

Timber as a Trade Resource of the Black Sea

Lise Hannestad

Introduction

In his book *Trees and Timber in the Ancient Mediterranean World*, Russel Meiggs¹ calls the timber industry the most silent and least recorded of the major ancient industries, and its sources are indeed few when compared for instance to the trade in grain, wine or oil. Despite the relative dearth of sources, I shall attempt in this paper to give an overview of the timber resources of the southern and northern Black Sea coasts² and the trade in this commodity. I shall concentrate on trade in timber for the two perhaps most important purposes, shipbuilding and house building, giving only a few references to other purposes, such as trade in luxury goods involving the use of special and often rare types of wood.³ After all, in the introduction to his book on trees (*HN* 12.2.4-5), Pliny, after enumerating some of the most important fruits that man obtains from trees, such as olive and wine, states that “there are a thousand other uses for those trees which are indispensable for carrying on life. We use a tree to furrow the seas and to bring the lands nearer together, we use a tree for building houses”.⁴

In his famous account of how the Rhodians managed to acquire large-scale international aid in the wake of the disastrous earthquake in 227/226 BC, Polybios (5.88.1-2) enumerates in detail the splendid gifts of the major Hellenistic kings Ptolemaios III Euergetes, Antigonos III Doson and Seleukos II Kallinikos, along with those of the Sicilian tyrants Hieron II and his son Gelon. There are three types of goods, which seem to be of the utmost importance: money, grain and timber. Thus, among his many other donations, Ptolemaios contributed timber for the construction of 10 quinqueremes, 10 triremes, and 40,000 cubits of squared deal planking; Antigonos contributed 10,000 pieces of timber ranging from eight to 16 cubits in length to be used as rafters, 5,000 beams seven cubits long, 1,000 talents of pitch, and 1,000 amphorae of raw pitch; and Seleukos contributed 10 quinqueremes fully equipped, 10,000 cubits of timber, and “1,000 talents of hair and resin”.⁵

Polybios goes on to mention that similar gifts were given by Prusias of Bithynia and Mithridates II of Pontos as well as by other Asiatic dynasts of the time – Lysanias, Olympichos and Limnaios – but without the specifications that are attached to the gifts of the major kings. However, it must be a fair assumption that timber and other forest products such as pitch and resin

also formed a major part of the gifts, especially those of Prusias and Mithridates, who both ruled over extensive territories along the southern Black Sea coast, famous for its forests not only in Antiquity but also much later.⁶ The large forests along the coast of northern Asia Minor are in fact among the few forest regions of the Greco-Roman world which have “survived” (or possibly recovered) relatively intact into modern times. Thus, according to the French travellers Perrot and Guillaume in their *Exploration Archéologique de la Galatie et de la Bithynie* from 1862, the area went under the Turkish name of Ağaçdeniz – “Sea of Trees”.⁷

The forests on the southern shores of the Black Sea

Quite many literary sources convey that the potential and the value of the forests on the southern shores of the Black Sea were well known in Greek and Roman times.⁸ The predominant trees were – and are – oak, plane, beech, fir and mountain pine, of which especially the last two were important commodities in the ancient world. One of the earliest accounts – spiced with all the freshness of personal experience – is Xenophon’s passage on the fine harbour at Kalpe Limen (*An.* 6.4.4), situated on a bit of land jutting out into the sea halfway between Byzantion and Herakleia. Xenophon calculates that the site was large enough to settle 10,000 people. “At the very foot of the rock”, he continues, “there is a harbour whose beach faces towards the west, and an abundantly flowing spring of fresh water close to the shore of the sea and commanded by the headland. There is a great deal of timber of various sorts, but an especially large amount of fine ship timber, on the very shore of the sea”.⁹

In his description of the wood resources of the site, Xenophon concentrates on the fact that there was fine timber for shipbuilding – an important resource, indeed, in the situation in which Xenophon and his men found themselves, but also something that was always of importance to most Greeks. The wealth of the forests and the extensive use of wood and timber by the local population are also evident from Xenophon’s account of how timber was used not only for houses, but also for defensive purposes such as palisades and wooden towers around villages (e.g., *An.* 5.2.5 and 5.2.24). Evidence of a related use of timber by a Greek city in the area can be deduced from Polybios (4.56) when he describes the help which Rhodes provided to Sinope during the latter’s war with Mithridates II of Pontos:

[...] apart from large quantities of wine and three thousand pieces of gold, the Rhodians sent already prepared equipment including four catapults with their artillery men, prepared hair, prepared bow string, and one thousand complete suits of armour, whereas the Sinopeans themselves prepared for the war by blocking up the approaches from the sea by means of stakes and stockades [...]

This clearly indicates the easy access to suitable timber. It is often assumed, also by Meiggs, that the difficult terrain and the lack of roads prevented the overexploitation of the Ağaçdeniz ("Sea of Trees") in Antiquity, in medieval times, and also in more recent times. However, in his description of the area of the Halys River, Strabo (12.3.12) notes that "both Sinopitis and all the mountainous country extending as far as Bithynia and lying above the aforesaid seaboard have shipbuilding timber that is excellent and easy to transport". Strabo also informs us (12.2.10) that "In Kappadokia is produced the *miltos* called "Sinopean", the best in the world, although the Iberian rivals it. It was named "Sinopean" because the merchants were wont to bring it down to Sinope before the traffic of the Ephesians had penetrated as far as the people of Kappadokia".¹⁰ Thus navigable rivers, or rivers suitable for timber rafting, could certainly provide easy means of transport down to the Black Sea coast. In his passionate speech to his fellow citizens of Prusa upon their reconciliation with their neighbours in Apameia, Dion Chrysostomos (40.30) uses the following argument: "For not only do the Apameians need our timber and many other things as well, but we ourselves have no other harbour through which to import goods or to export our own domestic products".¹¹ Timber brought from the inland to the sea is also the topic of Pliny's well-known letter to Trajan (*Ep.* 10.41), in which he tells of a sizeable lake (present-day Lake Sapanca), not far from Nikomedeia, across which marble, agricultural products, wood, and timber for building were easily and cheaply brought by boat as far as the main road; from here everything had to be taken on to the sea by cart, with great difficulty and at great expense.¹² He suggests that a canal should be dug to connect the lake with the sea. The project came to nothing.¹³

The forests of the northern coast

Our written sources on forests and timber resources along the northern coast of the Black Sea are much fewer. From Theophrastos (*HP* 4.5.3) we learn about the resources around Pantikapaion:

There are many well grown fig-trees and pomegranates, which are given shelter; pears and apples are abundant in a great variety of forms and are excellent. These are spring-fruited trees, except that they may fruit later here than elsewhere. Of the wild trees there are oak, elm, manna-ash and the like (while there is no fir, or pine, or indeed any resinous tree). But the wood of such trees in this country is damp and much inferior to that of Sinope, so that they do not use it much except for outdoor purposes.¹⁴

Regarding forests east of the Tanais River, Strabo (11.2.12) tells of the wealth of timber on the coast of the Achaei, the Zygi and the Heniochi, peoples who are reported to have earned their living mainly from piracy, using slender,

light and narrow boats, each holding only about twenty-five people – the boats called *kamarai* by the Greeks. Since there were no good anchorages, they carried the boats up on the shores into the forests where they lived and tilled the poor soil (see Gabrielsen in this volume).

According to Strabo (11.2.15) the whole of Caucasus was rich in forests and timber of all kinds, particularly those used in shipbuilding, and the rivers made it possible to transport the timber to the coast (11.2.17). So when Mithridates VI Eupator conquered the territory it was from here that he received “most aid in the equipment of his naval forces” (Strab. 11.2.18).

Palaeobotanical analyses from the Crimea

Palaeobotanical studies involving pollen analysis or analyses of preserved wood have brought a wealth of new information on the topic of this paper. Therefore, we now have a large amount of data on the vegetation of, for instance, the Crimea in Antiquity. Relevant for this paper is of course in particular the issue of woods and forests and their extent, as well as whether they could provide the timber needed for shipbuilding and house building (besides for the many purposes of daily life, including firewood).

From 1970 onwards, studies of pollen from the cultural layers at Čajka (see Fig. 1) have been carried out. The picture that emerges is the following: in the earlier period, i.e. the 3rd and 2nd centuries BC, a combination of steppe (grasses) and forest (pine, oak, maple, elm, hazel, hornbeam, juniper, and sumach) is characteristic, whereas from the 2nd century onwards pollen from grass and shrub vegetation, which is characteristic of the steppe zone, is predominant, although pollen from trees, including new species (elm, willow, birch, spruce), continues to appear (Levkovskaja 1970; Maslov & Filin 1976, 176; Ščeglov 1978, 25). Pollen from maple, oak, elm, walnut, alder, willow, poplar, juniper, arbutus and chestnut is prevalent, and since pollen from these species is not easily transported over long distances by the wind, they must have grown in the immediate surroundings of the site. Pine is also common, but since its pollen is easily carried over long distances by the wind it could actually come from areas several hundred kilometres away, particularly when the wind is strong, which is indeed very common in the Crimea. However, at Čajka, manufactured wood made of pine has been found, suggesting that pine actually grew in the vicinity of the site. Levkovskaja concludes that what is now steppe zone and the nearby foothills of the Crimean Mountains presented a different picture in Antiquity, when much of it was presumably covered with trees and woods. According to Levkovskaja, the fossil pine pollen differs morphologically from that of Crimean pine (*Pinus Pallasiana* Lamb.) and pine of Stankewicz (*Pinus Stankewiczi* Tom.), which grow in Crimea nowadays. In terms of size it resembles most closely the pollen of common pine (*Pinus silvestris* L.) and that of the Crimean mountainous pine (*Pinus hamata* D. Sosn.).¹⁵

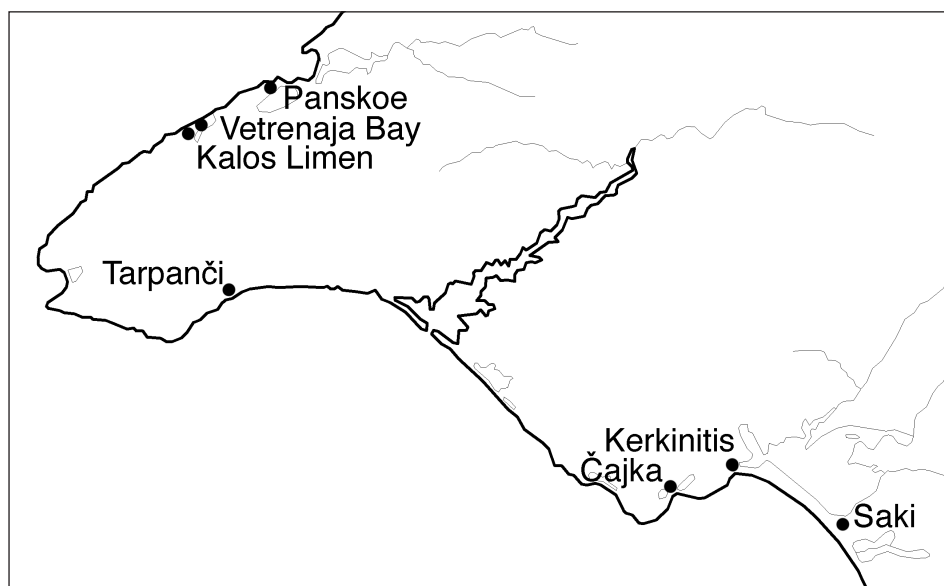


Fig. 1. Western Crimea.

According to Maslov and Filin (1976, 177), oak with thick tree rings dominated in the 3rd and 2nd centuries BC, comprising up to 70 % of the total number of fragments identified. Later the number of oaks decreased, and they had smaller tree rings, whereas there is an increase in the number of elm, alder and willow.¹⁶ Maslov has more recently¹⁷ published two accumulations from Čajka, both dating from the 3rd century BC and containing (1) oak and chestnut, and (2) willow, oak and hazel. It should be noted that oak and hazel are good for coppicing and thus for a lot of daily purposes including firewood.

From U6 at Panskoe I (Fig. 1) charred fragments of beech and oak are preserved in the filling of the well in the middle of the courtyard below the water level. These are probably the remains of a wooden well curb, since they are preserved well enough to show that they derive from beams or boards. On the site charred remains of juniper have also been found. From Saki Lake cores of silt sediment have revealed pollen of oak, beech, pine, hornbeam, chestnut, hazel and alder.¹⁸ The excavations at Vetrenaja Bay in the *chora* of Kalos Limen (see Fig. 1), dating from the period from the late fourth to the early 3rd century BC, revealed remains of ceiling constructions of juniper (55 %), oak (30 %), and elm (15 %). And from the settlement at Tarpanči (Fig. 1) the samples of wood from a layer dating from the 2nd century BC indicate that all the specimens are from branches, apart from a single specimen deriving from an artefact made of pine, clearly proving that the following trees were growing in the immediate vicinity of the settlement: elm (47.17 %), poplar (18.87 %), oak (16.98 %), ash (11.32 %), and maple (5.66 %).¹⁹



Fig. 2. The region around Olbia.

Sokol'skij mentions that in the late 18th century extensive forests are recorded in southwestern Crimea from near Balaklava Bay, Inkerman, the Northern Bay (north of Chersonesos), and along the lower stream of the Kača and Alma Rivers.²⁰ Karl Hablitz (a scientist and traveller of the late 18th and early 19th century) mentions oak, beech, hornbeam, maple, linden, pine, alder, yew, juniper, ash and walnut as growing in the vicinity of Chersonesos. The same species, and many others, are also mentioned as common in southwestern Crimea by P.S. Pallas (a German scientist in Russian service in the early 19th century). Recently Cordova's and Lehman's studies (2003) of the palaeobotany of the *chora* of Chersonesos have revealed that the first Greek settlers on the Herakleian Peninsula encountered a relatively dense wooded landscape including clusters of oak and hornbeam and in the wetter areas elm, hazel and alder.

Today the border between the steppe and the forest steppe is the Bulganak River as well as the species of the forest steppe are oak, hornbeam and maple. The disappearance of the forest steppe further north than the Bulganak River may be due to human activity or to climatic changes. Red juniper – which is very hardy, drought resistant and able to withstand cold – and Crimean pine grow today north and east of Bachčisaraj.²¹ Fir grows willingly in the high mountains of the Crimea – being a typical mountain tree, as Pliny puts it: “fir, which is in great demand for building ships, grows high up in the mountains, as though it had run away from the sea” (HN 16.42).

In his book on woodcraft in the Greek colonies of the northern Black Sea area, Sokol'skij²² lists a number of analyses of wooden remains found at sites in the vicinity of Olbia in the years 1962-1965: elm and poplar at Košarskoe Gorodišče (Fig. 2), from layers of the 4th and 3rd centuries BC; oak, linden, wych elm, poplar, and ash at Koblevo (Fig. 2) from the same period; pine at

Viktorovka II (2nd-4th century AD) (Fig. 2); ash, linden, oak, alder and pine at Tiligulo-Berezanka from the same period; and elm and ash at Ranževoe (3rd-4th centuries AD). From Olbia itself Sokol'skij's material mainly derives from wooden sarcophagi and includes juniper (dating from the 6th century BC), oak and pine, cypress (from the Hellenistic period), a piece of willow from a wooden artefact dating from the Hellenistic period, and a box comb dating from the 2nd-3rd century AD. The box and cypress specimens are most probably imported pieces not found in the local surroundings (see below).

Pollen analyses from the peat bog at Kardašinskij in the Lower Dnieper region (i.e. the northern part of the ancient Hylaia) show that in the middle and late Holocene period, oak, elm, alder, birch, hornbeam, beech, maple, hazel nut, linden and pine grew here. The presence of pine is also suggested by finds of cones in a bog.²³

Wooden remains from sites in the territory of Pantikapaion derive from the following sites, according to Sokol'skij.²⁴ Michajlovka (rural site on the Kerch Peninsula (see Fig. 3); 1st-3rd centuries AD): pine 30 samples; poplar 23; elm 10; ash 10; oak 8; willow 4; apple 1; plane (?) 2. Semenovka (rural site on the Kerch Peninsula (see Fig. 3); 5th century BC - 3rd century AD): oak 21 samples; pine 15; elm 26; juniper 21; poplar 4; birch 1; cypress 1; others 2. Batarejka II (rural site on the Taman Peninsula (see Fig. 3); destroyed in the early 2nd century AD): oak 14 samples; pine 23; elm 22; poplar 7; birch 1; spruce 3; ash 3; maple 10. Batarejka I (rural site on the Taman Peninsula (see Fig. 3); 2nd-4th centuries AD): oak 14 samples; pine 1; elm 1; spruce 3; ash 7; maple 3. Il'ičevka (site on the Taman Peninsula; 4th-5th centuries AD): oak 31 samples; pine 18; elm 3; poplar 4; ash 3; beech 3; maple 1.

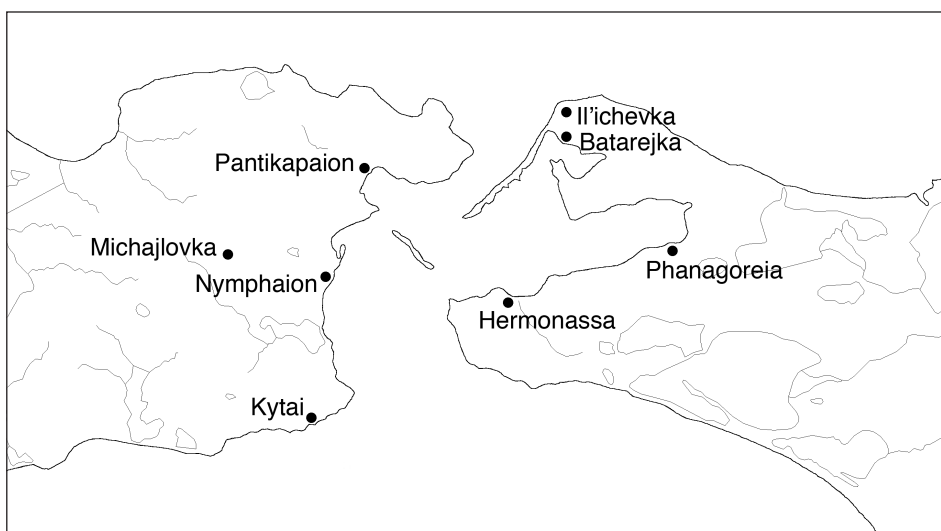


Fig. 3. The Kimmerian Bosphoros.

Sokol'skij concludes that the Bosporan demand for timber from leaf-bearing trees can have been covered from local sources, the Kerch and Taman Peninsulae, whereas the most important source of fir and pine was probably the coastal zone of Caucasus, from Anapa down to Suchumi, as well as the southern coast of Crimea.²⁵

Ship building

Timber is the very basis of sea trade, and it is too tempting to quote Plato's famous passage from *Laws* 705c: in his ideal city, there should be "no good fir or mountain pine, not much cypress, and little coastal pine which shipwrights have to use for the interior parts of merchant vessels, because this would encourage trade, the great corrupter".²⁶

Fir and pine are also central to Theophrastos's comments on trees suitable for shipbuilding. Thus in *HP* 5.7.1-3, he writes:

Fir, pine and cedar are, generally speaking, useful for shipbuilding; for triremes and long ships are made of fir, because of its lightness, and merchant ships of pine, because its does not decay: while some make triremes of it also because they are ill provided with fir. The people of Syria and Phoenicia use Syrian cedar, since they cannot obtain much pine either; while the people of Cyprus use coastal pine, since their island provides it and it seems superior to their pine. Most parts are made of these woods; but the keel for the trireme is made of oak, that may stand the hauling; and for merchantmen it is made of pine. However, they put an oaken keel under this when they are hauling, or for smaller vessels a keel of beech; and the sheathing is made entirely of this wood.²⁷

And in another passage (*HP*. 4.5.5), Theophrastos states:

Again it is only a narrow extent of the country which produces wood fit for shipbuilding at all, namely in Europe the Macedonian region and certain parts of Thrace and Italy; in Asia, Cilicia, Sinope and Amisos and also the Mysian Olympos, and Mount Ida; but in these parts it is not abundant. For Syria has Syrian cedar, and they use this for the galleys.

This suggests that, at the time of Theophrastos, Sinope and Amisos were the two main cities and harbours on the southern Black Sea coast from which timber for shipbuilding could be acquired. Timber could certainly also be provided by the Bithynian kings and Herakleia. But Theophrastos's statement may indicate that timber from the two cities further east was considered the best for shipbuilding. In a third passage, Theophrastos (*HP* 5.1.5) states that

“fir and pine are the most useful trees and in the greatest varieties of ways, and their timber is the fairest and largest”. He also mentions (*HP* 5.2) that “some make a distinction between regions and say that the best of timber which comes into Hellas for the carpenter’s purposes is the Macedonian, for it is smooth and of straight grain, and it contains resin: second is that from Pontus, third that from the Rhyndakos”; Pliny (*HN* 16.76.197) informs us that “the most highly spoken of [among fir and larch] grow on the Alps and the Apennines, on the Jura and Vosges mountains of Gaul, in Corsica, Bithynia, Pontos and Macedonia”.²⁸ According to Theophrastos (*HP* 5.1.7), fir “also gives timber of the greatest lengths and of the straightest growth; wherefore yard-arms and masts are made from them”.

Regarding matters such as acquisition, felling, transport, and marketing, little evidence survives from the ancient Greek and Roman world.²⁹ Buying from private estates would normally have presented few difficulties since the owner was free to sell. Transactions involving the huge forests with the best timber were probably more complicated. It is well known that felling the forests of Macedonia – in particular trees of the size necessary for shipbuilding – was a royal prerogative.³⁰ We need not hesitate to assume that this was also the case in both the Ptolemaic and the Seleukid Kingdoms, and probably also by this time at least in the minor kingdoms including Bithynia and Pontos. For the Seleukid Kingdom this is strongly suggested by an inscription from Sardis, dating from March 203 BC,³¹ which preserves the last part of a letter from Antiochos III to the inhabitants of Sardis:

... (we have given orders) also to cut down wood for the rebuilding of the city and to bring it out from the forests in Taranza, in accordance with whatever Zeuxis may decide.³²

The Romans maintained a large reserve of state forests;³³ also Roman colonies and municipalities had their own public woodlands to provide timber. This must also have been the case in Greek *poleis*, but our evidence for this is fairly meagre. Meiggs discusses the possible sources for the building of a much larger Athenian fleet in the early 5th century, suggesting that the mountain ranges of Attica and Euboea are the most probable ones. Later on the city relied on a friendly relationship with the kings of Macedonia and on their colonies in northern Greece.³⁴

Timber export from the Black Sea

An issue central to the theme of this conference is, of course, whether timber from the Black Sea was traded to the Mediterranean. The written sources give us the impression that Athens relied on Macedonia and her colony at Amphipolis on the Chalkidike (*Thyc.* 4.108.1) to provide timber for her fleet,

and we know of imports from Samos, Knidos and Crete, but there is no hint of timber trade with Black Sea ports.³⁵

Sokolskij³⁶ interpreted a passage from Philochoros on the Macedonian king Philip II's occupation of Hieron, on the Asiatic side of the Bosphoros Straits, and his capture of 230 ships, in the year 340 BC, as indicating that Philip used the timber, which together with grain and hides was the main cargo of the ships, for building siege engines.³⁷ Sokolskij also supposed that this cargo must have contained Bosporan timber, since this corresponds with the information in Theophrastos.³⁸ Brašinskij also understood the passage as signifying that the merchant ships sailing from Pontos had timber, grain and hides as their cargo.³⁹ Unfortunately (for our purposes), there can be no doubt that Brašinskij's and Sokolskij's conclusion is based on a misinterpretation of the Greek text, which clearly states that the timber used by Philip for building catapults derived not from the cargo carried by the ships, but from the ships themselves, which after their capture by Philip were demolished.⁴⁰

Indirect evidence for trade in timber from the Black Sea to the Mediterranean may possibly be provided by the close connections between Rhodos and Sinope in the 2nd century BC, as can be concluded from two passages in Polybios: 4.56 (on which see p. 86) and 23.9. In the second of these, in particular, Polybios reports the sending, in 183/2 BC, of a Rhodian embassy to Rome with the aim to defend the interests of Sinope (which at that time was seriously threatened Mithridates II of Pontos) and also the Senate's positive response, i.e. that they would send legates to investigate the matter. The archaeological evidence (mainly, amphora stamps) certainly confirms a strong Rhodian presence in the Black Sea in this period.⁴¹ Evidence from later periods suggests that the Rhodian interest in Sinope might have to do with the possibility to acquire timber for their fleet.⁴² The hostile relationship between Macedonia and Rhodos in this period certainly suggests that Rhodos could not acquire timber for shipbuilding in Macedonia.⁴³ However, the situation quickly changed. Only a few years later, king Perseus had re-established friendly relations with the Rhodians, providing them with timber for shipbuilding (Polyb. 25.4).

It is well known that timber was commonly transported long-distance by sea on a massive scale.⁴⁴ This is indicated, for instance, by the circumstance that Macedonia was a major supplier of particularly timber for masts, and also by Thukydides' report (4.108.1, mentioned p. 93) that the capture of Amphipolis by the Spartans greatly alarmed the Athenians among other things because that city provided them with timber for shipbuilding.⁴⁵ Also the forests of southern Italy could provide timber to be used in Greece.

That the timber export could take a different form, i.e., as ready-built ships, can be deduced from Alkibiades' speech in Thukydides (6.90.3), where he states that part of the aim of the expedition to Sicily had been to add to the Athenian fleet by building many triremes "as Italy has timber in abun-

dance".⁴⁶ This suggests that timber from the Black Sea might not always have been exported as raw material but also as ships.

House building: public and sacred buildings

Timber for ordinary house building was normally available in the vicinity; otherwise most of the building was done with other materials. It could, however, be necessary to transport timber long distances, especially for large-scale buildings for public use or in difficult circumstances, as suggested by the letter from Antiochos III to Sardis (see p. 93). Theophrastos (*HP*. 5.3.3) states that "of the wild trees which are used for roof-timbers, the wood of the fir is the least compact, and among others that of the elder fig, apple and bay. The hardest woods are those of the oak and holm-oak".

Especially rich evidence of an extensive Aegean or Mediterranean trade in timber for the construction of buildings can be followed in detail in the building inscriptions from some of the most important sanctuaries in Greece, particularly from the 4th century BC and the Hellenistic period. For the temple of Asklepios in Epidauros the following timber is recorded in the accounts: fir (the best general building timber according to Theophrastos (*HP*. 5.7.4-5)): 4,390 drachmas; cypress (price not preserved); elm, nettlewood and boxwood for the doors (and for the workshop): 840 drachms.⁴⁷ The fir was undoubtedly mainly for roof construction. The contractor of the fir was a Korinthian, something that tells us little about its origin, since Korinthian merchants are known to have traded in many parts of the Mediterranean. The contractor of the cypress, on the other hand, was from Crete, an island famous for its cypresses.

Inscriptions from Delphi provide us with records,⁴⁸ which show that the sanctuary bought a quantity of very costly, and therefore probably very large, cypress timbers in 335 BC, in connection with the rebuilding of the temple of Apollon that had burnt down in 373 BC. These timbers were provided by a number of different contractors, mostly originating from Sikyon, across the Gulf of Korinth. The temple also bought fir, while another account specifically mentions Macedonian timber, most probably fir.

The accounts from the sanctuary of Eleusis dating from the year 329/8 BC specify the purchase of elm, ash, cedar, and cypress.⁴⁹ Particularly interesting are the contracts with many different suppliers providing the timber. There does not seem to have been any merchant with a large and diversified stock.⁵⁰

Delos had to depend exclusively on outside timber resources.⁵¹ The most commonly listed species during the island's period of independence (314-166 BC) are oak, fir, elm, and cedar. There is also evidence of ash, beech, box, cornel, cypress, lime, mulberry, olive, palm and probably chestnut. Pine is mentioned only as pine torches, associated with firewood for the altars. There is also mention of "Macedonian timbers" without any further specification.

The longest lengths recorded (probably fir) are of 30 cubits, to be used for the theatre stage.

In none of the accounts preserved from the Greek sanctuaries do we find any mention of timber from a locality in the Black Sea, nor do we have evidence for contractors coming from this region. Apparently the Aegean and possibly the Levant (cedar wood) were able to satisfy the demand of the sanctuaries.

Among the other building types for which high-quality timber was required were fortresses and, in the Hellenistic period, catapults and other types of siege engines. Polybios's account (4.52) of the conflict between Byzantion on the one hand and Rhodos and Prusias of Bithynia on the other is very detailed, when it comes to the peace treaty concluded by the conflicting parties. One of the conditions is that Prusias must surrender to the Byzantians the lands, fortresses, people and slaves taken from the enemy free from ransom, as well as the ships taken at the outset of the war, the missiles captured in the forts, and the timbers, building stones and tiles taken from Hieron within the Straits.

Luxury trade

Wood for making luxury goods was clearly traded over long distances, as were also objects manufactured either from a particularly attractive type of wood or a combination of different types of wood. Maple and the mountain nut from the region of Sinope were used for tables (Strab. 12.3.12; see also Theophr. *HP.* 5.7.6). Moreover, according to Pliny (*HN.* 16.66), maple is second only to citrus in elegance for cabinet making, because of the finish it allows. The written sources thus clearly indicate a luxury industry and trade in elegant furniture from Sinope, at least from the early Hellenistic period onwards.

Perhaps the best-known wooden luxury objects from the Greek cities of the Black Sea are the sarcophagi from Pantikapaion and Taman.⁵² They were produced over a long period from the 5th century BC to the 2nd century AD, the finest coming from the first 100 years. According to Sokol'skij,⁵³ in general cypress, cedar and yew were employed for the basic construction of the sarcophagi of the fourth to the 3rd century BC. Some of the decorations are in inlaid wood, of which boxwood is the most common, its pale colour contrasting well with the dark cypress or yew. Maple or pear tree may also have been used for inlays. Some of them seem to be made by local craftsmen following Greek patterns or by resident Greek craftsmen, but the best of them were probably produced in Greece, most likely in Athens.⁵⁴ Thus we see trade in readymade wooden objects from the Mediterranean to the Black Sea. When wood was imported for manufacturing the sarcophagi in the cities of the northern Black Sea, the Mediterranean need not have been the only supplier, as assumed by Sokol'skij;⁵⁵ the inlay of boxwood may derive from, for instance, Amastris, since according to Strabo (12.3.10-11) "the most and the best box-

wood grow in the territory of Amastris, and particularly round Kytoron". A few wooden fragments from Chersonesos have been identified. Among them are pine, oak, juniper and yew. In a vault dated to the period from the second to the 4th century AD there were fifteen coffins made of yew.⁵⁶

Turning to luxury trade in trees rather than wood, we may consider the statement by Theophrastos (*HP* 4.5.3): "of the cultivated plants they say that those least able to thrive in cold regions are bay and myrtle, and for proof they state that on Mount Olympos bay is abundant, but myrtle does not occur at all. In Pontos about Pantikapaion neither grows, though they are anxious to grow them and take special pains to do so for religious purposes". Pliny (*HN* 16.137) tells us that it was Mithridates (VI) and the rest of the natives who had toiled in every way to cultivate these two plants for ritual purposes, but that they did not succeed. Both plants were very common in, for instance, the Propontis and there may have been a luxury export in these specific trees or their branches for use in Pantikapaion and other northern Black Sea colonies.

Conclusion

Trade in timber to the Mediterranean from the Black Sea was presumably common, although our sources do not explicitly mention such trade. In particular, this is not only suggested by the information given by Polybios on the gifts given to Rhodos after the earthquake, which include timber from this region, but also by the detailed knowledge which was possessed by Theophrastos and other ancient writers about Pontic timber resources and their value for shipbuilding. It is also worth noting in this connection that in the Hellenistic period, Rhodos, whose fleet was one of the most important in the Mediterranean,⁵⁷ maintained very close ties of friendship with Sinope, perhaps the Black Sea city best known for its timber resources in the Greek world. Wood exported from the Mediterranean to the Black Sea was probably an exception and mainly consisted of luxury wood or ready-made, wooden luxury goods such as some of the sarcophagi from the Bosporan Kingdom.

Notes

- 1 Meiggs 1982, 325.
- 2 The northern and southern Black Sea coasts are the focal point of the Danish Research Foundation's Centre for Black Sea Studies. The paper therefore concentrates on these regions, taking only a quick look at the eastern and western Black Sea coasts.
- 3 Beal (1995) presents a very informative model on the use of timber in war and agriculture, using the forests of Bruttium in southern Italy as a case study.
- 4 Translation H. Rackham, Loeb Classical Library.
- 5 Polybios's full list of donations from the three kings is as follows: Ptolemaios III Euergetes: 300 talents of silver, 1 million *artabae* of corn, timber for the construction of 10 quinqueremes and 10 triremes, 40,000 cubits of squared deal planking, a 1000 talents of bronze coins, 3000 talents of tow, 3000 pieces of sail-cloth, 3000

- talents (of bronze?) for the restoration of the Kolossos, a 100 master builders and 350 masons, and 14 talents *per annum* for their pay, and besides all this, 12,000 *artabae* of corn for the games and sacrifices and 20,000 *artabae* to feed the crews of 10 triremes. Antigonos III Doson: 10,000 pieces of timber ranging from eight to 16 cubits in length to be used as rafters, 5000 beams of seven cubits long, 3000 talents of silver, 1000 talents of pitch, 1000 amphorae of raw pitch and a hundred talents of silver, while his wife Chryseis gave them 100,000 *medimnoi* of corn and 3000 talents of lead. Seleukos II Kallinikos: exemption from custom duties for Rhodians trading in his dominions. 10 quinqueremes fully equipped, 200,000 *medimnoi* of corn, 10,000 cubits of timber and 1000 talents of hair and resin. (Translation. W.R. Paton, Loeb Classical Library). See Gabrielsen 1997, 76-77.
- 6 See Gabrielsen 1997, 77: "Had Polybios catalogued the gifts of the remaining donors, his list would certainly have been even more impressive but hardly less repetitive".
 - 7 For these forests see Perrot & Guillaume 1862, 20, 26 and 58-59. See also Robert 1980, chapter 2.
 - 8 In the following I shall concentrate on only a few of the ancient written sources.
 - 9 Translation C.L. Brownson, Loeb Classical Library.
 - 10 The translation of the passages from Strabo is that by H.L. Jones, Loeb Classical Library.
 - 11 Translation H. Lamar Crosby, Loeb Classical Library.
 - 12 Translation B. Radice, Loeb Classical Library.
 - 13 For the transport aspect, see in particular Mulliez 1982.
 - 14 Translation A. Hort, Loeb Classical Library.
 - 15 Levkovskaja 1970, 104.
 - 16 Today oak makes up for more than 50 % of the Crimean forests.
 - 17 Maslov 1991, 76-81.
 - 18 The dating is uncertain; according to Borisov 1956, 535, the core taken in 1954 was 1.5 m long and covered a period of 1500-2000 years. All samples revealed the species mentioned above. The same information is given by Ščeglov 1978, 25.
 - 19 Ščeglov 1978, 24. See also Levkovskaja 1970, 105.
 - 20 Sokol'skij 1971, 19.
 - 21 Levkovskaja 1970, 106.
 - 22 Sokol'skij 1971, 17.
 - 23 Sokol'skij 1971, 18.
 - 24 Sokol'skij 1971, 24-29.
 - 25 Sokol'skij 1971, 28.
 - 26 Translation Meiggs 1982, 118.
 - 27 See also Morrison & Coates 1994; Casson 1971.
 - 28 The order in which the three regions in the eastern Mediterranean are mentioned may perhaps indicate that by the time of Pliny, Bithynia had become Rome's most important supplier of timber from this region.
 - 29 See Meiggs 1982, chapter 12, for a broader discussion of timber trade in the Greco-Roman world.
 - 30 The sources relating to the supply of Macedonian timber for the Classical Athenian fleet are discussed in Gabrielsen 1994, 140-142.
 - 31 Gauthier 1989, n. 1; Ma 1999, 284, n. 1.

- 32 Translation Ma 1999, 285.
- 33 Meiggs 1982, 329 for discussion.
- 34 See also Gabrielsen 1994, 31-39, 140-142.
- 35 Meiggs 1982, 393.
- 36 Sokol'skij 1971, 38, possibly relying on a translation by Brašinskij 1963, 114-115.
- 37 *FGrH* 328: Philochoros F162 (Didymos' commentary on Dem. 11.1, col. 10-11), cf. also *FGrH* 115: Theopompos F292.
- 38 I am indebted to Vladimir Stolba for information on Sokol'skij's idea and for his translation into English of Sokol'skij's Russian text.
- 39 Brašinskij 1963, 114-115.
- 40 This is the standard interpretation of the passage in question: see, for instance, Hammond & Griffith 1979b, 576, n. 3. I am indebted to George Hinge, who discussed the text with me.
- 41 Conovici & Garlan 2004; Gabrielsen 1997, 65.
- 42 Agnoletti 2004. See also Meiggs 1982, 116.
- 43 For the conflicts see Hammond & Walbank 1988, chapter 20.
- 44 See Meiggs 1982, chapter 12.
- 45 For a recent treatment, offering also a comparative perspective, of long-distance transport of timber for shipbuilding, see Agnoletti 2004, who examines the way in which the Dutch and the British acquired timber from Scandinavia and the Baltic in the 16th and 17th centuries AD. Meiggs (1982, 333) also mentions that in the 17th century the English fleet relied on the American white pine for supplies of tall masts.
- 46 Translation Ch. Forster Smith, Loeb Classical Library. For comments on this, see also Meiggs 1982, 117.
- 47 See Burford 1966 and 1969.
- 48 *FD* III, 5; Bousquet 1977; Meiggs 1982, 430-433, for comments.
- 49 *IG* II², 1672, with Meiggs 1982, 433-440.
- 50 Meiggs 1982, 437.
- 51 See *IG* II², 135-289 and *ID* 290-510, with Meiggs 1982, 441-457.
- 52 Meiggs 1982, 294.
- 53 Sokol'skij 1971. See also Kremenetski 1995.
- 54 According to Thukydides (2.34.3), the ashes of the Athenians who died in the first year of the Peloponnesian War were placed in cypress coffins. Sokol'skij 1971. Sokol'skij 1971, 19. Gabrielsen 1997, chapter 4.
- 55 Sokol'skij 1971.
- 56 Sokol'skij 1971, 19.
- 57 Gabrielsen 1997, chapter 4.