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ON SOME ASPECTS OF THRACIAN AGRICULTURE[1]

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Abstract. – In recent years, more and more interdisciplinary studies have been brought to supplement written records, which have greatly increased our knowledge of Thracian agriculture. The analysis of organic remains, pollen curves, and the interpretation of archaeological material show a significant intensity in agricultural development throughout the 1st millennium BC, with the expansion of deforested lands and a wide presence of larger cultivated areas and pastures. Of course, it is necessary to consider the specifics of individual climatic regions and how the population of these areas adapted to the different conditions they offer. Temperatures, the nature of the soil, rainfall, altitude, and the hydrology in different regions can explain the selection of a particular crop or animal species over others. This necessitates the consideration of Thracian climatic zones separately, so their specificities can be traced. Climatic features outline several agroecological regions in Ancient Thrace – a Temperate continental zone, the Northern Coast of the Western Black Sea, a Transitional continental zone, a Mountainous zone, a Continental-Mediterranean zone, the Southern Coast of the Western Black Sea, and a Mediterranean zone. The article will present the various agricultural activities and economic strategies of these regions, and will also showcase the Thracian agricultural calendar. Interdisciplinary research establishes the existence of four seasons in economic activity. For the Thracian farmer, the agricultural year begins in autumn, with the gathering of grapes, and ends in summer, with the crop harvest. Some of the religious rituals witnessed in various sites are probably connected with certain moments of the Thracian agricultural calendar. Finally, the profile of the Thracian farmer will be examined from the point of view of societal status and gender.

Key words. – ancient agroecological zones, agricultural calendar, ancient agriculture, Ancient Thrace.

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Although ancient agriculture has attracted much scholarly interest in recent years, a fact made clear by the recent appearance of *A Companion to Ancient Agriculture*,[2] the Thracians, as an example of a non-classical society in a classical world, have remained outside the area of (or have been overlooked by) this research. Agriculture, however, has been a subject of scientific inquiry even in the earliest Bulgarian studies in the field of Thracology. When Gavril Katsarov published his work on the private and social life of the Thracians, as seen by the ancient authors, in the distant year of 1912, he touched briefly on the problem of Thracian farming and cultivation.[3] Some years later, Ivan Venedikov published an extensive study on agriculture in the Bulgarian lands from Antiquity to the Early Modern period, part of which was devoted to the Thracian agrarian economy.[4] Based mainly on information extracted from written sources and ethnographic parallels, his book discussed agriculture by region and tribe, dealing with the methods for tilling land and growing plants, their processing and use in trade, as well as the chief animals reared in Thrace, and the agricultural implements found during archaeological excavations. The publications of A. Andonova also provide a detailed description of finds of metal agricultural tools from the territory of modern-day Bulgaria.[5] Two articles by Rumyana Georgieva, the first on the paleogeography and natural environment of Thrace in the 1st millennium BC,[6] and the second on Thracian agrarian economy, present in detail the processes of utilization and exploitation of the region's natural resources, and the changes that occurred as a result of anthropogenic activity.[7] Both studies rely on a comparative analysis of written, archaeobotanical, archaeozoological, palynological, archaeological and physio-geographical data. This article attempts to construct a territorial classification of Thracian farming, aiming not only to better understand the processes by which it was carried out, but also to avoid generalizations that the Thracians, as a whole, were involved in a particular industry when it was practiced only in certain regions or by specific tribes.

Agriculture is influenced by various factors: natural, social, economic, political, and cultural. Among these, the environment plays a particularly crucial role. Natural factors that are of paramount importance for the successful functioning of agriculture include favourable soil conditions, minimal losses from wind and rainfall, suitable altitude, and appropriate hydrology. They impact crop selection and plant species diversity, which are essential for maintaining sustainable agriculture. Ultimately, this diversity contributed significantly to a higher quality of life. Studies of plant

[2] Hollander, Howe 2021.
[3] Katsarov 1912.
[4] Venedikov 1981.
[5] Andonova 2008; 2013.
[6] Georgieva 2015.
[7] Georgieva 2015; 2016.

material, pollen curves, archaeological findings, and written sources, along with comparative analyses of neighbouring regions and global climate trends, reveal significant agricultural development in Thrace during the 1st millennium BC. This period saw a marked increase in deforested areas and larger cultivated fields and pastures as compared to earlier times. Naturally, we must consider the unique characteristics of different climatic regions and how populations in these areas adapted to their specific conditions.

Agroecological zones

Ancient Thrace was of considerable size during the 1st millennium BC, but under the influence of demographic, political and other factors, its borders were constantly changing and gradually narrowing. For this reason, the current article will focus on its core territories, which broadly coincide with the lands of modern-day Bulgaria, north-eastern Greece, European Turkey and parts of southern Romania. In the study of agroecological zones, the northern boundary is taken to be the nearby areas on both sides of the Danube, the eastern boundary runs along the Western Black Sea, the southern boundary along the Aegean and the Sea of Marmara, and the western boundary along the Struma and Morava River basins. *Apoikia* along the Aegean coast and the Western Black Sea, such as Apollonia Pontica, will not be discussed in this article because of the difficulty to distinguish Thracian elements in a Greek setting.

The territorial classification of agricultural activities directly linked to the production of foodstuffs is based entirely on the climatic characteristics of each region (see Fig. 1). Climate is not the only distinguishing criterion by which a categorisation of this type can be made. There are multiple factors that determine the livelihood of a population in a given area. In our case, however, climate is the most accessible factor that allows us to easily detect the differences and a lack of uniformity in plant cultivation and animal husbandry, as well as in supplemental activities used to acquire food, such as hunting and fishing. Of course, regional distinctions may be due to fragmentation and lack of sufficient data, and it is likely that future studies would change the picture outlined below.

Transitional continental agroecological zone

Much of the territory of Ancient Thrace falls within the Transitional continental agroecological zone, which includes the Upper Thracian Lowlands, the Sub-Balkan Basins and the lands up to the middle reaches of the river Struma. It is also one of the best-studied regions, represented by different types of archaeological sites – settlements, sanctuaries, pit and burial complexes. An important factor in the formation of the region's climate is the Balkan Mountains, which serve as a barrier against the cold northern

winds and contribute to the higher temperatures during winter and summer. The relatively high richness of the region's characteristic luvisols and vertisols allow for a variety of plant species to be cultivated.

Fig. 1. Climatic influences (Author: E. Filipova)

Plant Cultivation

Interdisciplinary studies paint a picture of intensive agricultural activity throughout the 1st millennium BC. An extraordinary richness of plant species is observed. Cereals, which play a leading role at all the sites studied (see Fig. 2), are represented first by common/bread wheat (*Triticum aestivum/dirum* Shiem.) and einkorn (*Triticum monococcum*), followed by millet (*Panicum miliaceum*), barley (*Hordeum vulgare var. vulgare* L.)

and rye (*Secale cereale*). Emmer (*Triticum dicoccum*), spelt (*Triticum spelta*) and oat (*Avena sativa*) were also planted, and new crops such as sorghum (*Sorghum vulgare*) were introduced in the second half of the millennium.

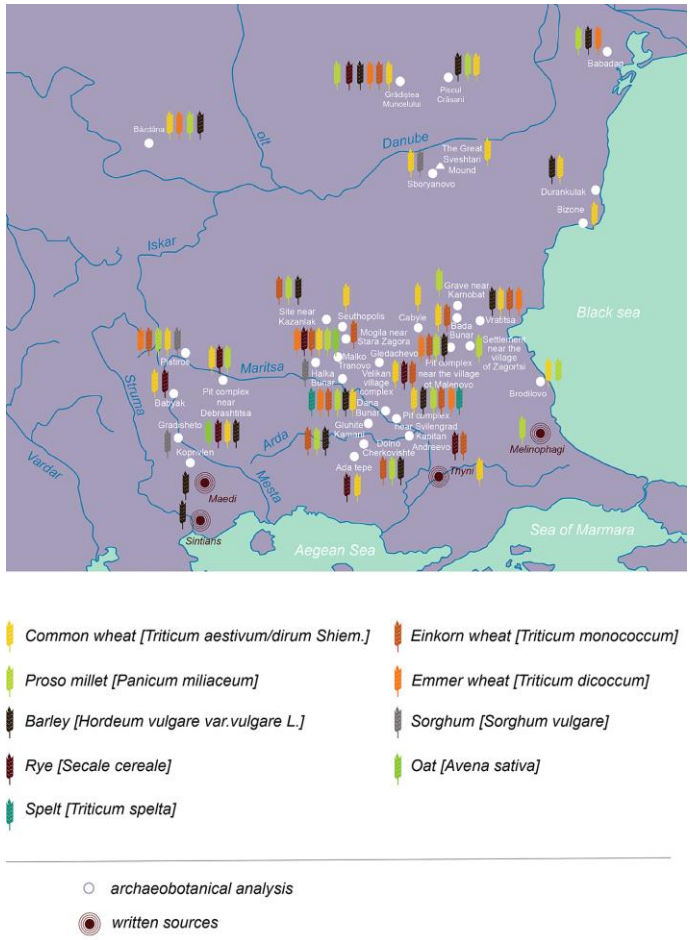

Fig. 2a. Cereal plants

Archaeobotanical studies report differentiation in the distribution of cereals based on the context in which they are found. For example, einkorn is commonly discovered at ritual complexes.[8] A possible explanation for this, besides it being the most ancient form of grain, is the hierarchization of cereals and redistribution of resources. It is likely that soft wheat was cultivated for commercial purposes, rye and barley for fodder, and millet to

[8] Popova 2018, 59.

feed the population. The suggestion that these crops were used specifically for the outlined purposes, however, should be discounted, as there was most certainly an overlap in function. As an example, some of the finds of bread and porridge from the Transitional continental agroecological zone are mixtures of different cereals: common wheat, millet and einkorn (see Fig. 2). Hulled wheats were grown as a reserve in case of famine, poor harvests and climate deterioration. In many cases, the finds of einkorn and emmer indicate the stockpiling of provisions,[9] as these crops are indifferent to the nature of the soil, are unaffected by frost and drought, and produce good yields. Their prominent use in a ritual context, besides their ancient nature, positively reflects economic dimensions related to the reluctance of "wasting" precious bread wheat.

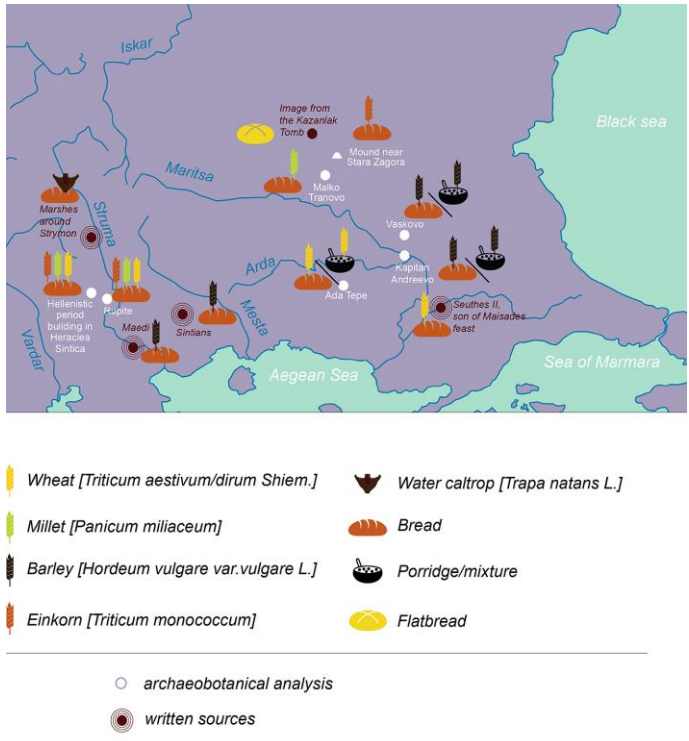

Fig. 2b. Bread production

Legumes were also part of a variety of cultivated crops in the Transitional continental agroecological zone, which findings from the archaeological sites conclusively confirm (see Fig. 3). Throughout the millennium, lentils (*Lens culinaris var. Microsperma*, medik.) were most widespread,

[9] Popova 2018, 59.

followed by bitter vetch (*Vicia ervilia* Wild.), and peas (*Pisum sativum*). After the 4th century BC, fava beans (*Vicia faba*) were also cultivated (see Fig. 3).

With the warming of the Balkan climate, the chickpea (*Cicer arietinum* L.) also "reappeared". Large quantities of this plant,[10] along with finds of grass pea (*Lathyrus sativus*), were documented at an archaeological site near the village of Krepost. This discovery led researchers to conclude that it was a stockpile of some sort. Whether its purpose was to provide food for the population or a commercial initiative remains a matter of conjecture.

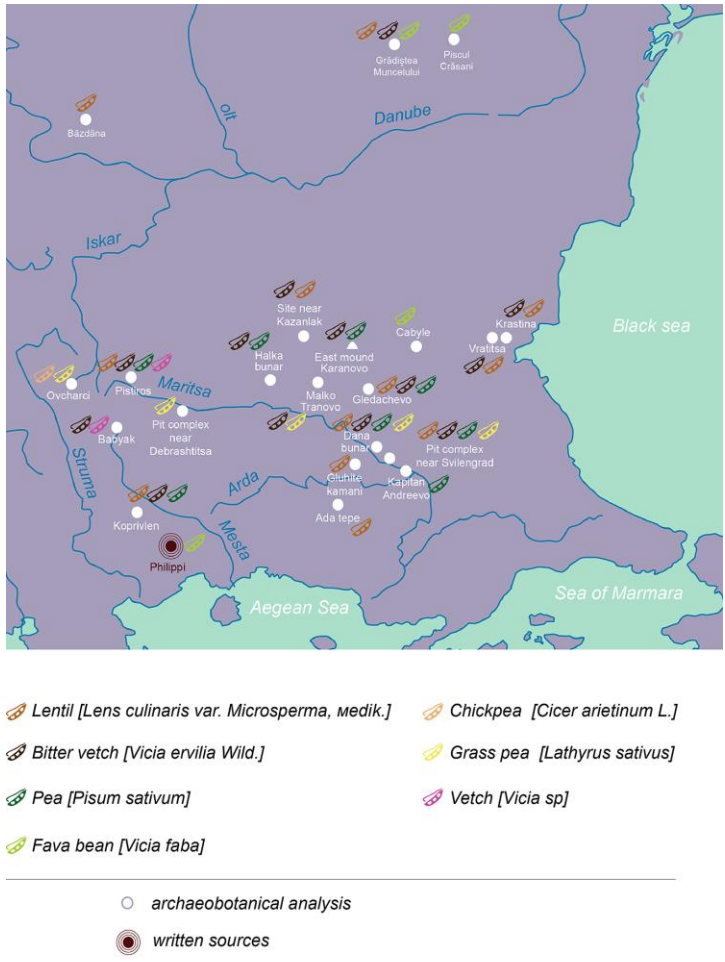

Fig. 3. Legumes (Author: E. Filipova)

[10] Popova, Marinova 2016, 969, Fig. 1.

Orcharding

Pomponius Mela mentions that "fruit trees are a rarity" in Thrace.[11] Interdisciplinary studies, however, register the presence of fruits in a significant number of archaeological sites throughout the Transitional continental agroecological zone, such as apples, pears, cherries, sour cherries, plums, raspberries, blackberries, dogwood and rose hips, as well as nuts, such as hazelnuts, walnuts, acorns, almonds and chestnuts (see Fig. 4). At some sites, the produce of wild-growing species was gathered, but the rest of finds can be linked to the existence of fruit plantations in the region. This is also indicated by the finds of billhooks, which, in addition to viticulture, are also used in the maintenance of fruit trees (see Fig. 5). The presence of figs in Cabyle, Dana Bunar, and Malenovo may be due to importation, but it is possible that plantations of this heat-loving tree existed, as winters there are mild and temperatures rarely fall below 0°C. In all probability, however, trade is the explanation for the discovery of an almond in an archaeological site at Osikovitsa, near the foot of the Western Balkan Mountains. This plant species is one of the earliest flowering crops, which spring frosts can very easily destroy. Still, a prerequisite for its cultivation in the region is the high proportion of rainfall in Osikovitsa, which corresponds to the irrigation norm of these trees. There are also natural meadows in the area, which is another favourable condition.[12] The discovery of small objects made of plum wood in an Early Hellenistic burial mound near Cabyle may also be associated with orchards in the region.[13]

Although archaeobotanical studies display a wide variety of fruit species in the diet of the population from the Transitional continental agroecological zone of Thrace, they represent merely 1% of plant remains.[14] Unlike in Greece, where fruits played an important role in funerary rites[15] – a practice carried over to the colonies established along the Black Sea coast[16] – in the Thracian world, fruit species had an insignificant presence. Perhaps this is due to the peculiarities of the climate, but also probably to differences in dietary culture and the nature of ritual actions, which did not involve their use.

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[11] Mela 2.16–18.

[12] Data from the Municipal Development Plan of Pravets for the period 2007–2013 shows that the agricultural territories in the village of Osikovitsa are 73,7%, while 38,7% of the total amount of natural meadows for the whole municipality are located in its hinterland ("Municipal Development Plan of the Municipality of Pravets 2007–2013.", www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=77. Accessed 30 Oct. 2024.)

[13] Georgieva 2020, 215.

[14] Georgieva 2016, 118.

[15] On wild fruits and orchards in Greece from the Neolithic to Roman times, see Pagnoux 2019. On the deposition of fruits and other plant species in sanctuaries and burial complexes in Greece, see Margaritis 2014.

[16] The amount of fruit in the ritual hearths of Apollonia Pontica is also significant, accounting for 21% of the plant remains (Popova, Krumova, 2015, 27, Fig. 4).

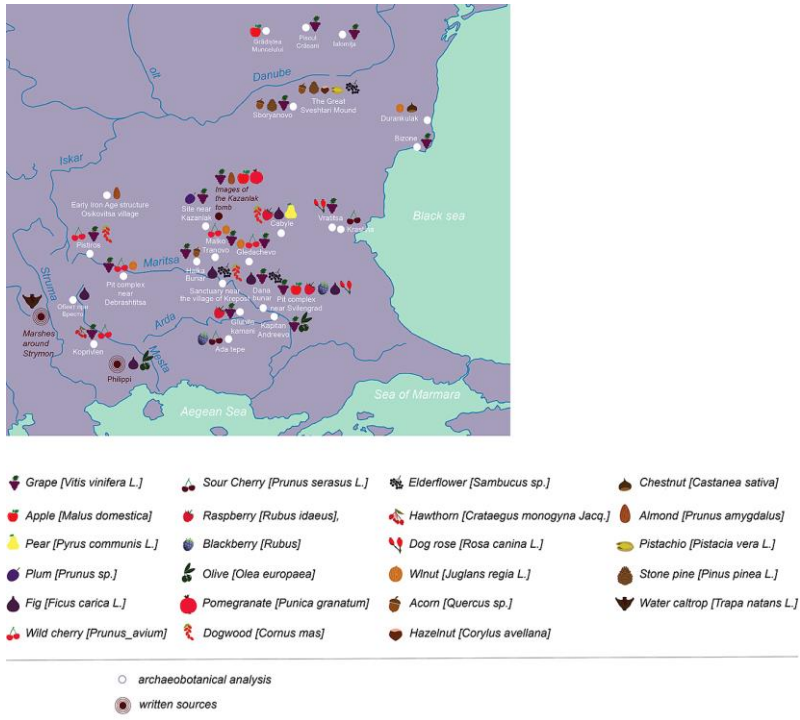

Fig. 4. Fruits (Author: E. Filipova)

Viticulture

Vine cultivation in the Transitional continental agroecological zone of Thrace was used chiefly for two purposes: the preparation of wine and the growing of table grapes, intended for consumption while still fresh.[17] The depiction of grapes in the Kazanlak tomb, shown served at a table, suggests this interpretation. Additionally, archaeobotanical studies of grape remains report no traces of pressing, further supporting this view.[18] Most of the studied archaeological sites represent pit and burial complexes, in which grapes were deposited whole rather than crushed, which would be the case if they were being prepared for vinification. The possibility of detecting traces of the process's intermediate stages is extremely low unless a production centre is located archaeologically. Irrespective of the economic purposes of the final product, viticulture in the Transitional continental agroecological zone of Thrace became more technologically sophisticated after the 4th century BC, which can be seen in the finds of iron billhooks from the region (see Fig. 5).

[17] Foxhall 2006, 266; Georgieva 2016, 119, n. 23.
[18] Valamoti et al. 2018, 277.

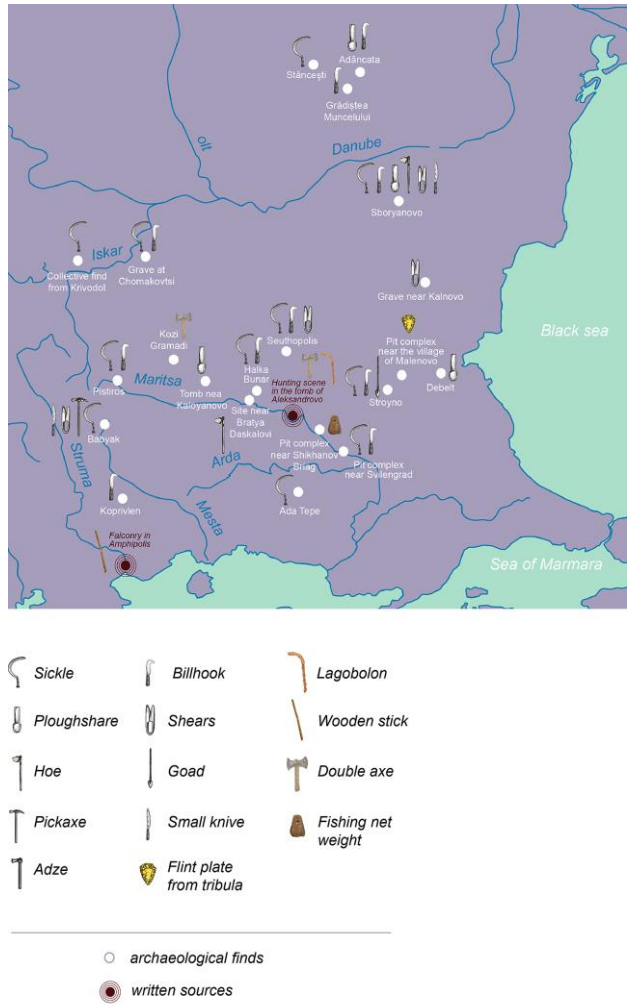

Fig. 5. Farming implements (Author: E. Filipova)

Husbandry

Archaeozoological studies have documented an exceptional wealth of faunal species in the Transitional continental agroecological zone of Ancient Thrace, with farm animals being the most predominant (see Fig. 6). Available data shows that most surveyed archaeological sites contain large quantities of pig remains,[19] while others have similar amounts of both pig

[19] A preference for pig rearing has been recorded in the so-called *Big Cave* above the village of Ilia in the district of Kyustendil (Nikolov, Vassilev 1980, also commented on in Georgieva 1999, 80–81).

and ox remains.[20] In the case of pigs, there is a preference for younger specimens, which suggests that they were reared primarily for their meat. The opposite is true for cattle, where older specimens prevail, and the remains show signs of physical exertion, suggesting that the animals were mainly used as farm labour and as a source of milk.[21]

Goats and sheep were also among the species reared in the Transitional continental agroecological zone in the 1st millennium BC, with goats outnumbering sheep. Bones from adult specimens are mostly found, suggesting that small ruminants were primarily bred for their milk and wool. Finds of bronze and iron shears for clipping animals confirm the existence of developed animal husbandry (see Fig. 5).

Fig. 6. Domestic animals (Author: E. Filipova)

[20] For example, in Cabyle, pigs make up 45% of domestic animals, and cattle only 18%. (Ribarov 1991), and in Yasa Tepe the two species are equal – each account for 28% of the total number of animals (Ribarov, Boev 1990).

[21] Ribarov, Boev 1990, 86.

Poultry remains consist of hen and goose, which are found at a limited number of sites from the 1st millennium BC (see Fig. 6) and are significantly fewer percentage-wise than the other animal species.

Hunting

The data currently available indicates that hunting was used as an additional means to diversify the Thracian menu. Archaeozoological studies show that wild boar was most widely hunted and its meat had a similar taste to that of the domestic pig. Other preferred species were the aurochs, the red deer, the roe and the fallow deer (Fig. 7). Of the small game animals, the rabbit is found at most sites, and there are isolated finds of beaver and badger. The food of the aristocracy in the Odrysian capital, Seuthopolis, may have included delicacies such as bear meat,[22] while remains of exotic birds, such as pheasant, crane and bustard, were discovered at Cabyle.[23] The relative proportion of wild to domestic animals is 20%,[24] which means that hunting was not the chief method of subsistence, although it was practiced actively enough. The increased numbers of dogs in settlements from the 1st millennium BC are probably due to both their involvement in cattle husbandry and their active participation in hunting.[25]

The ancient hunting art of falconry was also practiced in the Transitional continental agroecological zone. Aristotle relates an extremely curious case of swamp birds being hunted with falcons (ἱέρακες) in Thrace.[26] The hunters were equipped with long sticks (ξύλα), with which they struck the reed bushes to entice the birds to show themselves. The falcons then flew overhead to frighten them away. Afterwards, the hunters would hit the birds with their sticks and capture them, sharing some of the prey with the falcons by throwing it up into the air. Archaeozoological research reveals that a similar practice may have existed in the northeast at Cabyle. Remains of a saker falcon (*Falco cherrug*) have been discovered in the settlement, which was probably used to hunt greylag goose (*Anser anser*), mallard (*Anas platyrhynchos*), gadwall (*Anas strepera*) and garganey (*Spatula querquedula*), the bones of which were also found at the same site.[27]

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[22] Markov 1958, 141. The data from the archaeozoological analysis of Seuthopolis, presented here and later in the text, should be taken with some reservation, since the bone material studied belongs to two distinct periods of occupation – 1. the Thracian polis of the 4th–3rd centuries BC (up to 1.80 m deep), and 2. the medieval settlement of the 12th–14th centuries (reaching up to 40–50 cm), which are not clearly distinguished by Georgi Markov.

[23] Boev 2018, 9, Tab. 1.

[24] In Cabyle and Yasa Tepe the relative share is 30% (Ribarov, 1991; Ribarov, Boev 1990), while in Seuthopolis game is 10% of the total number of animals (Markov 1958, 135).

[25] Ribarov 1991, 159.

[26] Boev 2018, 9, Tab. 1.

[27] Boev 2018, 9, Tab. 1.

Fig. 7. Wild animals (Author: E. Filipova)

Hunting in the Transitional continental agroecological zone is not always associated with the killing of animals. For example, there is evidence from the settlement of Ada tepe that a wild aurochs (*Bos primigenius* Boj.) was captured and then crossbred with domestic cattle, resulting in the creation of a new breed that was larger and physically stronger.[28]

Fishing

The rivers crossing the Transitional continental agroecological zone provided an opportunity to enrich the regional menu with different fish species. Unfortunately, the bones are too small and fragile, making it difficult to detect them at archaeological sites, and ichthyological analysis cannot always identify the species of animal. Remains of carp and whitefish, as well as river mussels, have been recorded. Common land snails were also collected by the population (see Fig. 8).

[28] Ribarov, Boev 1990, 86.

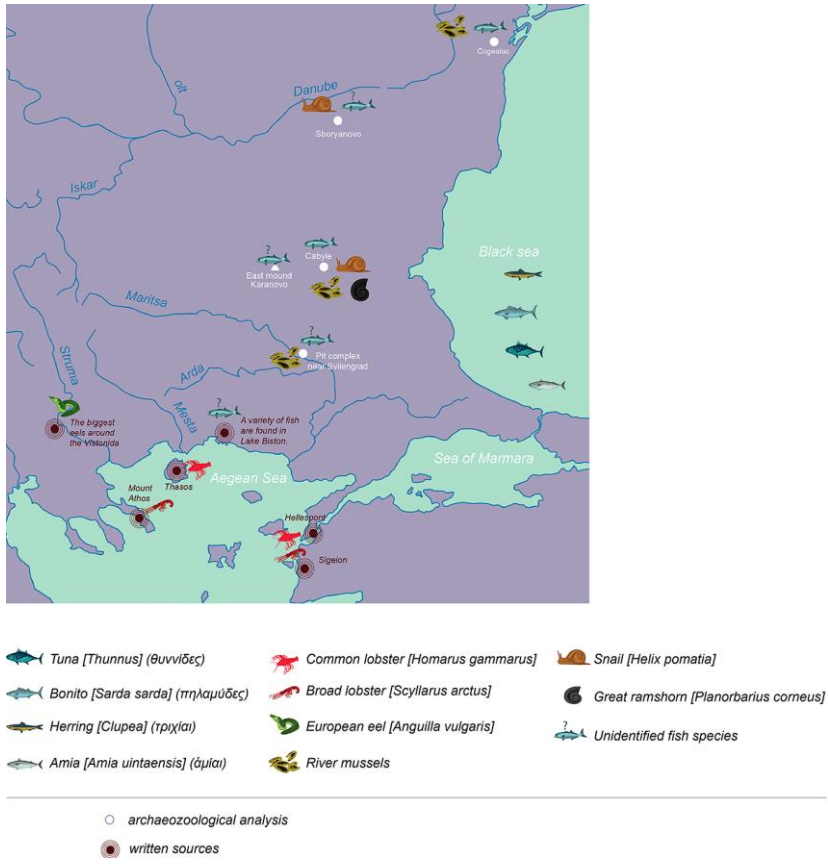

Fig. 8. Fish and mollusks (Author: E. Filipova)

Temperate continental and Northwestern Black Sea agroecological zones

The merging of the Temperate continental agroecological zone, covering the hilly areas near the Balkan Mountains, the Trans-Balkan Basins, the Danube Lowlands and the lands north of the Danube, and the Northwestern Black Sea agroecological zone, extending 40–60 km from the Black Sea coast, is due to the similarity of the farming practiced in both areas, as well as to the common specificities of the climate, which, with the exception of some microclimatic zones such as Durankulak, is characterized by cold winters and hot summers. Unfortunately, the studied sites from the 1st millennium BC in the north of the Balkan Mountains are not sufficient to provide comprehensive and definitive data on the agriculture in the region. They are, however, a basis for future studies to add new information about floristic and faunal diversity.

Plant Cultivation

The Temperate continental and Northwestern Black Sea agroecological zones, especially their moist and organic-rich black soils, are suitable for planting a variety of plant species. Common wheat grows here, from which the "best white bread" is made (see Fig. 2). Its preference for wet climatic conditions makes it an excellent plantation for the northern Thracian lands, and it is no coincidence that Solinus in the 2nd century wrote that his ancestors rightly called Upper and Lower Moesia "the barn of Ceres".[29] Other agricultural crops that were grown north of the Danube are barley, millet, einkorn, and emmer (See Fig. 2). During the Late Iron Age, a Near Eastern crop, sorghum, was introduced to the region. Certain evidence of its cultivation is provided by the archaeobotanical analysis of a jar filled with seeds for sowing, discovered in a dwelling in the Getic capital of Helis.[30] This species is extremely suitable for the temperate continental climate of the region around Sboryanovo and is an excellent addition to the diet of the population and livestock because of its high starch content.[31] Much can be gleaned about the agriculture of the northern Thracian lands thanks to the multi-year in-depth studies carried out at the Getic capital, which saw its heyday during the second half of the 1st millennium BC. Various tools have been found there that confirm the existence of developed agricultural techniques[32] and a find of a ploughshare allows for the reconstruction of the ard used by the Thracians.[33]

The lack of samples of cold-loving legumes in the area between the Balkan Mountains and the Danube does not necessarily exclude their use by the local population. Moreover, the presence of lentils, bitter vetch and fava bean has been recorded at sites north of the river (See Fig. 3).

Orcharding/Gathering

In one of his letters, Ovid exclaims: "The earth lies idle, abandoned to harsh neglect. No sweet grapes are hidden in leafy shade, no frothing must fills the deep wine-vats. This land's denied fruit…".[34] Archaeobotanical research, however, refutes the claims of the renowned poet exiled at Tomis. Samples show that apples, grapes, elderberries, walnuts, chestnuts, acorns and hazelnuts were all among the fruit plants of the Temperate

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[29] Solin. 21.3.

[30] Stoyanov et al. 2016, 34.

[31] Stoyanov et al. 2016, 34.

[32] Stoyanov et al. 2016, 35, Fig. 56. For finds of sickles in Romania see Cârciumaru 1996, 239, Fig. 20; 240, Fig. 21–22. Sorghum was also found in Pistiros (Popova Popova 2009, 130) and Halka Bunar (Popova 2009, 132).

[33] Stoyanov et al. 35, Fig. 57. For a reconstruction of a Dacian plough, see Cârciumaru 1996, 236, Fig. 15.

[34] Ov. *Tr.* 3.10.41 (translated by A. S. Kline, topostext.org/work/663. Accessed 30 April 2024).

continental and Northwestern Black Sea agroecological zones of Thrace in the second half of the 1st millennium BC (see Fig. 4). In all likelihood, however, these are not cultivated species (with the exception of grapes), but rather the fruits of semi-wild trees collected from the vicinity of the settlements.

Viticulture

The discovery of grapes (*Vitis vinifera* L.) in archaeological sites, along with billhook finds located on both sides of the Danube, indicate the presence of viticulture and wine production in the region. The temperate climate, regardless of latitude, ensures a long ripening period from April to October. The technique of covering the vines with leaves to prevent them from freezing during the cold months, described by Pomponius Mela,[35] may have been practiced in northern Thrace, where winters are considerably colder.

Husbandry

The large quantity of domestic animal bones examined at archaeological sites on both sides of the Danube is evidence enough of developed animal husbandry in the Temperate continental and Northwestern Black Sea agroecological zones during the 1st millennium BC (see Fig. 5). Observations of archaeozoologists reveal the following economic strategy — the sites were dominated by cattle, followed by sheep, goat, and, finally, pig. Cattle remains are primarily of young animals that show no signs of physical exertion, which means that they were raised chiefly for their meat. The same is true for pig remains, the largest proportion of which are specimens of the ages *infans* and *juvenilis*. The opposite trend is observed in the small livestock. The bones are of adult animals, meaning that sheep and goats were raised for their milk and wool.[36] Unfortunately, only one study indicates the specimens' gender,[37] which could be useful in relation to horses, because of Homer's mention of *hippemolgoi* (Ἱππημολγοί), who milked mares.[38] However, an interesting observation has been made about the existence of two categories of horses: a common group, exploited for riding and transport, and an elite group, represented by a smaller number of specimens used by the aristocracy.[39]

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[35] Mela 2.16.

[36] Ninov 2015, 966–968; Tarcan-Hrișcu et al. 1996, 299–305; Haimovici 2003, 253–261; Marian, Haimovici 2009, 335–345; Bejenaru et al. 2012, 603– 614; Sîrbu et al. 2014, 207–258.

[37] Marian, Haimovici 2009, 340, Tab. 4.

[38] Hom. *Il.* 13.1.5.

[39] Haimovici 1983, 79–107.

Hunting

It is likely that specimens from the elite horse category were used in the hunting of wild animals, which is a persistent element in the life of the population north of the Balkan Mountains. Moreover, a preference for big game, such as wild boar, red deer and roe deer, is evident.[40] The aurochs, which preferred warm deciduous forests overgrown with herbaceous vegetation,[41] occurs less frequently in bone finds. Of the small mammals, mainly hares were hunted, and beaver in the sites north of the Danube. The high social status of the Getic hunters is underlined by their choice of such a delicacy as bear meat.[42] The percentage of wild animal bones varies between 15% and 30% at different sites.[43] These values suggest that hunting was practiced not only by members of the aristocracy, but also by men of various social strata.[44]

Fishing

Aristotle tells of the different species of schooling fish that migrate and spawn in the fresh waters of the Black Sea.[45] He also describes the method of fishing on the Euxine coast during winter by drilling a hole in the ice.[46] Despite this information, the percentage of fish and mollusc remains at archaeological sites is low (see Fig. 8), and the bone finds are of river-dwelling species. In the Hellenistic settlement of Kozalak, located north of the Danube at Constanţa, the freshwater ichthyological fauna present is sterlet, catfish, carp and mussel of the genus *Unio*.[47] In addition to catching fish, the population of the alleged Getic capital of Helis enriched their menu with garden snails collected from the surrounding area.

Continental-Mediterranean and Mediterranean agroecological zones

The lands in the valley of the River Struma and the lower reaches of the River Maritza fall within the Continental-Mediterranean zone, while the southernmost territories along the Aegean coast, the Sea of Marmara and the Thracian Chersonese experience the true Mediterranean climate. The parallel consideration of these two areas is dictated by the similar characteristics in the natural environment and the analogies in the choice of fauna and flora cultivated.

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[40] Ferencz, Barbu 2012, 63–75.
[41] Ribarov 2020, 524.
[42] Two phalanges of a bear's paw in Sboryanovo (Ninov 2016, 967).
[43] Ferencz, Barbu 2012, 64.
[44] Ferencz, Barbu 2012, 70.
[45] Arist. *Hist. an.* 6.17.13.
[46] Arist. *Mete.* 348b 30–35.
[47] Haimovici 2003, 254, Tab. 2.

Plant Cultivation

From all regions of Thrace, the southern territories were in most direct contact with the Greek world and have the largest amount of information preserved about them, albeit in a fragmentary manner. Galen, while traveling along the Via Egnatia, remarked that he saw many fields of grain in Thrace.[48] Aristotle also relates that barly grew in the lands of the Thracian tribes of the Sintians and Maedi.[49] Cereals are highly adaptable to all environmental conditions and can cope with specific environmental constraints in different regions.[50] However, the climate in the Mediterranean agroecological zone, characterized by mild winters and extremely hot and dry summers, is not favourable for wheat production. The Thracian Chersonese is an exception, due to the high humidity with an annual average of around 72%.[51] This classifies the region as having good productive opportunities and defines its natural agricultural potential. The iconography of the hemidrachms of Chersonese with wheat grains, ears and wreaths is a sure confirmation of the cultivation of bread wheat in the region.

The surveyed settlement sites of the Continental-Mediterranean zone are too few to draw firm conclusions about the nature of cereal cultivation in the region. Archaeobotanical analyses of the plant foods deposited in pit and burial complexes are extremely useful and comprehensive, but probably do not reflect the actual situation of grain meals consumed in daily life. Bread wheat was recorded in small quantities, and minor crops dominated. There is a tendency in certain microregions for a preference of particular types of cereal, such as millet, barley[52] or hulled wheats,[53] these probably being regional peculiarities. Millet, for example, dominates the pit complex at Malenovo,[54] which falls within the territories of the Odrysae. In the famous fragment of Anaxandrides's comedy, ridiculing the feast organized by the Odrysian ruler Cotys to celebrate his daughter's wedding to Iphicrates, the dowry the Athenian commander received included a pot of millet.[55] The affinity for this cereal is probably related to its resistance

[48] Gal. 514.

[49] Arist. *Mir. ausc.* 27.116.

[50] Chevalier et al. 2014, 4.

[51] Tzvetkova 2008, 264.

[52] Barley predominates in Gledachevo-Dvora (Popova 2018, 46), Malko Tarnovo (Popova 2018, 43), Dolno Cherkovishte and Dana Bunar, followed by millet (Hristova et al. 2016, Tab. 1).

[53] In Svilengrad, the ubiquitous distribution of spelt and one-grain wheat is in equal amounts, in the complex at Kapitan Andreevo one-grain and two-grain wheat lead, in Velikan one-grain wheat predominates (Popova 2018, 48).

[54] In the pit complex at Malenovo, millet predominates in 43% of the pits (Hristova et al. 2016, Tab. 1).

[55] κέρχνων χύτρα (Anaxandr. fr. 41 Kock (= Ath. 4.7). For the use of the vessel – the so-called *hytra*, which serves for smoking/cooking food, see Villard 1992, 73–96.

to changes in climate, its short ripening period, and the rich harvest it produces.

Legumes, represented by lentils, leys, peas and sorghum, occur only sporadically at archaeological sites, although we learn from ancient texts that the Thracians knew the property of these plants to enrich the soil. Theophrastus, for example, relates that in Macedonia they turned over the ground during the flowering of the broad bean to fertilize it.[56]

Orcharding

Often the cold tolerance limit of olives is perceived as a determinant to the presence of a Mediterranean climate.[57] As already mentioned, according to Theophrastus, in the region of Philippi, olive trees were cultivated, which sprouted again after being scorched and their leaves were rejuvenated.[58] An olive stone was discovered in a Late Iron Age pit at a site near Kapitan Andreevo,[59] which slightly increases the "limit of cold tolerance", unless, of course, it is an import.[60]

In fact, the purposeful planting and cultivation of fruit tree species during the 1st millennium BC is most likely in the Mediterranean agroecological zone of Thrace. In the other agroecological regions, a large part of the fruits consumed came from gathering and trade. Various species were found at excavated sites: apple, fig, grape, cherry, sour cherry, blackberry, raspberry, hawthorn, elder, dogwood, as well as walnut, acorn and chestnut (see Fig. 4), but their percentage as compared to other plant species is not high. From Theophrastus we learn that in the swampy places around Strymon grew the water caltrop (*Trapa natans*), which the population ground into flour and used in the making of bread.[61]

Viticulture

Written sources attest that viticulture in the Continental-Mediterranean and Mediterranean agroecological zones was actively involved in the production of refined varieties of wine, according to Athenaeus.[62] Among these was the famous Biblin wine, which is a sweet type of wine and is made in the area around Oesyme in Southwestern Thrace. The discovery of baskets and grapes among the plant samples from the sites also confirm the presence of viticulture in the region (see Fig. 5 and 9). According to

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[56] Theophr. *Hist. pl.* 8.9.2.

[57] Grove, Rackham 2001, 11, also cited in Foxhall 2006, 245

[58] Theophr. *Hist. pl.* 4.14.12.

[59] Hristova et al. 2016, Tab. 1; Valamoti et al. 2018, 280.

[60] Philippi is located at 41° 0′ 47″ N, 24° 17′ 11″ E and Kapitan Andreevo at 41° 43′ 0″ N, 26° 19′ 0″ E.

[61] Plin. *Nat. hist.* 22.12, Theophr. *Hist. pl.* 4.9.1.

[62] Ath. 1.56.

Rumyana Georgieva, "for certain areas along the southern coast, viticulture and winemaking are the main economic activities",[63] which is also suggested by the coin images of grapes.[64]

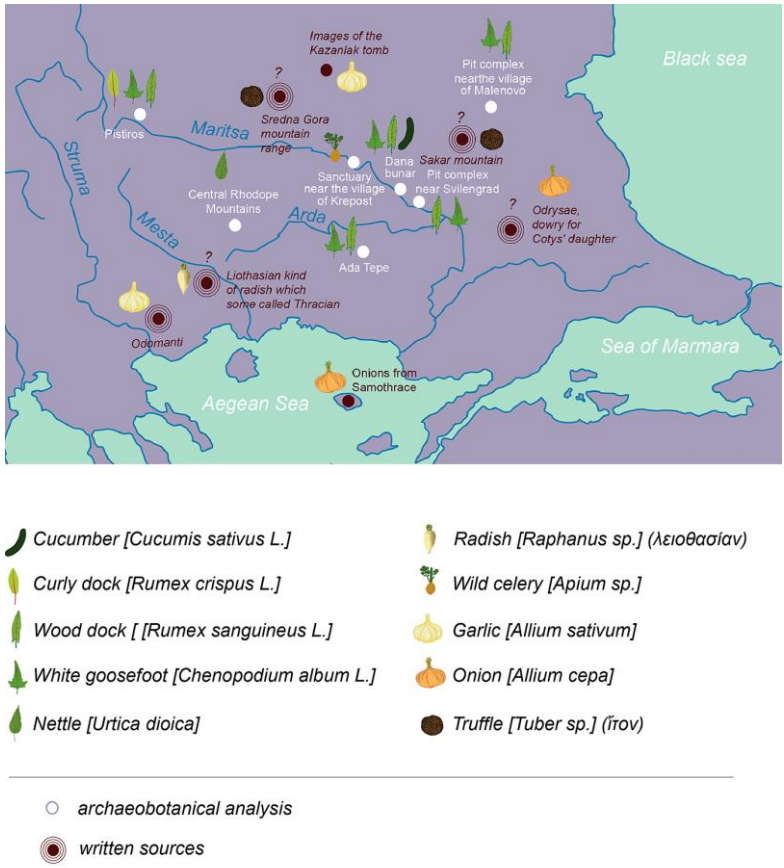

Fig. 9. Vegetables (Author: E. Filipova)

Horticulture

Gardening in the Continental-Mediterranean and Mediterranean agroecological zones of Thrace is expressed in the cultivation of vegetables in relatively small plots of land, such as domestic gardens and yard spaces. Nearby water sources were probably used to supply the plants. Referring to the Homeric texts,[65] Kalin Porozhanov discusses irrigation practices in Southeastern Europe and Northwestern Asia Minor in Antiquity,

[63] Georgieva 1999, 84.
[64] Youroukova 1981, 121; Filipova 2022.
[65] Hom. *Il.* 21.257–259; Hom. *Od.* 7.127–130.

and the conclusions that could be drawn regarding crop irrigation strategies in the southern Thracian lands.[66] Archaeobotanical analyses reveal a poor set of cultivated species – cucumber, saltbush, sorrel, curly dock, and celery. Written sources add onions and garlic to the list of vegetable species (Fig. 9).[67]

Husbandry

Information about the volume and the nature of animal husbandry in Southern Thrace can be found in written sources. Already in the *Iliad*, Thrace is represented as μήτηρ μήλων – mother of the sheep.[68] The marriage ransom of Iphidemes, the grandson of the Thracian king Cisseus, killed by Agamemnon in the *Iliad*, consisted of a hundred cattle and a thousand sheep and goats.[69] In the lands of the Cycones, Odysseus and his companions drank much wine and slaughtered many oxen and sheep.[70] Two thousand oxen and an innumerable quantity of small livestock were seized by Seuthes from the settlements of the Thyni,[71] while the dowry of Cotys's daughter for her wedding to Iphicrates included a herd of goats and two herds of white horses.[72] Data from different time periods reveals the importance that small ruminants had in the region throughout the 1st millennium BC. Different breeds were reared, as suggested by the mention of white and black lambs in the region of Assyritis, located on the Chalcidic Peninsula off the coast of Thrace, although for Aristotle the phenomenon was due to the water from which the animals drank.[73] Available osteological analyses, which are extremely thorough and informative, deal mainly with bones originating from pit complexes, objects of ritual and funerary nature, but not with material originating from settlements. This prevents the drawing of definite conclusions about the nature of animal husbandry in the region. Indeed, in some sites sheep and goat remains dominate,[74] but other domestic species, such as pig and cattle, and, in rare cases, hen, are ubiquitous. There is a predominance of juvenile bones,[75] but due to the ritual nature of the sites it cannot be concluded with certainty that small ruminants were kept solely as a source of meat and not for their

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[66] Porozhanov 1998, 151.

[67] Theophr. *Hist. pl.* 1.10.6–8.

[68] Homer *Il.* 11.222; Ar. *Ach.* 160–170.

[69] Homer *Il.* 11.244–245.

[70] Hom. *Od.* 9.47.

[71] Xen. *An.* 7.3.48.

[72] Anaxandr. fr. 41 Kock (= Ath. 4.7).

[73] Arist. *Hist. an.* 3.12.1.

[74] Remains of a young sheep were found in a mound in an area known as Semercheto (Borislavov 2006, 81), goat and sheep bones predominate at Kapitan Andreevo, along with those of pigs (Popov et al. 2007, 196).

[75] A similar trend has been observed, for example, in the pit complex at Svilengrad (Nekhrizov, Tzvetkova 2012, 182).

milk and wool. It is likely that we are dealing with sacred activity related to the spring-summer cycle. The maintenance of herds of young animals may also be related to the livestock trade in the region.

Hunting

Hunting seems to have been widely practiced in the southern parts of Thrace, as written sources provide information about the types of game, as well as the methods used in the pursuit and capture. The Paeonians, for example, used traps. They laid olive-oil-smeared skins near pre-dug holes, on which fleeing bison would then slip and fall into the trench. The figurative scene from the Alexandrovo tomb illustrates in detail how hunting took place in the southern Thracian lands. Some of the men used horses – probably the representatives of the aristocracy, the rest moved on foot. Dogs offered key assistance and outnumbered the hunters. The weapons that were used also had military applications[76] – metal spears and the double axe, with which the most experienced hunter dealt the decisive blow to the captured animal.[77] One of the weapons is identified as a *lagobolon* (λαγωβόλον),[78] which further enriches the hunting inventory of the southern Thracian lands. Wooden sticks (ξύλα) were also used by children in the region of Amphipolis, who, according to Aristotle, hunted small birds with the help of falcons. The narrative provides interesting information about falconry in Southern Thrace. Training began at an early age, with each boy having his own bird. Falcons were trained to recognize the voice of their master, and to deliver their prey instead of eating it.[79] Animals depicted in the Alexandrovo tomb include wild boar, red deer and fallow deer (see Fig. 7). Archaeozoological studies confirm that these animals were all part of the game hunted in the region. The fallow deer is a typical sub-Mediterranean species. Its habitat is limited in the north to the Balkan Mountains, and in the west to the Sakar Mountain and a chain of low hills called the Bakadzhitsi.[80] The bear and the rabbit are among the faunal elements of the southern Thracian lands, which are not depicted in the tomb, but bones of which are found at archaeological sites in the region. We also learn from written sources that a species of hare with two livers was common in the lands of the Bisaltae.[81] Tortoise remains with heat marks, present at several sites in the region, are an indication of a sophisticated menu that included delicacies.

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[76] For the armament of the hunters from the scene in the Alexandrovo tomb see Petrov 2006; Nankov 2010.

[77] The image of the double axe is probably in its capacity as a royal symbol.

[78] Nankov 2010. The *lagobolon* is a typical hunting weapon used in the Greek world mostly in the pursuit of rabbits. It is a wooden stick curved at the upper end.

[79] Arist. *Mir. ausc.* 27.118.

[80] Ribarov 2020, 525.

[81] Arist. *Mir. ausc.* 27.122, Ath. 9.63.

Fishing

Aristotle speaks of the variety of fish that are caught in Lake Vistonida,[82] of the lobsters in the Hellespont and around Thasos,[83] of the crawfish around Sigeion,[84] and of the eels that are caught in Strymon.[85] Indeed, the rivers Strymon, Nestos, and Hebros provide an excellent opportunity for fishing in the region, but this category of food does not seem to be favoured by the population. Fish remains are found in a limited number of sites and represent a very small percentage as compared to meat or cereals (see Fig. 8). Yet, the finds of fishing net weights from Late Iron Age pit structures in the Shikhanov Bryag area, near the town of Harmanli, are an indication that fishing was practiced in the region.[86]

Mountainous agroecological zone

This zone is not compact, but unites areas with altitudes above 1000 m, including parts of Strandzha Mountain, the Rhodopes and the Thracian-Macedonian contact zone of the Pangaion Hills and Mount Athos. The higher values of herbaceous plants in archaeobotanical samples as compared to tree species demonstrate the impact of anthropogenic activity in the mountains during the 1st millennium BC. The involvement of cultivated grasses in the pollen spectra is a strong argument for the presence of agriculture there.[87]

Plant Cultivation

In the arable plots of the Thracian mountains, various types of cereal plants were grown: wheat, oats, rye and barley.[88] In the Strandzha Mountain, where the settlements of the *Melinophages* were located, millet was a highly prevalent crop.[89] Although its merits can hardly be compared to those of soft wheat, it is a suitable alternative for the population of mountainous regions. Archaeobotanical studies report that cereals were deposited in rock sanctuaries, chiefly rye and wheat, as well as small quantities of oats and millet.[90] The amounts of these cereals were often quite large and may have been supplies intended for certain ritual activities.[91] Leguminous crops are poorly attested to in the samples from the moun-

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[82] Arist. *Hist. ap.* 8.13.4.
[83] Arist. *Hist. ap.* 5.17.5.
[84] Arist. *Hist. ap.* 5.17.5.
[85] Arist. *Hist. ap.* 8.2.21, Ath. 7.300.
[86] Ignatov, Kancheva-Ruseva 2007, 123
[87] Increased presence in pollen samples of various herbaceous species such as loblolly, wormwood, plantain, sorrel, yarrow, aster, dandelion and nettle (Lazarova, Filipovitch 2003).
[88] Lazarova and Filipovitch 2003, 165
[89] Xen. *An.* 7.5.
[90] Popova 2018, 59.
[91] Popova 2018, 59.

tainous archaeological sites. They consist mainly of lentil, and, in rare cases, bitter vetch and grass pea (see Fig. 3).

Orcharding

Theophrastus relates that trees common to both mountains and plains grow to be more beautiful in lower areas, but the mountainous trees have better fruit, and the quality of their wood is much higher. Apples and pears are an exception, their fruits being smaller and more astringent when grown in mountainous conditions.[92] Archaeobotanical studies show extensive use of large quantities of fruits in rock sanctuaries, such as in Debrashtitsa, Izvorovo.[93] Finds consist of grapes, cherries, sour cherries, raspberries, blackberries, dogwood, elderflower and walnut (see Fig. 4). According to Pomponius Mela, there were Thracians who had no knowledge of wine. If this statement is true, according to Venedikov, it describes the population from the mountainous regions, where the climatic conditions do not allow the cultivation of vines.[94] The possibility of using wild grapes, however, should not be excluded.

Husbandry

Available archaeozoological studies indicate that small ruminants dominated in the mountainous regions, followed by cattle and, finally, pig.[95] In terms of age, the bones from sheep and goats are predominantly of grown and adult specimens, meaning they were raised for milk and wool. However, there are remains of younger specimens as well. In the site at Babyak, for example, the number of lambs slaughtered at about three months of age is significant, which, according to Lazar Ninov, can be explained by ritual practices beginning in early May.[96] Cattle remains are of adult specimens, which is related to their use in farm labour. The few pig bones discovered all belong to younger specimens and sucklings.[97] These observations were made on the basis of the examination of material from ritual complexes, which does not allow firm conclusions to be drawn about the nature of husbandry in the region. It is likely that mobile pastoralism (transhumance) was practiced in the mountains, an indication of which is found in written sources. Peter Delev makes an interesting connection between the text of Herodotus about the Bisaltae "retreating to the Rhodopes" and a couplet by Virgil, which mentions Bisaltae shepherds "on a raid to the Rhodope". He allows for the possibility that the ancient

[92] Theoph. *Hist. pl.* 181.

[93] Popova 2018, 59.

[94] Venedikov 1981, 66.

[95] Gluhite Kamani Rock Sanctuary (Nekhrizov, Tzvetkova 2012, 128, analysis of bone material by Lazar Ninov), Babyak (Ninov 2009, 315).

[96] Ninov 2009, 315.

[97] Ninov 2009, 220.

texts represent a seasonally migrating pastoral population moving their herds to summer pastures in the mountains.[98]

Hunting

Bears are mentioned as one of the wild animals found in the Pangaion Hills and Kythos,[99] and on Mount Athos swine were kept in a semi-wild state.[100] Both species are among the plethora of game hunted in the Mountainous agroecological zone of Thrace, and remains of red deer, fallow deer, hare and roe deer were discovered as well (see Fig. 7). The proportion of wild animal bones is relatively high at around 30%, indicating that hunting is a sustainable element of food provision in the mountains.

Southwestern Black Sea agroecological zone

After the beginning of Greek colonization in the 6th century BC, numerous Greek poleis were established in this part of Thrace, and the local element in the region weakened. This is the reason why sites such as Apollonia Pontica are not considered in this survey, despite the extremely interesting observations on the faunistic and floristic potential of the Southwestern Black Sea area. The climate, unlike the other southern areas of Thrace, is influenced by the Black Sea, which, due to the moisture, is favourable for agriculture, and especially for the cultivation of bread wheat. Written sources preserve information about animal husbandry in the region, such as Pindar's account of the Argonauts encountering a herd of reddish Thracian cattle in the Bosphorus.[101] According to Aristotle, conditions existed for the development of beekeeping in the Southwestern Black Sea agroecological zone, as white bees were found making honey twice each month.[102] It is probable that this sub-sector of animal husbandry was actually practiced along the Black Sea coast, as Polybius writes that honey and wax were abundant in the lands around Pontus.[103]

Agricultural calendar

Archaeobotanical research provides definite evidence for the presence of seasonal crops in Thrace. The remains of chaff in the samples are an indicator of the time of year in which the different crops were planted, as most weeds are period specific. The existence of four seasons in farming, as well as the practice of autumn and winter-spring sowing of cultivated plants, has been firmly established.[104]

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[98] Delev 2014, 190.
[99] Xen. *Cyn.* 11.1.
[100] Arist. *Hist. ap.* 8.29.1.
[101] Pind. *Pyth.* 4. 203–206.
[102] Arist. *Hist. an.* 5.19.8.
[103] Polyb. 4.38.
[104] Popova 2010, 75; Georgieva 2016, 115.

Fall

For the Thracian farmer, the agricultural year began in autumn.[105] Because of the heavy rains during this season, the soil was moist and soft for ploughing. Archaeobotanical studies testify that winter cereals, which have higher yields than spring crops, were sown then.[106] However, there was a gap of nearly 11 months between the sowing and harvesting of spelt, which had a longer growing season. Grain was sown in September, and harvested in August. To dig and turn the soil, the Thracian farmer used both wooden implements, the ard, and metal tools, the hoe, the adze, and the pickaxe. The first variants of the ard, which, like the later ones, used the power of draft animals, only loosened the soil, without turning it over.[107] The tool underwent an evolutionary development after the 4th century BC, when a metal tip was added to the design for the immediate loosening of the soil. Metal ards in Thrace were all of the same so-called spoon-like type.[108] The reconstruction of the ard used by the Getae, which allowed the soil to be turned over, is a prototype of the plough.[109] The hoes used in Thrace are typologically different: with a semicircular and with a rectangular working end.[110] Another tool, which archaeological evidence so far suggests was only added to the inventory of agricultural implements at the very end of the millennium (see Fig. 5), is the goad, a tool used to drive draft animals.

Grape harvesting was usually done in the beginning of autumn, which is confirmed by archaeobotanical research. The other few cultivated fruits in the 1st millennium BC were also harvested in this period. These are probably the fig and olive plantations of the Mediterranean agroecological zones. Other fruits, such as apples and pears, as well as various forest species found at archaeological sites, may also have been harvested then. Autumn is also the season during which livestock was driven off of pastures and into the mountains. This was the time when herds were cleared, as well.

Winter

In late winter, legumes were sown: lentils, bitter vetch and peas. Leafy greens, root vegetables and onions were also planted in February. Tools made of wood, bone, horn or metal were probably used in planting the legumes and vegetables, and in maintaining them afterwards by weeding and hoeing.[111]

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[105] Georgieva 2016, 115.
[106] Marinova 2009, 173; Georgieva 2016, 115.
[107] Georgieva 2016, 112.
[108] Georgieva 2016, 113; Andonova 2013, 349
[109] Stoyanov et al. 2016, 35, Fig. 57.
[110] Georgieva 2016, 113.
[111] Georgieva 2016, 114.

Pruning vines is perhaps the most important activity in February. The pruning of other fruit trees is also particularly important, especially early flowering trees, such as cherries and almonds. Evidence of such a practice in Thrace is provided by iron billhooks registered at a number of sites dating from the Hellenistic period (see Fig. 5).

Spring

In early spring, cereals were sown again to prevent the risk of poor harvests and to ensure a surplus in case of hungry years.[112] This is substantiated by Theophrastus' statement about the properties of spring and winter crops in Thrace – the hard crops are those of spring, and the soft ones are those of winter,[113] as well as by Pliny's account of early maturing wheat in the region of Enos.[114] Every two or three years in the spring, olives, vines, and figs were grafted, an activity described in detail by Theophrastus.[115] In spring, mushrooms and some types of herbs are collected in the mountains. Written sources attest to a type of mushroom growing in Thrace, the so-called ἴτον or *itum*,[116] which is most fertile in spring and appears after heavy rain. The spring sowing of cereals uses the same tools as that of autumn. The grafting of fruit trees probably involved the use of small knives, which are found at sites dating from the 1st millennium BC (see Fig. 5).[117] The shearing of sheep took place in late spring and early summer. The prevalence of scissors at Hellenistic sites is associated with this activity in the agricultural calendar of Ancient Thrace. They were made of both iron and bronze,[118] and their form and shape remained consistent over time, as parallels can be drawn with ethnographic specimens from the recent past.[119] These scissors consist of two cutting blades facing each other, connected by an arcuate plate, and appear in sites from the second half of the 1st millennium BC (see Fig. 5).

Summer

Summer is the season of harvest, which varies in time for different crops, depending on the agroecological zone in which they are grown.[120] According to Pliny,[121] some wheat varieties in Thrace ripen two or three

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[112] Georgieva 2016, 2016.
[113] Theophr. *Hist. pl.* 8.4.6.
[114] Plin. *HN* 18.70.
[115] Theophr. *Hist. pl.* 2.1.4; 2.8.1–3.
[116] Ath. 2.60; Plin. *HN* 19.12.
[117] Knives have various uses not only in agriculture but for working wood, bone and leather.
[118] Andonova 2013, 161.
[119] Vakarelski 1977, 140, Fig. 92.
[120] Georgieva 2016, 115.
[121] Plin. *HN* 18. 69, 70.

months after sowing, while Theophrastus mentions a many-glumed wheat that ripens later because of the cold climate.[122] The main tool in harvesting is the sickle. In Thrace, two types of sicle were used, with a smooth and a serrated blade, both of which are attested to as early as the Early Iron Age.[123] In the second half of the millennium, smooth sickles are discovered less frequently.[124] This tool was probably used not only for harvesting, but also for mowing.[125] Evidence for the gathering of mown and dried grass, to be used as animal fodder, is found in Polyaenus's account of Antipater, who, while fighting in the lands of the Bessi, ordered the hay of the horses to be set on fire.[126] Wooden sticks/pitchforks were probably used in threshing,[127] as well as tribulas (threshing boards) equipped with flint plates, which are found at archaeological sites (e.g. in the pit complex at Malenovo).[128] Tribula elements can be recognized on the basis of their exceptional similarity to the ethnographic specimens.[129] It is possible that the same practice of winnowing, which Theophrastus mentions while describing the collection of fava beans in the region of Philippi, was used to separate the grain from the chaff.[130] The harvesting of legumes and vegetables also took place in summer.

During the summer, herds were put to graze at night. A seal found at Seuthopolis is associated with ownership marks, with which cattle were usually branded. Such practices suggest that animals belonging to different households grazed together.[131] In the mountainous and semi-mountainous regions, lush herbaceous vegetation bloomed in summer, including thyme[132] and mint,[133] which are excellent food for both animals and humans. Flowering plants are also valuable grazing for bees.

Profile of the Thracian farmer

Owners of lands and herds (Thracian rulers and aristocrats) most likely exploited their holdings through the use of various forms of extraneous labour.[134] One available option was to hire sharecroppers, who would quickly plant and harvest the grain owners needed for export. Aristotle's

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[122] Theophr. *Caus. pl.* 4.11.5.
[123] Nikolov 1970, 53, also commented on in Georgieva 2016, 114.
[124] Andonova 2008, 159; Andonova 2013, 352, 354; Georgieva 2016, 114.
[125] Vakarelski 1977, 88; Georgieva 2016, 114.
[126] Polyaenus, *Strat.* 4.4
[127] Ov. *Epigr.* 3.8 (commented in Venedikov 1981, 88; Georgieva 2016, 114)
[128] Bozkova, Petrova 2012, 144.
[129] Gurova 2011.
[130] Theophr. *Hist. pl.* 8.9.2.
[131] Ognenova-Marinova 166.
[132] Arist. *De pl.* 6.7.2, Plin. *HN* 19.55.
[133] Plin. *HN* 19.55.
[134] Fol 1972, 124, 125.

account of Iphicrates advising the Odrysian king Cotis to issue an order that all his subjects should sow a piece of land for him may be interpreted in this manner.[135] Xenophon's comment about the Thracians, for whom the victory of Seuthes would have meant slavery (δουλεία),[136] and a statement by the ruler himself, professing to the ownership of 120 slaves (ἀνδράποδα),[137] suggest that forced labour of dependent peasants and slaves was also present in Thrace. For example, Athenaeus, recounting Agatharchides of Cnidus, mentions that the Thraco-Illyrian tribe of the Dardani had a large number of slaves (δοῦλοι). Some possessed a thousand, and others even more, who in time of peace were employed in cultivating the land, and in time of war entered the army.[138] This source is also discussed by Hristo Danov[139] and Velisar Velkov.[140] According to Hr. Danov, however, such information reflects relationships in the coastal areas of Thrace,[141] which are not relevant for the interior. Velkov also writes that "the possibilities of the Thracian economy for the application of slave labour were limited".[142] His assumption is that the potential of these dependent people was used not so much in the cultivation of land, but in the rearing of livestock, and that Seuthes's slaves fulfilled the role of personal servants and shepherds of his flocks.[143] Grain farming, then, was more of an industry that employed mostly free people, representatives of the common population. On the basis of Aristotle's text, it can be assumed that in the case of the Odrysian kingdom, subjects of the state (τῶν ἀνθρώπων ὧν ἦρχε)[144] had to provide a certain amount of their produce as tax.

In the end, despite technological changes, the main factor in the cultivation of land in Thrace turned out to be the household members.[145] Yet, although of the familial type, in the 1st millennium BC agriculture was carried out in larger areas, beyond the scope of the domestic garden, and most likely outside the boundaries of settlement space. Ancient writers have specifically noted the employment of Thracian women in tilling the soil, harvesting grain and caring for livestock. These economic activities, according to Greco-Roman ideas, were not typical of women, and, according

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[135] Arist. *Econ.* 2.1351a. The statement is repeated almost verbatim in Polyaenus (Polyaenus, Strat. 7.32.1), but in this case the order is issued by Seuthes, hipparchus of Cersebleptes, to the farmers for five medimnoi grain. For sharecropping see Georgieva 2016, 124.

[136] Xen. *An.* 7.7.32.

[137] Xen. *An.* 7.7.53.

[138] Ath. 6.103.

[139] Danov 1955, 112, n. 2.

[140] Velkov 1967, 21, n. 17.

[141] Danov 1955, 112.

[142] Velkov 1967, 23.

[143] Velkov 1967, 23.

[144] Arist. *Oec.* 2.1351a.

[145] Venedikov 1981, 45–46.

to Plato, were carried out by slaves.[146] Their reports are corroborated by anthropological analyses, which show that the changes on the bones of individuals, a characteristic of great physical exertion in life, are observed in the remains of both male and female burials. Anthropological analyses of Iron Age necropolises in the Isperih municipality report frequent spondylosis and spondyloarthrosis changes in both sexes.[147] Osteoarthritic changes are also observed on the bones of individuals from the pit complex at Svilengrad.[148] Virgil's poetic stanzas about Thrace nourishing warriors who worked the land themselves[149] point to the assumption that in times of war, when men were recruited into the army, women were, indeed, entrusted with agricultural activities.

The attempt to regionalize the agricultural activity in Thrace into separate agroecological zones allows us to take into account different farming strategies, such as the specific fertilization of the soil with broad beans in the Continental-Mediterranean agroecological zone, the cross-breeding of domestic cattle and wild aurochs to obtain a larger breed in the Transitional-Continental agroecological zone, or the breeding of two categories of horses – a common and an elite group in the Temperate-Continental agroecological zone. Future research in this field of study could also highlight other specificities in the working processes of the populations in different parts of Thrace, which could not only add new data on economic activity, faunistic and floristic species, the agricultural calendar and its tools, and the profile of the Thracian farmer, but also contribute to a better knowledge of this non-classical society in the classical world.

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[146] Pl. *Leg.* 7.805. On the functionality of women's role in the family and the farm, and on the relationship between the institution of marriage ransom, polygynous marriages, and the recognition of the high economic value of women's labour in ancient Thracian societies, see Kotova 2013, 25, 87–91.

[147] Yordanov and Cholakov 117.

[148] Russeva 2008, 556–568.

[149] Verg. *Aen.* 3.13.

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