « ... Ό ποταμός Τύρας βαθύς τ'ών εύβοτός τε ταῖς νομαῖς, τῶν ἰχθύων διάθεσιν ἐμπόροις ἒχων...»<sup>8</sup>.

As we have already mentioned, inhabitants used fish not only for their diet but also for trade processing. This can easily be proved by the *Geography* of Strabo "... Τής δὲ χερσονήσου, πλὴν τῆς ὀρεινῆς τῆς ἐπὶ τῆ θαλάττῃ μέχρι Θεοδοσίας... κἂν τοῖς πρόσθεν χρόνοις ἐντεῦθεν ἦν τά σιτοπομπεῖα τοῖς Ἔλλησι, καθάπερ ἐκ τῆς λίμνης αἰ ταριχεῖαι ..."<sup>9</sup>.

Finally, once again, *Geography* of Strabo, offers us information about the fish species of the commercial importance in the Black Sea region «...<u>ἄπασα δ'</u> ή χώρα δυσχείμερός ἐστι μέχρι τῶν ἐπὶ θαλάττη τόπων τῶν μεταξὺ Βορυσθένους ... ὀρυκτοί τέ εἰσιν ἰχθύες οἱ ἀποληφθέντες ἐν τῷ κρυστάλλῳ τῆ προσαγορευομένη γαγγάμη, καὶ μάλιστα οἱ ἀντακαῖοι, δελφῖσι πάρισοι τὸ μέγεθος» (Figure.1).



Fig. 6. Main Black Sea fish species of commercial importance. 1) Beluga, Huso huso;
2) Russian sturgeon, Acipenser gueldenstaedtii; 3) Starry sturgeon/seoryuga, Acipenser stellatus; 4) Fringebarbel sturgeon, Acipenser nuthenus;
6) Turbot, Rhombus maeoticus; 7) Pontic shad, Alosa pontica; 8) Flathead mullet, Mugil cephalus; 9) Golden grey mullet, Liza aurata; 10) Leaping mullet, Liza saliens; 11)
Atlantic mackerel, Scomber scombrus; 12) Black Sea anchovy, Engraulis encrasicolus.
(1, 4-8, 10-11: after http://www.internevod.com/rus/academy/bio/opr; 2-3, 9, 12: after http://www.fishbase.org).

<sup>&</sup>lt;sup>8</sup> Scymni Chii, Periegesis quae supersunt, accessed on 17 January 2021, https://books.google.nl/books?id=V0Q-

 $<sup>\</sup>label{eq:alpha} AAAAcAAJ&pg=PA50&lpg=PA50&dq=O+\pi ota\mu octop to the transformation of transformation of the transformation of transformation of the transformation of transformation of transformation of transformation of the transformation of transf$ 

<sup>&</sup>lt;sup>9</sup> Strabo, Geography.7.4.1: Perseus Digital Library, accessed on 17 January 2021,

http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0197%3Abook%3D7%3 Achapter%3D4%3Asection%3D1



# **3.2.** Types of Archaeological evidence

There exists a wide variety of archaeological evidence that relates to commercial fishing and fish processing. It can be grouped comprehensively in the following manner:

i. Fishing equipment (net weights, floaters, sinkers, hooks, wrecked fishing vessels, tools for making and repairing nets and the nets and fish traps themselves)

- ii. Watchtowers
- iii. Fish remains (bones, scales)

# 3.2.1. Fishing equipment

Practically, at all sites along the northern coast of the Black Sea, fishing equipment has been reported dating from throughout their entire existence. Particularly, frequent are net weights, both lighter ones of clay or lead for throwing nets, heavier ones of regularly shaped stones for dragging nets (*Figure.2.*) and sinkers of larger stones or even amphora handles used for the same reason.



*Figure 1*. Net weights from Elizavetovka. Left stone weights, right clay weights (after Marčenko, Zitnikov & Kopylov 2000).

Less common are hooks (*Figure.3*), harpoons, and equipment for making and repairing nets: for example, bone and bronze needles (*Figure.4*). In addition to this, nets, fish traps and floaters for keeping the nets afloat, have normally not survived, due to poor preservation conditions. We do, however, have a few sculptural representations of these types equipment. An example from the Black Sea Region, a terracotta from Kepoi, represents a resting fisherman, with a basket for fishing at his feet.



Figure 2. Bronze hook from Panskoe I/U7 in čornomors'ke Museum.

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*Figure 3.* Bone needles for repairing nets from Elizavetovka (after Marčenko, Zitnikov & Kopylov 2000).

The problem with using fishing equipment to calculate the scale of the activity is of course the need to determinate what type and what amount of equipment needs to be present for archaeologists to calculate that the fishing carried out did not merely supply a local market for immediate consumption, but was geared to large scale production and export. At Porthmion at the entrance of the Kimmerian Bosporos for example, hooks and net weights of the 3<sup>rd</sup> to 1<sup>st</sup> c. B.C are found in great numbers but this is not sufficient evidence.

A further factor to be considered is the strategy adopted by the fishermen. Ordinarily, most fishers in smaller villages may have had fishing as a part time occupation to supply the local market, but in the event of an exceptionally good catch, or in periods of migrating schools of fish, they might have delivered the catch at the nearest salting facility for processing and export.

Nearer to the larger center, where the demand of fresh fish was greater and where fish processing on a larger scale took place, fishing probably often constituted a full-time occupation, and the investment in equipment was consequently greater. Boats in particular would require a substantial turnover to give a return on the investment. So far, no wrecked fishing vessels have been found to compare with the well-preserved boat recovered at Portus which, as evidence by a built-in well box, clearly fulfill a demand for fresh fish (Højte, 2003: 134-157).

#### 3.2.2. Watchtowers

Watchtowers or lookout posts, known from literally sources belong to the category of potential evidence, since none have yet been identified. They evidently served to give advance warning when schools of migratory fish were approaching. Strabo informs us that even in his era, the Klazomenians had a watchtower on the sea of Azov. As for the southern shore of the Black Sea, we hear about certain places where shoals of fish, particularly tunny, were caught on a regular basis.

Once more, Strabo mentions Trapezous, Pharmakeia and Sinope as the main fishing grounds ( $\pi\eta\lambda\alpha\mu\nu\delta\epsilon$ iov) and Athenaios cites Euthydemos for calling Byzantion

"the mother of tunny". The ammount of fish caught during migration would clearly exceed the quantity that could be consumed locally in a fresh condition, thus some form of preservation would be required ( $\Gamma \epsilon \omega \rho \gamma i \alpha \delta \eta \varsigma$ , 1998: 28).

# 3.2.3. Osseous remains and scales

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Osseous remains and scales constitute a very large and interesting group of archaeological evidence. By determining the size and age of the fish, it is furthermore possible to obtain valuable data about the intensity of exploitation of the resource and possibly the mode of fishing. As far as the actual quantity of fish caught is concerned, the evidence is much more problematic.

The problem is, however, to determine the amount of unrecovered osseous material from any given processing site. Bones could be removed for a variety of reasons. Firstly, they could be collected and disposed of elsewhere, possibly as fertilizer or they could be removed by animals.

Far more importantly, the bones could be exported along with processed fish. A good example of this, is the wreck recently discovered off Varna in Bulgaria, from which a Sinopean amphora was recovered. This had held large chunks of salted catfish, of which only the bones now remain. Since only one amphora was retrieved from the wreck, it should be stressed that we do not know yet whether it is representative of the whole cargo.

Additionally, one of the most comprehensive studies of the ichthyofauna in the Black Sea area in antiquity, concerns the fish bones of Olbia and Berezan in the Dnieper (Borysthenes) and Bug (Hypanis) estuary. What is more, these waters were important fishing grounds from early times is hinted at by Herodotus, who praised the sturgeon of the Borysthenes, which he says was salted. It has even been suggested that fishing was indeed one of the principal reasons for settling in this area in the 7<sup>th</sup> c B. Based on this, N.V. Ivanova has examined nearly 6,500 bones from these locations. In all 19 species of five families were identified, with the evidence from Olbia showing the greatest variety. This fact can be proved also with an inscription that shows the extinct of a fishmarket at Olbia "...ἕτι δὲ τοῦ πλείστου μέρους τοῦ πρὸς τὸμ ποτ[α]μὸν τῆς πόλεως ἀτειχίστου ὄντος, τοῦ τε κατ[à]τὸν λιμένα παντὸς καὶ τοῦ κατὰ τὸ πρότερ[ον]ὑπάρχον <u>ἰχθυοπώλιον</u>, ἕως οὖ ὁ ἥρως ὁ Σωσίας..." (IG<sup>2</sup>, 32,Olbia, 3<sup>rd</sup> c B.C.) (Latyschev, 1965: 80-82).

At Berezan 13 species were represented, all of them present at Olbia also. The most striking fact the data reveals seems to be the clear dominance of very large fish: sturgeon, pike and catfish while smaller fish are under-represented throughout the period. Unfortunately many of these species are extinct due to modern industrialized fishing techniques.

## 3.3. Fish processing facilities

To begin with, the remains of the processing facilities for salted fish products, are the most prominent of the archaeological evidence. These consists normally of a series of vats built up or hollowed into the rock, lined with walls and finally waterproofed with *opus signinum* containing a high content of crushed ceramic material giving them a reddish colour. Storage and work facilities are usually found in connection with these vats also.



# 3.3.1. Elizavetovka

The Elizavetovka Settlement, southeast of Tanais has been excavated by Russian archaeologists since the 1940s but has only undergone proper publication. The excavation reveals that fishing played an important role in the economy of the settlement. Moreover, in some areas of the site, large plots were covered with up to 20 cm thick layers of compressed fish bones and in the periphery of the settlement refuse pits filled with scales and bones have been uncovered.

To continue with, in the  $4^{th}$  and  $3^{rd}$  c. B.C. with the growing Hellenization, however, there was a fishing boom. The excavators believe that the amount of fish caught as early as in the first half of the  $4^{th}$  c. B.C already exceeded local consumption and from that point onwards, fish must have been one of the foremost export goods. Although, no tanks for salting fish have been found at Elizavetovka Settlement but instead, the excavators have uncovered what may have been a smokecuring installation that it was situated in the northern section of the settlement in an area with a large amount of fish bones.

# 3.3.2. Tyritake

The most thoroughly studied fish processing installations are those at Tyritake 11 km south of Pantikapaion, excavated by Gajdukevič from the 1930s to the 1950s. A total of 57 salting vats were uncovered in the southern and eastern part of the city. Surprisingly, all the installations lay within the city wall (*Figure.5*). The vats are of rectangular shape and partly hewn out of the rock.

In addition to this, depths range between 1.50 and 2.00m with a few up to a depth of 3m. The vats are all grouped in small production units. Three to six vats seem to be the common size. Typically the vats are in a single row or in two rows of two or three. The largest processing complex in Tyritake, situated by itself in the area just the southern wall, had 16 vats, four by four, of regular size, giving a total capacity of more than  $155\text{m}^3$  (*Figure. 6*).

Moreover, vats have turned up in several of the excavated sectors, but it is particularly in sector XIII in the eastern part of the city that a high concentration was observed. Here, no less than six individual installations were situated and fish processing seems to have been the only activity in this sector during the first three centuries of this era (*Figure.7*). The total capacity of the known installations in Tyritake has been calculated to  $457\text{m}^3$  and they could process up to 365 metric tons of fish simultaneously.



*Figure 5.* Plan of Tyritake showing the location of the salting vats (after Gajdukevič 1952).



*Figure. 6.* The largest salting installation with originally 16 vats located just inside the southern wall. The vats had a capacity of  $155m^3$  (courtesy of the Photo Archives of IIMK RAN).



*Figure.* 7. Plan of sector XIII in Tyritake where a high consentration of salting vats was found (after Gajdukevič 1971).

#### 3.3.3. Myrmekion

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Another single fish installation dating to the  $2^{nd} - 3^{rd}$  c. A.D is situated in Myrmekion, a short distance to the east of Pantikapaion and was again excavated by Gajdukevič. This installation, consists of eight vats in two rows of four, each 3.00x2.70x1.80m with a total capacity of about 116m3, accompanied by a storage room with a number of large *pithoi* (*Figure.8*).

What is more, the construction of the vats is similar to those at Tyritake, but finds in the vicinity help to shed further light on the production process. The large flat limestone slabs recovered may have been used to press down the fish into the salt solution (*Figure.9*). Only a relatively small area of the town has been excavated so it is quite possible that further excavation would reveal more installations.





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*Figure 8.* Salting unit in Myrmekion with a capacity of 116m<sup>3</sup> (courtesy of the Photo Archives of IIMK RAN).



*Figure 9.* Finds from the vicinity of the vats in Myrmekion. Note the tiles that may have belonged to a protective roof, and the limestone blocks that were used to press down the fish during processing (courtesy of the Photo Archives of IIMK RAN).

## 3.3.4. Chersonesos

Lastly, the city with the largest known capacity for fish processing was Chersonesos. The installations have not, however, received quite the same thorough attention as those in Tyritake. An exception is a house in block XV-XVI in the northern central part of the town where a Hellenistic house in the first century AD was turned into a small fish processing facility.

According to Kadeev, there are about 90 salting vats of all periods, predominantly in the harbor area, with a total volume of some 2000 cubic metres. Additionally, the facilities in Chersonesos show a number of peculiarities. Firstly, they tend not be organized in larger units, but rather appear solitary or in groups of two or three at the most in what seem to be private houses.

The individual vats also, tend to be larger than those of Tyritake, particularly as regards their depth: 3m or more does not seem to be unusual. Many of the vats are hewn out of the rock, lined with stones and finally waterproofed with opus signinum as at Tyritake. Closing, the vats there are nearly always storerooms containing several *pithoi* (Fig.14). The ceramic evidence points to a construction date in the 1<sup>st</sup> to 2<sup>nd</sup> c A.D for most of the installations and production probably continued throughout antiquity (Højte, 2003: 134-157).

## 4. Fish and Money: Numismatic Evidence for Black Sea Fishing

Human beings, have not only associated the word "fish" with food, but also, to a very great degree, with a marketable commodity linked with money. The sporadic

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appearance of fish on coins, or as a coin type all around the Greek world, would also suggest that we are not dealing with a fortuitous phenomenon.

As far as it concerns the ancient Black Sea, where the written sources on economic conditions in general and fishery in particular are often very scarce, the numismatic data may provide an additional piece of evidence. It is generally accepted that in Archaic and Classical

Time, the typology of the Greek coins was chiefly of a religious character, which it maintained right into the early Hellenistic period.

Despite this fact, there is a fairly large group of types related one way or another to the local recourses that secured a reputation or prosperity for the specific city or entire region. Our aim is to focus on the fish numismatic evidence of the Black Sea that is geographically organized, starting from the north-western corner and following its shores clock-wise.

#### 4.1. North-Western Corner (Karkinitis, Chersonesos, Pantikapaion)

To begin with, Karkinitian coins, revealing a fish as a main type are not numerous. It is not long ago, that as a result of excavations of 1980 to 1982 in Eupatoria, they were introduced to the scientific world. All the specimens are bronze and made in the cast technique.

What is the most interesting; this peculiarity strongly indicates the influence from the neighboring city of Olvia, where this distinctive technique, foreign to the Greek world as such, was employed from the  $6^{th}$  c. B.C onwards.

According to shape they may be divided into two main groups. The figured cast specimens in the shape of fish constitute the first of these groups. In fact, only one side of the casts represents the fish in relief, while the other having a long horizontal rib resembles rather an arrowhead. The second group is round in shape and consists of two denominations showing a fish on the observe and an abbreviated city-ethnic KA or K on the reverse (*Figures.10.1-5*).

Based on the above, Kutajsov, who first published and attributed these coins, considered the obverse of the last group to be a representation of a dolphin or, as he suggested later, one of the sturgeon types. However, the dolphin, it seems, has the least chance of being among the candidates here.

Furthermore, the type of coins of Chersonesos, is represented in two metals, which apparently were stuck contemporaneously. Two clearly discernible dorsal fins and a projecting anal fin seem to indicate that the die engraver intended to represent a mullet or a Pontic shad with three words written on it XEP (*Figures.10.6-7*).

Continusly, the type of (Fig.15.8), is represented by bronze specimens only. The fish has apparently only one dorsal fin, although the entire image is so stylised that any attempt to identify the species would be a matter of pure speculation. While Type 1 belong to the first quarter of the 4th c B.C, Type 2 cannot be dated earlier than the second quarter of the same century (*Figures.10.8-11*).

Ending with North-Western Corner, Pantikapaion shows that the elements of the coin's types are detailed enough to make it certain that they represent one and the same fish species. Apart from silver coins of, that are dating to the late  $5^{th}$  c B.C, the remaining coins belong to the late  $4^{th}$  c B.C and are bronze.

According to some sources of the economic prosperity of Pantikapaion, the fish on its coins might well have had a double significance, implying at the same time



the city-name. Being related to Pantikapes, one of the main Scythian rivers mentioned by Herodotus in his History 4.  $54^{10}$  it apparently derives, from the Old-Iranian *pantikāpa*, which should mean a "fishy-way" (*Figures.11.1-3*).



*Figures 10.* 1-11. Coins of Karkinitis, Olbia and Chersonesos. 1-3) Karkinitis, AE; 4) Olbia, AE; 5) Sturgeon shaped bronze figure from barrow 4 near the village of Ryleevka (West Crimea); 6-7, 10-11) Chersonesos, AR 8-9, 12-13) Chersonesos, AE. (1:Gorny & Mosch auction 60, lot No. 180, photo courtesy of the Gorny & Mosch Munzhandlung; 2: Odessa Museum of Numismatics, photo courtesy of the Museum; 3: after Kutajsov 1986, Figure 1; 5: after Koltuchov 1997, 63, Figure3; 6-8, 11: State Hermitage Museum, Numismatic Department, inv.-nos. 25936-25937, 26075, 25945, after casts; 9: Bibliotheque royal de Belgique, Cabinet des Medailles, L.de Hirsch Collection 850, after a cast; 10: Hess-Leu auction 2.04.1958, lot No. 119, after a cast; 12: Ashmolean Museum Oxford, Heberden Coin Room, May bequest 1961, after a cast; 13: Bibliotheque National Paris, Cabinet des Medailles).

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<sup>&</sup>lt;sup>10</sup> Perseus Digital Library, accessed on 17 January 2021,

http://www.perseus.tufts.edu/hopper/text?doc=Hdt.+4.54&fromdoc=Perseus%3Atext%3A1999.01.012 5





Figure 11. 1. Pantikapaion AE18, Head of PAN left, fish below.



*Figure 11. 2.* Pantikapaion, 4<sup>th</sup>-3<sup>rd</sup> c BC, AE20mm, Bearded head of PAN right/ forepart of griffin left, fish below.



*Figure 11. 3.* Pantikapaion 310 – 304/3 BC: AE 21mm tetrachalkon 6.5g. Black Sea area. Bearded head of satyr PAN right/ forepart of griffin left; below, sturgeon left MacDonald 69; Anokhin 111; SNG BM Black Sea 869-871

# 4.2. Southern Coast (Sinope, Herakleia, Byzantion)

The next group of coin types showing fish leads to the southern coast of the Black Sea. The first area is represented by Sinope and Herakleia. Despite the long history of their coinage, which goes back to the  $6^{th}$  c and the last quarter of the  $5^{th}$  c B.C, a fish appears solely on a few types of bronze from the imperial time. The quality of the images does not allow any reliable identification of the fish species.

To continue with, the coinage of Byzantion offers us further examples of types representing fish. Apart from minor variations the composition constituted by two tunny fish does not show much diversity. On the earliest specimens struck in the name of Caligula, Trajan and Sabina, the fishes appear alone, as a rule, facing in the same direction.



However, the coins of Plotina, the wife of Trajan, already reveal further development of the type by adding a dolphin between the fish. In this form it survives until the middle of the  $3^{rd}$  c. Beginning from Plotina, we see the two-tunny fish regularly turned in opposite directions (*Figures 12.1-3*) (Stolba, 2004: 116-128).



*Figure 12.1.* Sinope. Arianthes.Circa 325 BC. AR Drachm. Head of nymph left, wearing earing/ Sea-eagle flying right, carrying dolphin; Aramaic legend.



Figure 12.2. Byzantion. Julia Mamaea left/ dolphin between two tunny fish right.



*Figure 12.3.* Kalattis Z Triassarian, Autonomous issue, ca 161-192 AD. Veiled & draped bust of Demeter left, wearing stephane;two grain ears to left/ KAAATIAN $\Omega$ N, gallery being rowed right, fish below.

# **5.** Transport Amphorae of the Black Sea Region as a Source for the trade in fish Products in the Classical and Hellenistic Periods

To begin with, a number of texts mention a trade in fish products in the Classical and Hellenistic Greek world. A papyrus from the Zenon archive, records the valuation (for tax purposes) of goods imported to Egypt on two ships on behalf of Apollonius and others.

This document, which dates from May-June 259 c B.C, lists among other goods "dried fish", "fish pickled in the season", "5 jars of belly of tunny fish/ at 20 dr,

"[--] of salted fish at 16 dr". "[--] of mullet at dr [--]". True, the origin of these goods is not mentioned, and there is little reason to regard them as originating in the Black Sea region, even if 10 *choinikes* of Pontic nuts are mentioned further down the list.

Furthermore, in January 2003, there were reports in the international press that a joint Bulgarian-American expedition directed by Robert Ballard had discovered a shipwreck off Varna at the eastern coast of Bulgaria. The wreck contained at least 20-30 amphorae, but only one of these was retrieved, which allegedly "looked like a type of amphora that would be manufactured at the site of Sinope, Turkey.

Based on this, it is said that "recent analysis of sediment gathered from inside the amphora revealed that it contained bones of a large freshwater catfish species, several olive pits and resin... Cut marks visible on the fish bones, together with other physical clues and references from classical literature, lead researches to believe the amphora carried fish steaks- catfish that was butchered into six-to eight- centimeter... chunks and perhaps salted and dried for preservation during shipping... Radiocarbon analysis of fish bones samples taken from the amphora indicated that the bones were between 487 - 277 c B.C" (Gabrielsen and Lund, 2007: 7-8).

To begin with, the main centers involved in the production of transport amphorae in the Black Sea region in the Classical and Hellenistic period were Herakleia, Amastris, Sinope, Dioskourias and Chersonesos. The amphorae produced in these centers have been well studied by several generations of Russian and other scholars, who have mainly concentrated on elucidating their typology, chronology and stamps.

Despite that fact, it has been claimed that amphorae from the Chersonesos contained "cheap local wine" and perhaps grain and that those made at Amastris carried "olive oil and salted olives". The site of Herakleia Pontike has been characterized as "one of the greatest wine exports to the North Black Sea region".

Thus, according to current scholarship, the amphorae produced in the Black Sea region in the Classical and Hellenistic periods were primarily intended as containers of wine and to a lesser degree of olive and grain. Although, Garlan has stated that it is "tempting to think that salted fish products could have been the main contests of the about 181 Sinopean amphorae found sporadically in the Mediterranean".

What is more, the painted inscription or stamps found on many – but not allamphorae, has a standard and fairly consistent pattern, although not every label contains every item of information. The kinds of information revealed, include identification of the contests, along with any references to their quality and the ingredients used to make the sauce, such as the type of fish used. Following this, the name of the owner of the vessel, the producer of the contests or the person who was responsible for transporting the vessel frequently appear.

In addition to this, an example comes from a one-handled vessel called the urceus, the vessel most often found in  $1^{st}$  c A.D Pompeii to have contained a fish sauce. The vessel reads:

# G(ari) F(los) SCOMBRI(i) SCAURI T(?) MAR

## L(uci) MARI PONICI

The first line translates "the flower of garum, made from the mackerel". The next line reads [a product] of Scaurus and in the third line appears an unknown symbol

followed after a space, by what appears to be an abbreviated name. the last line contains the name, in the genitive case, of "Lucius Marius Ponicus"

Giving more details, the label gas named the product (garum), declared its high quality (the flower), disclosed its ingredients (the mackerel) and identified the producer of the sauce (Scaurus). The meaning of the T is unknown; while MAR may refer to a manager of one of Scaurus' workshops. Ponicus may be the owner of the urceus ot the shipper transporting the vessel (Curtis, 1991: 40-41).

## 6. Conclusion

In conclusion, there is precious little archaeological evidence to support the notion that the Black Sea region was focus on a large-scale and systematic amphora-based trade in fish and fish products in the Classical and Hellenistic periods. The fact that stamped amphorae produced in the Black Sea region only occur sporadically south of the Bosporus certainly suggests that the scale of any such trade must have been restricted.

Besides, no one has yet mapped the distribution of Black Sea amphorae in the Mediterranean, but among 1001 amphorae stamps from Athens recently published by Gerhard Johrens, only six came from Sinope and one from Chersonesos. We hope that the work of archaeologists will continue enriching our knowledge about the fish and whole fish processing.

# References

- Athenaeus. *The Deipnosophists*. 7 vols. Edited and translated by Charles Burton Gulick, Massachussets: Harvard University Press 1927-1941.
- Γεωργιάδης, Θανάσης. Ευξείνου Περίπλους, Τόμος Ά. Κέντρο Μελέτης και Ανάπτυξης του Ελληνικού Πολιτισμού της Μαύρης Θάλασσας, n. p., 2001.
- Civitello, Linda. *Cuisine and culture: a history of food and people*, 2nd ed. New Jersey, Canada: Wiley, J & Sons, Inc, Hoboken, 2008.
- Curtis, Robert I. "Sources for Production and Trade of Greek and Roman Processed Fish". *In Ancient Fishing and Fish Processing in the Black Sea Region*, edited by Tonnes Bekker, 40-41. Oxford: Aarhus University Press, 1991.
- Dalby, Andrew and Grainger, Sally. *The classical cookbook*, Rev. Ed. London: British Museum Press, 2002.
- Garlan, Yvon. Production et commerce des Amphores Anciennes en Mer Noire. Aixen-Provence: Public de l'Universite de Provence, 1999.
- Garnsey, Peter. *Food and Society in Classical Antiquity*. Cambridge: Cambridge University Press, 1999. https://doi: 10.1017/CBO9780511612534.001
- Højte, Jakob M. "The Archaeological Evidence for Fish Processing in the Black Sea Region". In Ancient Fishing and Fish Processing in the Black Sea Region, edited by Tonnes Bekker, 134-157. Oxford: Aarhus University Press 2003.
- Latyschev, Basilius. Inscriptiones antiquae Orae Septentrionalis Ponti Euxini Graecae et Latinae, Hildesheim: Georg Olms, 1965.
- Lund, John and Gabrielsen, Vincent. "A Fishy Business. Transport Amphorae of the Black Sea Region as a Source for the Trade in Fish and Fish Products in the Classical and Hellenistic Periods." *In Ancient Fishing and Fish Processing in*

the Black Sea Region, edited by Tonnes Bekker, 164-167. Oxford: Aarhus University Press, 2004.

- Lund, John and Gabrielsen, Vincent. "The Black Sea in Antiquity. Regional and Interregional Economic Exchanges". *Black Sea Studies*, vol. 6, 7-8. Aarhus: Aarhus University Press, 2007.
- Πατέρα, Ελένη. Η διατροφή στους Αρχαίους Ρωμαϊκούς Χρόνους. Αθήνα: Προπομπός, 2006.
- Σούλη, Σοφία, Α. Αρχαία Ελληνική Μαγειρική: Γεύσεις Ελλήνων, n.p.: Ψυχάλης, 2004.
- Stolba, Vladimir F. "Fish and Money: Numismatic Evidence for Black Sea Fishing". In Ancient Fishing and Fish Processing in the Black Sea Region, edited by Tonnes Bekker, 116-128. Oxford: Aarhus University Press, 2004.
- Vakalopoulos- Chrone, M. and A. Vakalopoulos. "Fishes and other species in Byzantine Literature- Classification. Terminology and Scientific names", Βυζαντινά Σύμμεικτα 18 (December 2008): 123-157. https://doi.org/10.12681/byzsym.359

# **Internet citations**

Mare Ponticum

http://www.enotes.com/food-encyclopedia/greece-ancient. Accessed on 16 January, 2021.

http://www.mueseum.com.ua. Accessed on 10 January, 2021.

- http://epigraphy.packhum.org/inscriptions. Accessed 15 January, 2021.
- http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0125%3 Abook%3D4%3Achapter%3D53%3Asection%3D2. Accessed on 17 January 2021.
- https://penelope.uchicago.edu/Thayer/L/Roman/Texts/Pliny\_the\_Elder/31\*.html. Accessed on 17 January 2021.
- http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0125%3 Abook%3D4%3Achapter%3D53%3Asection%3D2. Accessed on 17 January 2021.
- http://www.perseus.tufts.edu/hopper/text?doc=Hdt.+4.48&fromdoc=Perseus%3Atext %3A1999.01.0125. Accessed on 17 January 2021.
- http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0125%3 Abook%3D4%3Achapter%3D48%3Asection%3D3. Accessed on 17 January 2021.
- http://www.perseus.tufts.edu/hopper/text?doc=Hdt.+4.54&fromdoc=Perseus%3Atext %3A1999.01.0125.

Accessed on 17 January 2021.

http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0197%3 Abook%3D7%3Achapter%3D4%3Asection%3D1. Accessed on 17 January 2021.

https://books.google.nl/books?id=V0Q-

AAAAcAAJ&pg=PA50&lpg=PA50&dq=Ό+ποταμός+Τύρας+βαθύς+τ΄ὤν+εύ βοτός+τε+ταῖς+νομαῖς,+τῶν+ἰχθύων+διάθεσιν+ἐμπόροις+ἒχων&source=bl&o ts=BxAJvWEzvi&sig=ACfU3U2Bb2iVb8xQ8MZQH8LTMVCzqVHOnA&h l=el&sa=X&ved=2ahUKEwiUsurLv6PuAhXQuaQKHb0zBl4Q6AEwAHoEC AMQAg#v=onepage&q=Ό%20ποταμός%20Τύρας%20βαθύς%20τ΄ὤν%20εύ

βοτός%20τε%20ταῖς%20νομαῖς%2C%20τῶν%20ἰχθύων%20διάθεσιν%20ἐμπ όροις%20ἒχων&f=false. Accessed on 17 January 2021. https://www.thelatinlibrary.com/manilius5.html. Accessed on 24 January 2021.