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Rural hinterlands in the Black Sea during the fourth century BCE: Expansion, intensification and new connections

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Abstract:

This paper takes a holistic approach to the data for rural hinterlands in the Black Sea region in the fourth century BCE to reveal pan-Black Sea patterning, importantly including the south coast and the territory of ancient Sinope. During a period of dynamic mobility and prosperity, rural hinterlands of Greek settlements around the Black Sea expand in ways that demonstrate significant regional commonalities in terms of increased settlement, intensified agricultural infrastructure, new connections via road and path networks and the inclusion of dependent territories beyond the traditional chora. Decisions to expand rural territory and intensify agricultural production were taken at the local level, but this patterning demonstrates that they were also responding to the dynamics of Black Sea economic and political networks. The associated increased density of occupation and connectivity in these rural hinterlands made them key facilitators of social networks, creating stronger ties between Greek settlements and other local communities and ultimately enmeshing a more diverse group of people within Black Sea networks.

The fourth century BCE was a period of dynamic mobility and prosperity in the Black Sea region, particularly for the Greek settlements that lined its shores. Evidence for significant movement of people and goods within the Black Sea comes in the form of epitaphs, proxeny decrees and pottery that have been found in the Greek settlements and their hinterlands (Avram 2012; Bouzek 2007; Ruscu 2008; Saprykin 2014). Prosperity, at least amongst elite groups, is reflected in monumental burial traditions and rich burial assemblages that can be found in various iterations (e.g. Archibald 1998; Kacharava, Kvirkvelia 2008; Rempel 2011). At the same time, the epigraphic and textual records demonstrate closer ties with the Aegean, and Athens in particular, especially for Greek cities on the north coast of the Black Sea (Moreno 2007a). A key driver for this fourth century BCE prosperity was the trade of agricultural products: wine and oil transported in amphorae primarily within the Black Sea and grain that was exported to Athens.

A corollary of this trade in oil, wine and grain was increased agricultural production and increased investment in agricultural territory and rural hinterlands. Indeed, archaeological investigation has documented increased settlement and activity in the chorai, or rural territories, of various Greek settlements around the Black Sea, particularly on the north and west coasts where most work has been done. Understanding the implications of agricultural intensification, however, can only go so far at the level of individual hinterland. The oil and wine that circulated most widely within the Black Sea was produced on the south coast (Herakleia Pontika, Sinope) and the grain that was exported was produced primarily on the north coast (Olbia, Chersonesos and the western Crimea, Bosporan kingdom). The Black Sea functioned as a conduit for movement and exchange, connecting the Greek settlements on its coast within economic and social networks that were expanding in the fourth century BCE to include new communities and stronger ties with non-Greek polities in the surrounding regions.

The expansion and intensification of use of rural hinterlands around the Black Sea must be understood as a part of these larger networks (Attema 2017). Indeed, the commonalities in the nature and impact of hinterland expansions can only be recognised and interpreted through regionally holistic investigation and comparison. While there has been considerable investigation of some individual hinterlands in the Black Sea, there has been little discussion of them at level of regional networks. This is also true for areas of the Mediterranean settled by ancient Greeks with the exception of the Aegean region, where systematic intensive survey techniques were pioneered in the 1970s and 80s. Here, where politically defined rural territories were often contiguous, a more regional and comparative approach to the chora has developed. Key questions have revolved around the polis/chora nexus: the process of territorial definition of the chora; the nature of agricultural exploitation and labour; and the relationship of the chora to the urban centre of the polis (Alcock, Cherry, Davis 1994; Bintliff 2006; Morris 2005; Osborne 1987). More recently, focus has shifted to the political significance of the chora and the ways in which land tenure related to the definition of political status (e.g. Zurbach 2013).

Outside of the Aegean Greek world, however, both the nature of questions regarding the hinterlands of ancient Greek settlements abroad and the methodology adopted for answering them have been different. If Anthony Snodgrass's (1987-9: 63) warning that, despite the apparent correlation of maximum rural expansion and a period of maximum population, power and prosperity for a polis, we must not assume that all members of the polis community shared in the prosperity equally is true for the Aegean region, it is even more salient for Greek settlements elsewhere in the Mediterranean and Black Sea regions. The inherent interconnectedness of the chora of a 'colony' and the surrounding territory means that political boundaries are not necessarily the most important feature for understanding activity in the hinterland of Greek settlements outside the Aegean region. In addition, the processes and causes of change and development of hinterlands are inherently more regionally and locally determined than in the Aegean. The methodology of investigating these landscapes has also been determined by local landscapes, regional and national politics and the disciplinary traditions of the often-international teams working in them. For these reasons, discussion of rural landscapes at a larger comparative scale has not taken place outside of the Aegean region.

This paper, however, takes a holistic approach to the data for rural hinterlands in the Black Sea region in the fourth century BCE to reveal pan-Black Sea patterning that has been obscured by prevalent local and subregional interpretations of the data. Crucially, we include evidence from the south coast of the Black Sea, in particular the area of ancient Sinope. Although this is a thinner data set than those available for other parts of the Black Sea, the evidence from the Sinop Regional Archaeological Project (SRAP) survey is imperative for informing, comparing and nuancing patterns of rural hinterland engagement in other regions of the Black Sea. SRAP has conducted 10 seasons of field survey in the region of Sinop from 1997-2012, under the direction of Owen Doonan (California State University Northridge) and Alex Bauer (Queens College, City University of New York). The project's aims are to investigate long-term patterns of land-use and settlement and communication networks in the Black Sea coastal region of Sinop, from the inland valleys and mountains to the sea, by employing both extensive

reconnaissance of its numerous ecological zones and intensive techniques of systematic survey and excavation in selected zones. SRAP has investigated the diachronic development of the hinterland of Sinope from the Chalcolithic to the early modern period; in particular it provides an important dataset for the hinterland of a southern Black Sea Greek settlement in the third millennium BCE – first millennium CE and the possibility of comparison with the west and north coasts (Doonan 2004; 2010).

Indeed, this pan-Black Sea perspective is crucial for recognising the nature of increased investment, agricultural production and engagement within the hinterlands of the Greek settlements. Perhaps more crucially, this holistic approach illuminates and contributes to our understanding of the social and economic networks that functioned within the Black Sea in this period. The rural hinterlands engaged both the Greek settlements and the other local communities in a rich set of connections that tied them to larger Black Sea networks and beyond, as will be considered at the end of this paper, to the wider Greek oikoumene.

The foundation for this paper is a wealth of data from the Black Sea region, especially from the north and west coasts, that addresses the rural hinterlands of the Greek settlements that were founded there from the second half of the seventh century BCE onwards. Beginning with the tradition of extensive survey that was championed by Soviet archaeology and an interest in understanding the polis and chora as a unified system (Archibald 2002: 54; Blavatskii 1953; Novakovic 1999; Shcheglov 1983), investigations have included targeted excavation of rural settlements, more recent intensive surveys (Guldager Bilde et al. 2012; Scholl, Zin'ko 1999) and the use of subsurface prospection and satellite imagery (e.g. Smekalova, Smekalov 2006; Smekalova 2013) to create a detailed picture of rural hinterlands of Greek settlements on the west and particularly north coast of the Black Sea. Nonetheless, despite this common foundation, the focus of interpretation has been primarily at the local level with few discussions at the regional level (cf. Müller 2010; Solovyov 2009; Wasowicz 1999). Where common themes exist, they focus on understanding the hinterlands of Greek settlements as defining features of the economic, and increasingly social, relationships

with local populations. While these interpretive trends have been productive, the local and subregional focus of research has precluded recognition of the ways in which economic, territorial and social expansion in Greek settlements were related to broader Black Sea and Mediterranean networks. In addition, the less archaeologically explored south and east coasts of the Black Sea have not been considered as part of this picture.

Increasingly, the recognition of glocal forces and the role of social networks in the ancient Greek world has opened up possibilities for understanding the interconnections between local manifestations of Greek experience and broader commonalities of Greek culture and practice (e.g. van Dommelen 2017; Hodos 2010; Malkin 2011). To date, this approach has only minimally been applied to the Black Sea region (Kozlovskaya 2017; Szamalek 2014); instead, the separation of the Black Sea from the larger Greek oikoumene and the separation of the Black Sea into sub-regions based on coastal differences has been dominant (Ivantchik 2007). This separation has been most prevalent in terms of rural landscapes where, despite a general acceptance of a broader Black Sea economic network, sub-regions have dominated interpretation. This more focused approach has enabled close investigation of the role of particular historical factors, such as the consolidation of the Bosporan kingdom, the Chersonesan expansion or the relationships between Olbia and the Scythians, on the development of individual hinterlands as well as recognition of the range of local communities that were implicated in that development (e.g. Braund, Kryzhitskiy 2007; Chtcheglov 1992; Kruglikova 1975; Kryzhitskii et al. 1989; Maslennikov 1981, 1998). At the same time, the focus on individual hinterlands has precluded a broader analysis that recognizes and interrogates the general trends in the development of rural territories, not only as agricultural hinterlands of the Greek communities around the Black Sea but as key actors in connecting the communities that lived in them to larger networks of the Black Sea and Greek worlds.

The focus here is the fourth century BCE, a time of dynamic movement of people and things in the Black Sea and the increasing regionalisation of wealth and power. On the one hand, there was a proliferation of political and economic connections between

Black Sea poleis (e.g. Inaishvili, Khalvashi 2010; Krapivina 2010; Ruscu 2008; Saprykin 2014) and intensified contacts between Greek communities in the Black Sea and those in the Mediterranean (Avram 2012; Moreno 2007a, b; Ruscu 2008). On the other hand, the 'fragmentation' of political power that occurred in the wake of the demise of the dominant powers from the fifth century BCE (Delian League, Persian empire; Hammond 1967) led to a rise of regional monarchies (Thracian, Scythian, Cholcian, Pontic). These kingdoms inserted a new element of heterarchical power relationships into the previous polis networks of the Black Sea region.

These factors combined to make the fourth century BCE a time of prosperity in the Black Sea. Increasingly developed networks of exchange, diplomacy and competition amongst the Black Sea centres set up conditions where increased exploitation of the hinterlands was desirable and new relationships with local populations were made possible and necessary. Although there are particular historical explanations for the hinterland development of certain Greek centres, for example the expansion of Chersonesan control into the western Crimea or the large-scale Bosporan export of grain, this paper contends that the general trend towards increased investment in hinterlands in the fourth century BCE was a response to the expansion and intensification of Black Sea networks in this period. An evaluation of the archaeological evidence from north and west shores of the Black Sea demonstrates that hinterland investments share key features, including an increase in settlement numbers; agricultural intensification; development of roads and routes providing access to the hinterlands; and the establishment of territory beyond agricultural chorai. Comparison with the only comparable survey data available for the south coast of the Black Sea, from the region around ancient Sinope, further confirms this pattern.

The nature of expansion of rural hinterlands in the Black Sea region does not only shed light on the ways in which the Greek centres of the region were investing and participating in broader economic networks. This study also demonstrates that the rural expansion also expanded these networks and created opportunities for new forms of participation and engagement of local populations who inhabited the hinterland regions

or were drawn to the newly developed agricultural and trade economies that were being created. The political heterarchy in the region that characterised this period, including larger kingdoms like the Thracians, the Scythians and the emerging Pontic polity as well as smaller regional powers, was both contextualised and enabled by the increasingly culturally heterogeneous communities in the rural hinterlands of the Greek centres around the Black Sea.

‘Flowering’ of settlement

Although most Greek settlements in the Black Sea had begun to develop a rural territory during the Archaic period, evidence for a marked fourth century BCE intensification can be seen at many sites on the west and north coasts of the Black Sea. It is also the case that the results of the systematic survey conducted by the Sinop Regional Archaeological Project demonstrate that it was only in the fourth century BCE that significant engagement with the hinterland of ancient Sinope developed. A comparative view of this evidence from around the Black Sea demonstrates that, while each region represents individual iterations of this pattern, there are clear general trends in the way hinterlands were expanded and exploited in this period (table 1).

Most clearly, there is an increase in the number of rural settlements in the territories of Greek settlements starting in the fourth century BCE (fig. 1). The development of the rural territories around the earliest Greek settlements on the west and north coasts of the Black Sea can be dated to the sixth century BCE, with some experiencing a disruption in their hinterlands in the fifth century BCE, for example Istros, Olbia and Nymphaion (Avram 2006; Kryzhitskii 2000; Kryžickij 2006; Scholl, Zin’ko 1999; Zin’ko 2006). Other later settlements, like Chersonesos, saw their rural territories developing in the fifth century BCE (Nikolaenko 2006). For all, however, the fourth century BCE marks the beginning of a period of increased settlement in their rural hinterlands. In some cases this took the form of an increase in the density of settlement within the territory already established in the Archaic period. At Olbia, for example, the 107 late Archaic settlements identified increase to 151 settlements in the fourth-third centuries BCE,

following a contraction of the chora in the fifth century BCE. The first farmsteads and settlements were probably reestablished by the late fifth century, but the last quarter of the fourth to first half of the third centuries BCE was a time of particular flourishing of rural settlement (Kryzhitskii 2000). Similarly, at Istros archaeological evidence suggests that the fourth century BCE saw an increased density of settlement in the southwest portion of its rural territory but not an overall expansion of territory (Avram 2006).

In other places, the increased settlement density was accompanied by an increase in rural territory, such as in the Kerch and Taman peninsulas or the western Crimea (Guldager Bilde et al. 2012; Saprykin 2006; figs 2-3). As the territory of the Bosporan kingdom was consolidated in the first half of the fourth century BCE, the number of rural settlements increased: from 13 in the fifth century to over 300 in the fourth-third centuries in the Kerch peninsula and from 48 in the fifth century to 138 in the fourth-second centuries in the Taman peninsula (Rempel 2004: 101). At Nymphaion, where the entire chora has been surveyed systematically, the late Classical-early Hellenistic period saw an increase in rural settlement: 35 of the 41 ancient settlements identified had material from the fourth-third centuries BCE; only six of these also have evidence of occupation in the sixth-fifth centuries BCE (Scholl, Zin'ko 1999: 15-22). The systematic Džarylgač survey on the Tarkhankut peninsula has demonstrated that, although the earliest Greek settlements in this area are coastal and date from the late fifth-early fourth centuries BCE (e.g. Panskoye 1, Kalos Limen), it is not until the second half of the fourth century BCE that there is evidence for significant occupation of the territory. The late Classical-early Hellenistic period saw the settling of the coastline, including main settlements at Bolshoy Kastel, Ocheretay and Karadzhinskoe, and the general occupation of the rural landscape, a development associated with Chersonesos's establishment of its 'further chora' in this region (Guldager Bilde et al. 2012: 54).

While the fourth century BCE clearly represents a peak of settlement numbers there are some variations. At Kallatis, on the west coast, archaeological evidence indicates that the rural hinterland was only first developed in the fourth century BCE (Avram 2006; Ştefan et al. 2017). This intensification of rural settlement was fairly short-lived in the

western Crimea and at Nikonion, with evidence of many sites being abandoned in the third century BCE (Guldager Bilde et al. 2012; Ochotnikov 2006). At larger centres, however, like Istros, Olbia, Chersonesos and the Bosporan kingdom, most of the settlement continued into the second century BCE (Avram 2006; Kryžickij 2006; Nikolaenko 2006; Saprykin 2006).

While there has been less survey on the eastern coast of the Black Sea, results from the Eastern Vani Survey project suggest that there was also an increase in rural settlement in the region around Vani in the fourth century BCE (Hughes 2015). The south coast of the Black Sea has also been less studied for the Classical period than the west and north coasts. Archaeological surveys conducted in the central Pontic region (Kastamonu, Sinop, Samsun, Amasya, Tokat and Çorum provinces) indicate a decline in the number of sites in the Classical and Hellenistic periods, although an overall continuity in occupation from the Iron Age (Bakan, Şerifoğlu 2015: 301; Doonan 2004; Erciyas 2006: 57; Matthews et al. 2009). A general difficulty in defining local pottery chronologies for the Classical and Hellenistic periods, however, makes it difficult to interrogate this general pattern further.

Historical sources for the southern Black Sea coast, in contrast, are suggestive of agricultural expansion, particularly in relation to Herakleia Pontika in the west. This Greek settlement apparently had a significant agricultural territory, with labour provided by a dependent population (Strabo 12.3.4) and by the fourth century BCE was an exporter of wine and grain (*IG* 2^2 363; Athenaeus 1.32b; Burstein 1976: 78; Erciyas 2003: 1406). In the last quarter of the fourth century BCE, Dionysos, the ruler of Herakleia, expanded its territory inland into Bithynia and annexed other Greek settlements along the coast (Memnon, *FGrH* 3B 434F4.1; Burstein 1976: 79). The foundation of the western Black Sea settlement of Kallatis and the refoundation of Chersonesos in Crimea are also both claimed as Herakleian initiatives (Strabo 12.3.6; Hind 1998).

For archaeological evidence, however, of territorial expansion and rural settlement on the south coast of the Black Sea we must turn to Sinope, where the fourth century BCE is a time of transformation in its hinterland. The results of intensive archaeological survey by the Sinop Regional Archaeological Project suggest that the pattern of increased settlement in the hinterland established for the other coasts of the Black Sea is true for this region as well. From the point of initial Greek settlement in the later seventh century to the fourth century Sinope remained isolated from its hinterland and its economy was fully focused on controlling the trade routes along the south coast of the Black Sea. This is in contrast to the evidence from Samsun province to the east, where early Greek imports have been found at sites inland along the Kızılırmak river (Summerer 2007; Tsetskhladze 2012), suggesting that the evidence, or lack thereof, for early Greek material or settlement in the territory around ancient Sinope represents a significant pattern.

At this point, the rural settlement picture in the hinterland of Sinope before the fourth century BCE is difficult to interpret owing to our poor understanding of local ceramic assemblages, but it is clear that during the fourth century BCE Greek amphorae and fine wares suddenly appeared at many sites in the hinterland. These sites included newly established coastal settlements as well as evidence for imports at established local settlements along inland riverine routes (fig. 4). This pattern may reflect a refocusing of Sinope's economy on the local hinterland after the incursions of the Persian satrap Datames severed ties with Sinope's eastern colonies in the 380's and 370's BCE, prompting a reorientation towards production of goods in the hinterland and export to primarily Black Sea trading partners. As a result, this encouraged increasing hinterland settlement, specialization of hinterland economic production and interdependence between different parts of the promontory (Doonan 2010).

As at other sites on the north and west coasts, therefore, there is a likely specific historical explanation for increased settlement in its fourth century BCE hinterland of Sinope but it also reflects a clear pattern for the Black Sea more generally. A consideration of the evidence from the hinterland of ancient Sinope provides an

important opportunity to integrate the southern coast into larger narratives about the Black Sea in the fourth century BCE. In the process, this leads to a richer interpretation of the ways in which the increased numbers of rural settlements were linked to increased agricultural exploitation and increased connectivity created by routeways, as well as the incorporation of different communities into the hinterland.

Agricultural installations

The role that agricultural activities played in the expansion and/or intensification of the rural hinterlands during the fourth century BCE is undeniable. On the west and north coast of the Black Sea the prevalence of farmstead sites, evidence for the processing and storage of grain and for agricultural installations like field divisions attest to this (table 2).

The best-known examples of farmsteads from this period come from Chersonesos, where farmhouses were constructed by the second half of the fourth century BCE with particularly rapid growth in numbers ca. 350-330 BCE, resulting in approximately 140 across the chora (fig. 5; Nikolaenko 2006). The Chersonesan-type farmhouses are typified by rooms around a courtyard; some were constructed with a tower while some examples, like that on plot 49, did not have a tower (Saprykin 2003). Farmhouse 151, excavated by a joint Ukrainian-American team in the 1990s, had evidence for wine production and storage in pithoi as well as provision for domestic cult (Carter et al. 2000). Indeed, in the western Crimea and particularly the Tarkhankut peninsula, where the development of the rural hinterland is associated with Chersonesan expansion into this territory in the second half of the fourth century BCE, occupation of the rural hinterland included isolated farmhouses, both fortified and unfortified, similar to those from Chersonesos (Guldager Bilde et al. 2012: 54; Smekalova, Kutaisov 2014). For example, a farmhouse at Ortli, near the shores of Lake Sasyk-Sivash in the region of ancient Kerkinitis, was recently discovered through geophysical survey and investigated via targeted excavation (Smekalova, Kutaisov 2014; Smekalova et al. 2016). Dating to ca. 325-270 BCE, the structure was 52 m^2 with rooms arranged around four courtyards

and a tower in the northeast corner. Excavation of the tower revealed a rich assemblage of votive statues, black glaze vessels and other artifacts. The tower, constructed in stone with mudbrick, was roofed with tiles from Sinope and was destroyed by fire ca. 270 BCE. A second farmhouse, 1.5 km away at Mamay-Tyup, has also been identified through geophysical survey (Smekalova, Kutaisov 2014; Smekalova et al. 2016).

These independent/isolated farmhouses existed in conjunction with larger agricultural settlements on the Tarkhankut peninsula, like Panskoye 1. Located near the north coast of the peninsula, Panskoye 1 was occupied from the last quarter of the fifth century BCE to c. 270 BCE. The settlement consisted of a series of farmhouse-type structures organized on a grid-plan. At least eleven survive and excavation has revealed evidence for storage and production, as well as occupation, organized around central courtyards. Contemporary isolated farmhouses (Panskoye 2-5) were situated in the surround territory a few kilometers away (Ščeglov 2002: 20-21; Stolba 2012). Panskoye 1 likely served as an agricultural outpost and it has been argued that in its earliest phase it was part of the chora of Olbia while, after a destruction event c. 350 BCE, it came under Chersonesos sphere of influence (Hannestad et al. 2002; Ščeglov 2002: 17). A close study of graffiti on amphorae from the monumental building U6 has demonstrated that in this latter phase, the inhabitants of Panskoye 1 were closely linked to Chersonesan trade networks (Stolba 2007).

By the fourth-third centuries Olbia's rural hinterland was also populated with farmsteads, both individual examples and collective groups of them, in addition to small but dense settlements. These farmsteads are also similar to those from Chersonesos (Kryzhitskii 2000). In the territory of the Bosporan kingdom, while earlier farmsteads were known, their number increased in the fourth century BCE, with excavated examples including Churubash Iuzhnoe and Geroevka 1 in the Nymphaion chora (Saprykin 2006; Scholl, Zin'ko 1999; Zin'ko 2006). At Istros, a fourth-third century BCE farm complex has been excavated at Histri-Pod (Avram 2006).

It has long been noted that these farmhouses with towers share many typological similarities to fourth century BCE farmhouses from mainland Greece (Pecírka 1973), but they do not necessarily represent Greek occupants in the Black Sea. At Chersonesos, epigraphic and onomastic evidence suggests that the owners of the large farmhouses were members of the urban elite (i.e. they held magistrate offices or were buried in the urban necropolis with decorated grave stelai) but their names were not uniformly Greek in origin (Carter et al. 2000). In addition, in many cases these 'Greek-style' farmhouses on the west and north coasts of the Black Sea are found in close proximity to settlements, which – on the basis of architecture and pottery assemblages – bear closer relationship to the local populations that lived in the region. For example, in the fourth century BCE Geroevka 1 was a stone-built farmhouse in the chora of the Nymphaion, a Bosporan polis, with a rich assemblage that included amphorae and hand-built vessels as well as significant quantities of fine wares and imports (Butyagin, Solovyov 2001: 268-80; Zinko 2001: 316). Geroevka 1 is located just a few kilometres away from the contemporary site of Geroevka 2, which included semi-pit dwellings and a kurgan (mounded burial), all also dating to the fourth-third centuries BCE. The finds from these complexes included many amphorae and hand-built vessels, along with some cooking and table wares, and black glaze cups (Butyagin, Solovyov 2001: 268-80).

Excavated examples of these farmsteads, as well as the small rural settlements found in the rural hinterlands on the west and north coasts of the Black Sea, are often accompanied by evidence for the processing and storage of agricultural products, such as grain. In the Bosporan kingdom, where large-scale export of grain to Athens is documented for the fourth century BCE, a large rural complex at Generalskoe Zapadnoe on the north coast of the Kerch peninsula not only had a large wine press but also a grain storage area in its cellar that could hold up to 400 tons (Maslennikov 1998: 66). The less grand fourth-second century farmstead at Volna 1 on the Taman peninsula similarly had several agricultural outbuildings and many pits designed to store agricultural produce (Solovyov 2009). Agricultural storage pits have also been found in association with small rural semi-pit structure settlements like Geroevka 2 and Koshara.

On the Tarkhankut peninsula the recently excavated farmhouse excavated at Kelsheikh 1, which will be more fully discussed below, has clear evidence for agricultural production. Grind stones and archaeobotanical remains provide evidence for the production and processing of cereals, while the dominance of sheep/goat in faunal assemblages from pits suggests involvement in pastoral livestock rearing (Stolba, Andresen 2015).

The most large-scale indications of agricultural activity in the hinterlands of Greek settlements on the west and north coasts of the Black Sea, however, are the agricultural installations, such as land divisions and irrigation systems, that were created in the fourth century BCE (fig. 6). For example, these have been proposed for the rural territories directly around Kallatis, where linear features visible in aerial photography and more recent UAV-based photogrammetry, combined with evidence of dry-stone division walls, suggest a divided agricultural landscape based on plots c. 420 m long (Avram 2006; Ştefan et al. 2017).

The best-known examples, however, are from the north coast of the Black Sea. The immediate hinterland of Chersonesos, with its comprehensive grid of regular land plots divided by stone walls is the best-preserved example. The surviving grid was laid out in the second half of the fourth century BCE, but it overlaid earlier separate grid systems and individual plots that had been established in the late fifth and early fourth centuries BCE (Nikolaenko 2006). The fourth century land plots were of standard dimensions (210 x 210 m) and farmhouses tended to be situated on plots that were larger (on average the size of 6 standard plots or 26 ha). In addition, planting walls divided the plots into areas for the cultivation of vines, cereals, fruit and gardens. It has been estimated that terrace walls for vine cultivation covered about 50% of the divided chora (Carter et al. 2000).

Evidence for similar planting walls, as well as for regularly divided land plots, have been identified in western Crimea in the area around Kerkinitis and on the Tarkhankut peninsula (Guldager Bilde et al. 2012; Kutajsov 2006; Smekalova 2013; Smekalova,

Kutaisov 2014). The farmhouses at Ortli and Mamay-Tyup, mentioned above, were located next to plots of land that have been identified as vineyards due to the parallel lines of stone planting walls; the vineyard at Ortli was 210 x 210 m, the standard Chersonesan size, while the one at Marmay-Tyup was slightly larger (Smekalova, Kutaisov 2014; Smekalova et al. 2016). These vineyards were independent agricultural plots associated with their respective farmhouses, but there were also large areas of orthogonal field divisions around Kerkinitis and on the Tarkhankut peninsula. Smaller areas of divided field systems have been located around settlements like Belyaus and Ak-Saray. The existence of these land division grids in western Crimea was first identified by A. N. Shcheglov (1980; Chtcheglov 1992) and they have been connected with the area described as 'the plain' in Chersonesan inscriptions, where grain and vines were grown (*IOSPE* 1^2 318, 401; Ščeglov 2002). Recent work by T. N. Smekalova has confirmed this connection by demonstrating that the surviving evidence for land divisions in the Tarkhankut peninsula follows the same orientation and appears to conform to the same parceling system employed in the territory around Chersonesos. Excavation has confirmed that structures associated with these land divisions date to the fourth-early third century BCE, further supporting the connection of the land divisions to the expansion of Chersonesan territory in this period (Smekalova, Smekalov 2006; Smekalova 2013; Smekalova, Kutaisov 2014).

While there is strong reason to connect this system of land divisions, and associated farmhouses, to the Chersonesan expansion into the western Crimea ca. 325 BCE, there is some evidence for earlier agricultural systems in the region. Although there is limited evidence for occupation of the rural territory in the Tarkhankut peninsula prior to the second half of the fourth century BCE, investigations at the farmstead site of Tiumen 2 have revealed a system of long narrow fields separated by ditches that predate the construction of the fourth-third century BCE farmstead and its associated Chersonesan-style rectilinear land pots (Smekalova, Kutaisov 2014). While this earlier field system is post-Bronze Age, it is not clear when it was created; it could be associated with an as-yet unrecognized pre-Greek sedentary population or it could reflect a late fifth-early fourth century BCE use of the land by Greek settlements, prior to the Chersonesan

expansion. Evidence from the territory around Kerkinitis would tend to support this latter conclusion; here evidence for the division of the rural hinterland into irregular land plots separated by shallow ditches or low earthen ramparts has been confirmed through excavation. V. A. Kutajsov (2006) argues that the land divisions in this area pre-date the Chersonesan expansion and relate to a peak in the rural population in the mid fourth century BCE.

In the territory of the Bosporan kingdom, there is also significant evidence for the division of parts of the rural territory into plots of land. On the Kerch peninsula, physical remains of banks and walls demarcating land plots have been found in excavation and survey at Oktiabrskoe in the chora of Pantikapaion (Kruglikova 1975: 93; Maslennikov 1998: 292). Also, near Nymphaion, at the sites of Geroevka 1 and Churubash Iuzhnoe, there is evidence for walled land plots of ca. 1 ha each, beginning in the late fifth century BCE (Saprykin 2000: 649) and indications of a broader system of field divisions discovered during intensive survey of that polis's chora (Scholl, Zin'ko 1999).

In addition, from aerial imagery and historical maps, evidence for land division has been identified in four distinct areas of the Kerch peninsula, including in the territories of the main Greek settlements (Smekalova, Smekalov 2006). These have been ground-truthed where possible and dated through correlation with excavated farmhouses, prompting Smekalova and S. L. Smekalov (2006) to argue that these divisions represent a common 'Bosporan system' of land divisions, based on plots 360-390 m on each side (ca. 13 ha), that was established in the fourth-third centuries BCE. It is possible that this regular system extended onto the western tip of the Taman peninsula as well, but the majority of the land divisions that have been identified there were irregular and centred around rural settlements. According to I. M. Paromov (2000), who based his dating on connections with road networks and excavated settlements, over half of the territory of the Taman peninsula was occupied by land plots and under intensive, structured cultivation in the fourth through second centuries BCE. Over 350 agricultural installations have been identified on the Fontalovskii promontory alone, although Iu. V. Gorlov has connected these linear features not with banks delineating

land parcels but with irrigation systems, connected with Spartokid control of territory during this period (Gorlov, Lopanov 1995; Müller et al. 1998).

The field divisions that have been identified in the rural hinterland of Olbia share more in common with those identified by Paromov on the Taman peninsula than those of the regular Chersonesan type. Aerial photography and satellite imagery provide indications of irregular field systems arranged in bands along the shores of the riverine estuaries around Olbia (Karjaka 2008; Kryžickij 2006; Odrin 2016). These fields are usually long and narrow (on average 60-70 m wide) and oriented across the natural slopes, facilitating drainage, and running towards the estuary banks. A. V. Karjaka (2008: 189) proposes that the majority of these field divisions developed in a 'spontaneous' manner and that they post-date the road system that was established in the sixth century BCE, although in the absence of excavation evidence they are difficult to date.

These large-scale agricultural installations are associated with shifts in agricultural practices on the north coast of the Black Sea in the fourth century BCE. In the western Crimea it has been argued that archaeobotanical evidence indicates a shift from wheat to rye cultivation in the fourth-third centuries BCE; Kutajsov (2006) suggests this shift is related to a warming of the climate, allowing winter sowing of rye crops. In this region, there is evidence in this period for deforestation as well as the introduction of almond, walnut and fruit trees and, importantly, of the grape vine (Archibald 2002: 54; Guldager Bilde et al. 2012: 162; Stolba 2012: 312). Evidence from Chersonesos indicates that it was in the mid fourth century BCE that the grape emerged as a major crop and Carter et al. (2000: 713) have argued:

> "The enormous intensification of agriculture and transformation of the chora that took place after the middle of the fourth century B.C. was largely based on viticulture."

Indeed, the earliest wine press found in western Crimea is a later fourth to third century BCE one from Chaika, near Yevpatoriya (Savvonidi 1993). Additional wine presses have been found within farm plots in the Chersonesan chora itself, such as the one excavated on plot 26 (Archibald 2002: 54). Smekalova (2013) estimates that over 40%

of the Tarkhankut peninsula was under cultivation in antiquity. In addition to the western Crimea examples of vineyards with stone planting walls at Ortli and Mamay-Tyup mentioned above, recent investigations of farm plots in Cape Oirat on the Tarkhankhut peninsula have revealed planting walls associated with the cultivation of grape vines as the dominant feature in the plots of land associated with fourth-third century BCE farmsteads. It should be noted, however, that at the site of Tiumen 2 a large pit for grain storage was also found and it is possible that the first stage of use for these fourth century BCE fields was for arable crops (Smekalova 2013; Smekalova, Kutaisov 2014). Indeed, archaeobotanical studies at sites within the divided territories in the western Crimea indicated that grain was a key crop and the late fourth-early third century BCE inscription known as the 'Civic Oath of Chersonesos' specifies restrictions around the sale of grain for export (Attema 2017; Carter et al. 2000). These new agricultural practices, along with the farmsteads and field systems, were most likely associated with the Chersonesan expansion into this region in the second half of the fourth century BCE and the subsequent increase in production of grain and especially of wine, as amphora evidence suggests (e.g. Stolba 2007).

It is also during the fourth century BCE that cultivation of grape vine began in earnest on the Kerch peninsula (the vine was not grown on the Taman peninsula until the second and first centuries BCE). The earliest evidence comes from Nymphaion, where there were two wine presses dating to the late fifth to mid fourth centuries BCE; in addition, rural wine presses have been found from the third century BCE in Myrmekion (Savvonidi 1993; Vinokurov, Maslennikov 1993). The majority of the divided land in the Bosporan kingdom, however, must have been under cultivation for grain, given the evidence for large-scale exports that come from fourth century Athenian texts (e.g. Demosthenes 20.30-1; *IG* II^2 212; *IG* II^2 653; Paromov 1997).

The best evidence for late Classical and Hellenistic agricultural installations in the rural territory around ancient Sinope is on the Boztepe headland immediately overlooking the town and harbor (fig. 7). SRAP documented traces of seven sites widely dispersed along the south facing slopes of Boztepe and an isolated site on the north-facing coast

(Doonan 2004; Doonan et al. 2015). Several of these were characterized by modest stone structures and imported black slip wares (Doonan et al. 2015). Recent excavations by the Sinop Museum, under the direction of Husein Vural, and at the site of late Roman-Byzantine bath/church complex of Balatlar Kilise, under the direction of Gülgün Köroğlu (Mimar Sinan Fine Arts University) have turned up further evidence of late Classical/early Hellenistic settlement on the west and south facing slopes of Boztepe. The upper terrace and north-facing slopes of Boztepe appear to have been sparsely populated in antiquity as well as modern times owing to the strong northerly winds and the cold and wet microclimate. Taking the 26 ha estimate from Chersonesos as a rough guide, there would have been room for approximately 12-15 farms along the west and south facing slopes of the headland. In addition, Hellenistic amphora production sites have been excavated at Zeytinlik and Nisiköy, on the south shore of the Boztepe peninsula (Garlan 2004: 17-36), indicating a further development of this headland.

From the second half of the fourth century to the mid third century BCE exports of amphorae and roof tiles from Sinope are found in all regions of the Black Sea. By ca. 325 BCE, Sinope was the main trading partner for south-west Georgia, based on the quantity of Sinopean amphorae and other pottery vessels and coins found at sites in that region (Inaishvili, Khalvashi 2010) and by the beginning of the third century BCE, wine and oil amphorae from Sinope are the main imports at Greek settlements on the north coast of the Black Sea (Krapivina 2010). Clearly, agricultural production at Sinope had increased to support this trade, or at least become increasingly regulated as evidence from the amphora stamps from this period, including the name of the amphora producer as well as the annual official, the astynomos, demonstrates (de Boer 2013; Garlan 2004). The coastal location of the contemporary amphora production sites at Zeytinlik and Nisiköy, mentioned above, emphasise the close links between this production and the sea-ward orientated nature of the trade.

In addition to the settlement on Boztepe, cultivation of olive trees and grape vines, whether or not they involved permanent installations like terraces or planting walls, to

supply this export market must have taken place in the fertile plains and valleys around the ancient port of Sinope. Strabo (2.1.15; 12.3.12) mentions the prolific olive production south and east of Sinope several times. A fifth-fourth century BCE funerary monument in the Sinop Museum naming Manes Elaiopoles ('Oil-seller') links a Paphlagonian name with the occupation of oil-seller, strengthening other circumstantial evidence for olive production on the promontory (French 2004: no. 28). The SRAP survey results have demonstrated that a series of new rural sites were established in the same period, the fourth century BCE. Most of these sites were set on terraces within 0.5 km of the coast and overlooked small fertile valleys opening to narrow coastal landings (fig. 4). At most of these sites, like Bostancılı, Greek pottery and some handmade and local wares were documented (Doonan 2004; Doonan et al. 2015). It is possible that these sites represent small settlements with an agricultural focus or that they played a role in transporting the agricultural produce by sea to the harbour of Sinope for processing and/or export.

Road and path networks

The intensification of agricultural production indicated by the evidence described above suggests that many Black Sea poleis were investing in the production of goods like wine, oil and grain not only for their own consumption but for export to the increasingly prosperous Black Sea economic networks as well as to the Mediterranean. At the same time the development of these agricultural hinterlands in the fourth century BCE also impacted the ways in which communities lived and interacted in these landscapes. The creation of these new agricultural landscapes in the rural hinterlands of the Greek settlements on the west and north coasts of the Black Sea was accompanied by the development of roads and paths that facilitated movement from the fields to the towns and ports and as well as the preservation of route networks of longer distance (table 3; fig. 8).

In the Bosporan kingdom, the orientation of the regular land divisions on the Kerch peninsula was at least in part dictated by providing the most convenient route to the

polis or other centre from which crops could be delivered to the sea (Smekalova, Smekalov 2006: 211, 213). In the well-investigated chora of Nymphaion there is evidence for fourth century BCE roads connecting the settlements of the same date in its territory (Saprykin 2000: 651), including six pathways identified by survey, all connected to fourth-third century BCE settlements and/or surface sherds from that period (Scholl, Zin'ko 1999: 104-6). On the Taman peninsula, where the land divisions appear to be less regular, they have been associated with a new network of roads (Paromov 1998). Based on the dates of the settlements they connect, it appears that this road network developed quickly in the fourth century BCE, and continued expanding until the second century BCE, and ultimately consisted of four tiers: short roads connecting settlements to land plots; roads connecting small and medium-sized settlements with each other or with major settlements; roads connecting major settlements; and finally roads connecting the cities themselves.

In addition to these roads designed to connect and facilitate movement between new settlements and agricultural installations in the rural territory of the Bosporan kingdom from the fourth century BCE, the pre-existing routes for longer distance travel across the territory were still respected. In particular, the Perpach ridge that runs east-west along the centre of the Kerch peninsula was a transhumance route in use before Greek settlement in the region, based on the presence of Bronze Age kurgan chains. It continued to provide a main route across the Bosporan kingdom, which ran through the agricultural territories of both Nymphaion and Pantikapaion to key crossing points at the Strait of Kerch (Smekalova, Smekalov 2006).

A similar picture is evident for the Tarkhankut peninsula in the fourth and third centuries BCE. Smekalova and Smekalov (2006) have identified a grid of roads in the western part of the Tarkhankut peninsula, which correspond in orientation and size with the land-plots discussed above. They interpret them as representing major axes and transportation routes within the land-divisions, including the central road from Karadzhinskoe into the interior (Smekalova, Smekalov 2006: 237). Evidence for roads connected with individual plots has also been discovered on Cape Oirat (Smekalova

2013). In addition, long rectilinear roads, running roughly parallel to the coasts of the Tarkhankut peninsula, and across the field divisions, have been identified, often connected with chains of kurgans. These perhaps represent established nomadic routes for seasonal migration (Guldager Bilde et al. 2012: 157; Smekalova, Smekalov 2006: 237).

The urban centre of Olbia lay in the geographical centre of its field division system, which was possibly for ease of transport and control of the territory (Karjaka 2008). A road network connecting Olbia to its rural hinterland was probably first established in the Archaic period and revived with the redevelopment of the rural hinterland in the fourth century BCE (Kryžickij 2006). Karjaka (2008) has argued that at least in the area closest to Olbia itself the field systems were filling in the spaces between pre-existing roads that primarily ran along estuary benches, connecting Olbia to different parts of its hinterland and to the sea. Here the long narrow fields were usually arranged across slopes towards the estuary banks, perhaps to facilitate drainage but also perhaps to facilitate movement of crops, equipment or people to riverine routes.

The new systems of roads and paths within these agricultural hinterlands were no doubt designed, in large part at least, to facilitate the movement of goods and labour from the fields to ports and the main settlements. At the same time, they also facilitated the movement of people throughout this landscape and created possibilities for regular connections amongst the communities living in the agricultural hinterlands, such as the roads connecting new hinterland settlements to Kallatis (Ştefan et al. 2017). The continued use of long-distance routes that ran through these newly developed field systems also indicates the ways in which agricultural hinterlands of Greek settlements served to formalise connections with transhumant populations in the region.

In the hinterland of ancient Sinope there is also evidence for increased connectivity and the establishment of new routes. While indications of the type of road and path systems documented on the north coast of the Black Sea are lacking, at Sinope there is evidence for new connections to the sea and inland (Doonan 2015). The new small

fourth century BCE coastal settlements mentioned above suggest increased traffic along the sea shore as well as potential points on the transport routes of agricultural products. These settlements are located at the intersection of the fertile hinterland and the sea and were ideally situated to both collect and transport agricultural products to transport ships in the harbour of ancient Sinope.

An important exception amongst the coastal sites is İlyan'ın Yeri, a coastal site where both local wares and Greek pottery were collected in survey (fig. 4; Doonan 2004; Doonan et al. 2015). The location of İlyan'ın Yeri near the mouth of the Kırkgeçit Çayı valley and the mixed nature of the assemblage may indicate that it was a gateway to an important local community along that river. Indigenous Iron Age communities in the southern region of the Black Sea appear to have been organized along river valleys, facilitating communications (Doonan 2018). A major indigenous stronghold at Tingirtepe, approximately 13 km upland (elevation ca. 550 m) overlooking the Kırkgeçit Çayı, may serve as an example of the organization of riverine polities as described in the eastern Pontic mountains by Xenophon (*Anab.* 5.4.30-32; Doonan 2018). In the late first century BCE Strabo (12.2.10; 12.3.12) emphasises the importance of riverine routes from the Pontic Mountain range down to the Black Sea coast in relation to trade (Hannestad 2007: 87). As will be discussed below, there is good evidence that Sinope began to exploit these river valley routes into its hinterland during the fourth century BCE.

'Dependent territories'

Connections between Greek and local communities were expanded beyond chora-based field systems and road networks as a result of hinterland development in the fourth century BCE. The agricultural intensification, described above, was often accompanied by an expansion of territory and the development of new land for cultivation or other agricultural activities (table 4). These territories are often referred to as 'further chorai', with the most obvious example being the expansion of Chersonesan controlled or influenced territory into the western Crimea in the second half of the fourth century BCE. In the Bosporan kingdom, the areas of regular land division, laid out

according to the ‘Bosporan system’, represent expansions of the initial chorai; it is also in this period that textual references point to the creation of a ‘Royal chora’, although its nature and exact location are debated (Maslennikov 2001b; Smekalova, Smekalov 2006).

Sinope is also associated with an early ‘further chora’ type expansion in the form of secondary settlements: Kotyora (possibly modern Ordu) and Kerasous (Giresun), as well as Trapezous, to the east of Sinope along the Black Sea coast (Erciyas 2007). These settlements, established shortly after Sinope itself, were associated with trade and proximity to natural resources (copper, silver, lead and iron) rather than developed agricultural hinterlands and Sinope’s control of them was severed by the Persian satrap Datames in the early fourth century BCE (Doonan 2009). It is possible this prompted Sinope’s new focus on its immediate hinterland in that century.

While there is limited data with which to discuss the nature of resource exploitation in the hinterland of these southern Black Sea settlements, for the north and west coasts it is well established that these expanding rural territories incorporated groups of different cultural traditions, both Greek and local. The inclusion of both mounded and flat burials in the necropoleis of sites like Panskoye I (Stolba, Rogov 2012) and the significant amounts of hand-built pottery in assemblages from rural settlements are indicators of close contacts that, while not necessarily new, certainly intensified in the fourth century BCE.

More common than the establishment of formal ‘further chorai’ during the fourth century BCE was the expansion of rural hinterlands beyond cultivated (divided) territories. These include rural settlements associated with the Greek centres and imply areas where Greeks and local populations lived and worked in close proximity. Such an arrangement has been proposed for late Classical-early Hellenistic Kallatis, with the foundation of new fortified settlements like Albești and Coroana in the further hinterland (Avram 2006; Ştefan et al. 2017). A similar arrangement has been proposed for Tyras and Nikonian, where divided agricultural territories are reconstructed for the territory

closest to the Greek settlements, with further rural settlements in the larger hinterlands (Ochotnikov 2006). In the territory around Chersonesos, the western part of the Herakleian peninsula was not included in the grid of land divisions but G. M. Nikolaenko (2006) asserts it was still under Chersonesan control, with both Greek and native settlements and evidence of increased agricultural exploitation in the fourth-second centuries BCE.

In the western Kerch peninsula and in the territory around Theodosia, a series of small settlements have been recorded through extensive survey (fig. 3). These settlements, interpreted as *selishcha* or small villages/hamlets, are largely located outside areas of land divisions; almost 300 have been identified and in general they were located on fertile land near water sources, often situated on the south slope of a hill or on a plateau. All of the *selishcha* date from between the second quarter of the fourth century BCE and the 270s BCE, with the majority established around the middle of the fourth century BCE (Maslennikov 1998: 86-8; Maslennikov 2001a). These settlements were unfortified and small (ranging from 65-850 m^2), typically comprising around eight to ten structures with many associated pits, both for storage and for refuse. The structures were usually irregularly rectilinear with one to three rooms and constructed with rubble foundation and wattle and daub superstructure. From excavated *selishcha*, such as Koshara, Ak-Tash, and Zolotoe Platau, the find assemblages were dominated by storage vessels and local hand-made pottery with few coins or imported ceramics (Maslennikov 1998: 76ff). These settlements are grouped in clusters, which may or may not have represented administrative units, and were often related to contemporaneous groups of kurgan burials that are similar in character to Scythian kurgans from the steppe to the north. It is probable that they represent a new or newly sedentarised Scythian population who settled in the region in the fourth century BCE and were presumably engaged in agricultural activity related to the economy of the Bosporan kingdom (Rempel 2004: 117-120).

A similar arrangement can be seen in the rural hinterland of the Tarkhankut peninsula in the western Crimea. The research area of the recent Džarylgač survey included both

coastal and lowland areas, where Chersonesan-type farmhouses and evidence for land divisions were identified, and upland regions, where there was no evidence for ancient land divisions. In the latter, the survey identified a series of small settlements as well as kurgans. The settlements, all located on the hillsides, were characterised by sherd scatters and well-preserved stone foundations, with late Classical-early Hellenistic Greek pottery found in the surface collections. The upland settlements were architecturally less robust than those of the coastal region but a few had evidence for more complex structures around courtyards, comparable to the unfortified farmhouses on the coast (e.g. Kelsheikh 1 discussed below); evidence for animal pens was also recorded in conjunction with some of these sites, interpreted as evidence for pastoralism (Guldager Bilde et al. 2012: 85-86, 139). The survey also identified kurgan chains on watersheds in these hillsides and, although it is not possible to connect them definitively with the settlements, they have been interpreted as marking 'zones of mircromobility' of a sedentary or semi-sedentary population (Guldager Bilde et al. 2012: 152, 157; see also Attema 2017: 131-133). Investigations conducted by the Western Crimean Archaeological Project in the nearby region of Chernomorskoye demonstrated that this upland pattern of settlement continues in that part of the Tarkhankut peninsula (Stolba, Andresen 2015: 347). The pottery assemblages from these sites suggest connections with the rural Greek settlements on the coast but the nature of these connections is unclear; the dates of pottery, however, as well as the quantity of Chersonesan coins that has been found by metal detecting in this area suggests these settlements are connected with the Chersonesan expansion in the second half of the fourth century BCE (Stolba, Andresen 2015).

A recently excavated structure at the site of Kelsheikh 1 (fig. 5), located at the top of a 15 km long riverine valley outside the area of field divisions identified on the Tarkhankut peninsula, provides more evidence about the nature of these settlements (Stolba, Andresen 2015). Here, although the stone-built structure, constructed in the second half of the fourth century BCE and comprised of rectilinear rooms around a small courtyard, has no direct parallels with coastal farmhouses excavated in the region, it is clear that construction technique and layout are connected to Greek architectural traditions

(Stolba, Andresen 2015: 356). Unlike the coastal sites, the pottery assemblage from the structure at Kelsheikh 1 contained little imported pottery and mainly comprised hand-built wares, of local Scythian and Kizil-Koba types, in significantly higher proportion than at the contemporary sites on the coast (Stolba, Andresen 2015: 354). The evidence for both the production and processing of cereals and pastoralism, as mentioned above, connects the settlement at Kelsheikh 1 to the agricultural economy of the divided hinterland as well as to pastoral traditions of the Crimean interior.

The Bosporan *selishcha* and the upland settlements in the Tarkhankut peninsula represent two archaeologically well-explored examples of territories within the rural hinterland that were occupied by local communities. These communities had clear agricultural and economic links to the Greek settlements and it seems plausible that these links were key in promoting a more sedentary, agrarian existence in areas that had not previously been occupied as such. The resulting settlements were founded in conjunction with the expansion of the agricultural hinterlands of the Greek settlements and represent intensified relationships between Greek and local communities.

Finally, there is evidence for connections beyond the rural hinterlands of Greek settlements, most often extending along nodal riverine routes into the interior. For example, it has been suggested that fourth and third century BCE fortified settlements in the lower Dneipr area were connected with – possibly even occupied by – Olbia (Gavriliuk in Kryzhitskii 2000). The influence of Tyras up the Dneister into the forest-steppe region in the second half of the fourth century BCE has been suggested on the basis of coin finds from that area (Ochotnikov 2006). Similarly, Bosporan connections with the Maeotians in the Kuban region are evident from coin hoards of the period in question (Anfimov 1991) and O. V. Odrin (2014) has argued that significant Bosporan grain exports could only have been achieved with the additional cultivation of the Kuban valley lands. To the north, Bosporan presence in the lower Don region at Elizavetovskoe is clear by the late fourth-early third centuries BCE (Kopylov 2003).

Overall, on the north and west coasts of the Black Sea, there was a clear pattern of tiered connection to the rural hinterlands around Greek settlements. Closest to these settlements was the occupation of an intensely settled and often formally organised agricultural territory, or chora. Adjacent to these territories was the possibility for the creation of associated 'dependent' communities, linked to the larger agricultural or economic structure of the hinterland. Beyond this, there existed a wider sphere of influence, where local populations interacted with economic and social networks created with the expansion of agricultural hinterlands.

The evidence from survey in the hinterland of Sinope also suggests this tiered model of expansion into its hinterland. The Boztepe and small coastal sites discussed above represent a close engagement with an agricultural hinterland or chora, with sites like İlyan'ın Yeri perhaps representing local communities engaged in the rural production. The survey also demonstrates that in the fourth century BCE goods from Sinope start to find their way into the interior for the first time – perhaps as a result of a reorientation of the Sinopean economy. In contrast to the coastal sites, the upland sites showing fourth century Greek imports are often larger indigenous centres (ca. 5 ha) and imported wares are normally mixed in with an assemblage dominated by local ceramics (Doonan 2018).

This type of site can be found inland from of İlyan'ın Yeri along the Kırkgeçit Çayı valley (fig. 4). For example, Tıngıroğlu is a large (5+ ha) settlement with local handmade wares together with Hellenistic ceramics; several other upland sites like Tingiroğlu suggest lively trade between indigenous and Greek communities from the fourth century BCE on. The site of Maltepe is a large (6 ha) settlement at the juncture between the high passes and the foothills above the coastal plains (Doonan 2004, 2018; Doonan et al. 2015). Here both local and Hellenistic ceramics were found suggesting this site represents a formidable indigenous stronghold located in a key position to control the movement of people and goods to and from Sinope.

There is also evidence that inhabitants of the Sinop promontory took care to mark the landscape with monuments that effectively laid claims to territory (Doonan 2015). The highland Chalcolithic site of Kayan'in Başı was marked with a Hellenistic tumulus and a deposit of fine wares, burnt bone and a terracotta Aphrodite figurine. The site overlooks the Sarımsaklı Çayı gorge and faces the looming height of Asar tepe, where a deposit of bull figurines has been interpreted as indicating a sanctuary of Zeus Dikaiosynos documented by an inscription in nearby Gerze (French 2004: no. 75).

In comparison to the west and north coasts of the Black Sea, even in the fourth century BCE there is limited archaeological evidence for contact between the port of Sinope and the hinterland. Nonetheless, two important textual sources from the fourth century suggest that there had already been some contact and economic development between Greek and local communities by 400 BCE and that an important economic relationship was developing between these groups over the course of the century.

The most important source for understanding the cultural and economic conditions along the south coast of the Black Sea ca. 400 BCE is Xenophon. His *Anabasis* (ca. 400 BCE) books five and six describe in some detail the experiences of the Greeks as they traveled west along the south Black Sea coast from Trabzon to the Bosphorus. Although descriptions of Greek-indigenous encounters specific to Sinope are missing, several episodes near Sinope's eastern colonies suggest a degree of entanglement between Greeks and local communities (Doonan 2018). For example, there was an exchange of pledges between the Macronians and the Greeks (Xen. *Anab*. 5.4.32) and an alliance with the Mossynoecians (Xen. *Anab.* 5.4); or the key role of hospitality in maintaining good relations between Greeks and local populations (Xen. *Anab*. 5.5.2; 6.1 ff). Moreover, the Greeks discovered dolphin blubber stored in the settlements at higher elevations suggesting that there were economic connections between highland and coastal settlements in these communities (Xen. *Anab.* 5.4.28; Doonan 2018).

These passages suggest a familiarity between Greek settlers and local communities that would have evolved over centuries of occasional contacts along the coast. Even if

there was little formal trade between Greeks and local communities at Sinope before 400 BCE, it is obvious that there would have been occasions when Greek merchants and fishermen would have had to put in because of weather conditions. They would then have found themselves at the mercy of local groups and surely such encounters led to opportunities for mutual benefit. The new presence of Greek pottery in the hinterland from the fourth century BCE suggests that these informal and periodic relationships were becoming more frequent and/or more formalised.

In the territory of Sinope there has been limited excavation, so teasing out site type or function from the SRAP survey results can only go so far. It is difficult to comment on the potential agricultural nature of the upland rural settlements described here, and a contemporary historical source suggests that exploitation of the broader rural hinterland at Sinope might have another explanation. Theophrastus' *Enquiry into Plants* provides a useful fourth century BCE perspective on timber production in Sinope, naming it as one of the sources of timber for ship-building in the Greek world (Doonan 2003).

> Again it is only a narrow extent of country which produces wood fit for shipbuilding at all, namely in Europe the Macedonian region, and in certain parts of Thrace and Italy; in Asia Cilicia, Sinope and Amasus, and also the Mysian Olympus, and Mt. Ida; but in these parts it is not abundant.
> (Theophrastus, *Enquiry into Plants* IV.v.5)

This passage suggests that by the mid fourth century BCE the timber resources of Sinope were being exploited to a sufficient degree to attract outside attention. Strabo (12.3.12) confirms this connection, emphasising the quality of shipbuilding timber in the mountainous regions south of Sinope, as well as ease of transport via river routes (Doonan 2003; Hannestad 2007: 87). When viewed in combination with the dramatic expansion of evidence for contact in the highlands along the major river valleys just to the south of the port of Sinope, it seems

certain that a fundamentally new engagement between Sinope and local communities in the region developed during the fourth century.

Clearly there was a strong move towards engagement between ancient Sinope and local communities in its hinterland that began to develop in the fourth century BCE. The new presence of Greek pottery in the hinterland is one indicator of this contact, but the location of the settlements in places that seem related to access to the sea and into the uplands also suggests a new level of connectivity in the Sinope rural hinterland.

The current picture of Sinope's hinterland in the fourth century BCE differs in significant detail from those of Greek settlements on the west and north coasts of the Black Sea; unlike them, there is little evidence for Greek engagement in the Sinope hinterland prior to the fourth century, and when Greek imports do appear in that century there is no clear evidence for the kind of intensive agricultural installations that existed in other Black Sea regions. The pattern observed in Sinope can also be suggested in the Cide region, ca. 200 km west of Sinope in the Kastamonu province, although the Cide survey offers a much more limited data set. The near coastal Early Iron Age site of Okçular İni kale at the mouth of the Devrekanı Çayı may have formed the outlet of a community downstream from contemporary highland sites in the Çamdibi area (Şerifoğlu 2015). At some point Greeks colonised the nearby port at Gideros. Despite the continuing need for more extensive research along the south coast the emergence in this period of Sinope as a dominant exporter of wine and/or oil in the Black Sea strongly indicates that the increase in settlement in its close hinterland was associated with the cultivation of grapes and olives. Textual sources suggest export of other resources, like timber, drove contact up riverine routes into the upland region to the south. The explanations for the intensification of contact between Sinope and its hinterland in the fourth century BCE lie in the same type of larger political and economic networks that involved the other Greek centres around the Black Sea coast.

Just as importantly, the evidence for increased economic and physical connection between Sinope and the inhabitants of its hinterland mirrors the intensified interaction of

Greek and local communities, or better, people who identified themselves with the urban Greek settlements and those with cultural connections to the steppe, on the west and north coasts of the Black Sea. These increasingly culturally heterogeneous interactions at a local level must be understood in conjunction with the increasing presence of Scythian, Thracian, Paphlagonian, Colchian and other local groups in the political, economic and social Black Sea networks that had been established by the Greek colonies. The expansion and intensified use of rural hinterlands around the Black Sea played an important role in connecting communities at the local and also regional level.

Conclusion

The late Classical and early Hellenistic rural hinterlands of Greek settlements around the Black Sea are products of specific local circumstances but they also reflect their engagement in broader Black Sea networks. By bringing together data from individual hinterlands, including Sinope on the south coast, this paper has revealed patterning at the Black Sea level. Although the data set from Sinope is less robust than those on the north and west coasts, it provides a crucial point of reference for a pan-Black Sea view.

From the data compiled in this paper, it is clear that in the fourth century BCE rural hinterlands of Greek settlements were transformed through increased settlement, intensified agricultural production and infrastructure, along with increased connectivity and ultimately expansion. This patterning, previously concealed by more localized foci of study, functioned at the level of the Black Sea as a region and its recognition impacts the way we understand the role rural hinterlands played in general. Decisions to expand rural territory and intensify agricultural production were taken at the local level, but they were also responding to the dynamics of Black Sea economic and political networks. The associated increased density of occupation and connectivity in these rural hinterlands also made them key facilitators of social networks by creating opportunities for new forms of participation and engagement by local populations who inhabited the hinterland regions. This resulted in stronger ties between Greek settlements and other

local communities and ultimately enmeshed a more diverse group of people within Black Sea networks. This diversity impacted the integration of heterarchical power relationships, which were both contextualised and enabled by the increasingly culturally heterogeneous communities in the rural hinterlands of the Greek centres around the Black Sea.

The intensification of agricultural hinterlands in the Classical and early Hellenistic period, however, is not restricted to the Black Sea. The phenomena described here are clearly related to developments in fifth and fourth century BCE rural hinterlands elsewhere in the Greek world. Evidence for the intensification of investment in the chora in this period, including an increase in the number of farmhouses and other settlements, has long been recognized especially in the Aegean (e.g. Foxhall 1992; Pecírka 1973; Pettegrew 2001; Snodgrass 1987-1989). Here, the ways in which chorai were implicated in increased connectivity may have been different but it will be important to consider how economic and social networks in the Mediterranean interacted with those in the Black Sea at the level of rural hinterlands. Recognition of the key role of rural hinterlands as facilitators of not only economic but also social connectivity has important implications for broader 'global' and 'small Greek world' approaches (e.g. Hodos 2010; van Dommelen 2017; Malkin 2011). They are key to understanding the nature of connection and interaction between communities within and beyond the Greek oikoumene, which in relation to the Black Sea includes connections to the Eurasian steppe and the Near East.

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Figure captions

Figure 1: Map of main Greek settlements in the Black Sea; those with evidence for increased settlement density in their rural hinterlands in the fourth century BCE are marked with a black dot.

Figure 2: Map of western Crimea with locations of sites mentioned in the text indicated (after Chtcheglov 1992: 251). Key: 1. Panskoye 1; 2. Bolshoy Kastel; 3. Ocheretay; 4. Karadzhinskoe; 5. Kelsheikh 1; 6. Oirat; 7. Ak-Saray; 8. Belyaus; 9. Chaika; 10. Ortli and Mamay-Tyup.

Figure 3: Map of the Kerch and Taman peninsulas (Bosporan kingdom) with locations of sites mentioned in the text indicated; note the selishcha (villages) on the Kerch peninsula. Key: 1. Generalskoe Zapadnoe; 2. Oktiabrskoe; 3. Churubash Iuzhnoe; 4. Geroevka 1; 5. Volna 1.

Figure 4: Fourth century BCE sites in the Sinope hinterland indicated by the SRAP survey.

Figure 5: Examples of excavated fourth century BCE farmhouses. Key: a) Farmhouse 49, Chersonesos (after Saprykin 2003); b) Geroevka 1 (after Butyagin, Solovyov 2001); c) Farmhouse 151, Chersonesos (after Carter et al. 2001); d) Churubash Iuzhno (after Zin'ko 2006); e) Kelsheikh 1, house 1 (after Stolba, Andresen 2015).

Figure 6: Examples of fourth century BCE field divisions: a) Chersonesos (after Carter et al. 2001); b) Tarkhankut peninsula (after Stolba, Andresen 2015); c) Olbia (after Karjaka 2008).

Figure 7: The Boztepe peninsula, with Hellenistic sites (H) and kiln sites (K) indicated.

Figure 8: Example of fourth-second century BCE road network from the Taman peninsula (Rempel 2004 after Paromov 1998, 225).

Abbreviations

FGrH Jacoby, F. 1923-: *Die Fragmente der griechischen Historiker,* Berlin, Weidmann**.**

IG *Inscriptiones Graecae,* Berlin 1903-

IOSPE Latyshev, B. 1885-1901: *Inscriptiones antiquae Orae Septentrionalis Ponti Euxini graecae et latinae*. St Petersburg, Imp. Russkoe Archeologicheskoe Obshchestvo.

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Tables

Table 1: Evidence for 'flowering' of settlement for places mentioned in the text (compiled from Avram 2006; Doonan 2004; 2010; Guldager Bilde et al. 2012; Hughes 2015; Kryzhitskii 2000; Kryžickij 2006; Nikolaenko 2006; Ochotnikov 2006; Rempel 2004; Saprykin 2006; Scholl, Zin'ko 1999; Ştefan et al. 2017; Zin'ko 2006).

	Increased number of settlements	**Increased density in existing territory**	**Settlements in new/expanded territory**
Bosporan kingdom	x	x	x
Nymphaion	x	x	
Chersonesos	x	x	
Western Crimea	x	x	x
Tarkhankut	x		x
Olbia	x	x	
Nikonion	x		x
Istros	x	x	
Kallatis	x		x
Sinope	x		x
Vani	x		x

Table 2: Evidence for agricultural installations in hinterlands of places mentioned in the text (compiled from Avram 2006; Butyagin, Solovyov 2001: 268-80; Carter et al. 2000; Doonan 2004; Doonan et al. 2015; Gorlov, Lopanov 1995; Guldager Bilde et al. 2012; Karjaka 2008; Kruglikova 1975; Kryzhitskii 2000; Kryžickij 2006; Kutajsov 2006; Maslennikov 1998; Müller et al. 1998; Nikolaenko 2006; Paromov 2000; Saprykin 2000; 2003; 2006; Ščeglov 2002: 20-21; Scholl, Zin'ko 1999; Smekalova 2013; Smekalova, Kutaisov 2014; Smekalova, Smekalov 2006; Smekalova et al. 2016; Solovyov 2009; Ştefan et al. 2017; Stolba 2012; Stolba, Andresen 2015; Zin'ko 2001; 2006).

	Farmsteads	**Agricultural storage/ processing**	**Individual fields, planting structures**	**Field systems**
Bosporan kingdom	x	x	x	x
Nymphaion	x	x		x
Churubash Iuzhnoe			x	
Geroevka 1	x		x	
Geroevka 2		x		
Generalskoe Zapadnoe	x	x		

Hermonassa (Volna 1)	x	x		
Chersonesos	x	x	x	x
Western Crimea				
Tarkhankut	x	x	x	x
Kelsheikh 1	x	x	x animal pens	
Oirat	x		x	
Tiumen 2	x	x	x	
Kerkenitis	x		x	x
Ortli	x	x	x	
Mamay-Tyup	x		x	
Olbia	x	x		x
Istros	x			
Histri-Pod	x	x		
Kallatis				x
Sinope	?	x		

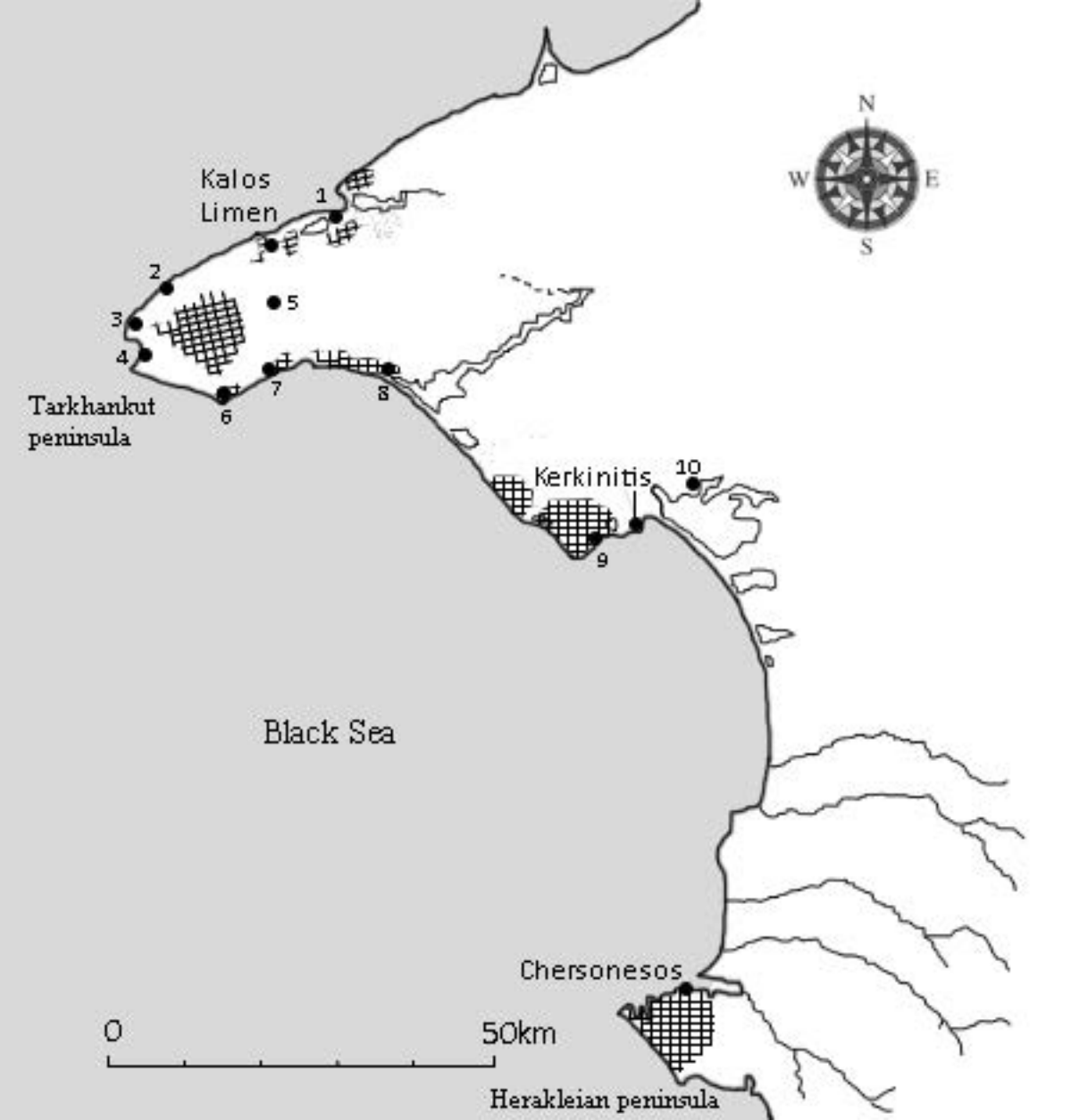
Table 3: Evidence for road and path networks in hinterlands of places mentioned in the text (compiled from Doonan 2004; 2015; Doonan et al. 2015; Guldager Bilde et al. 2012; Karjaka 2008; Kryžickij 2006; Paromov 1998; Saprykin 2000; Scholl, Zin'ko 1999; Smekalova 2013; Smekalova, Smekalov 2006; Ştefan et al. 2017).

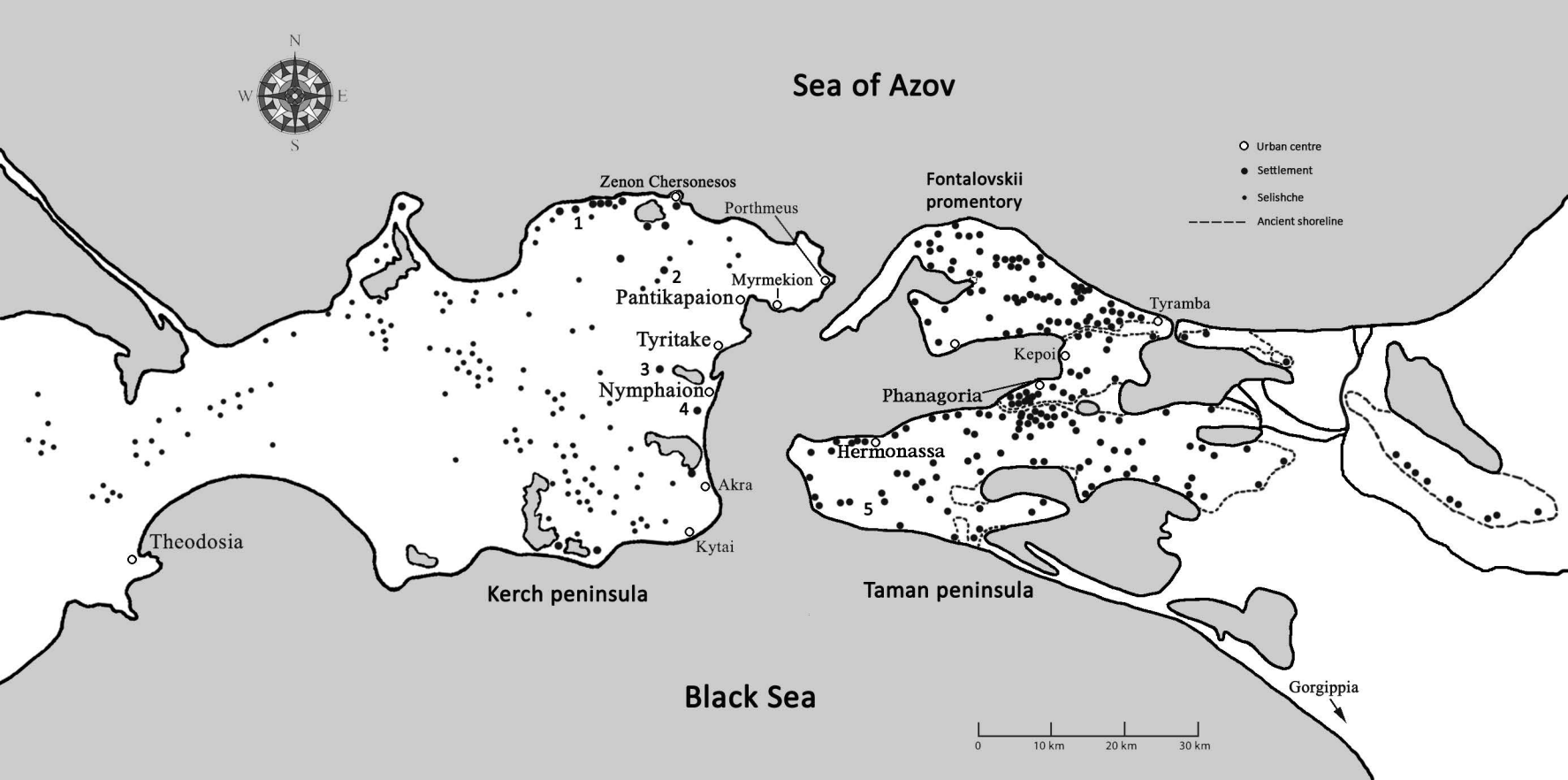
	Paths, short distance	**Field division roads**	**Long distance routes**
Bosporan kingdom	x	x	x
Nymphaion	x	x	x
Chersonesos	x	x	
Western Crimea	x	x	x
Tarkhankut	x	x	x
Olbia	x		x
Kallatis		x	x
Sinope	x		x

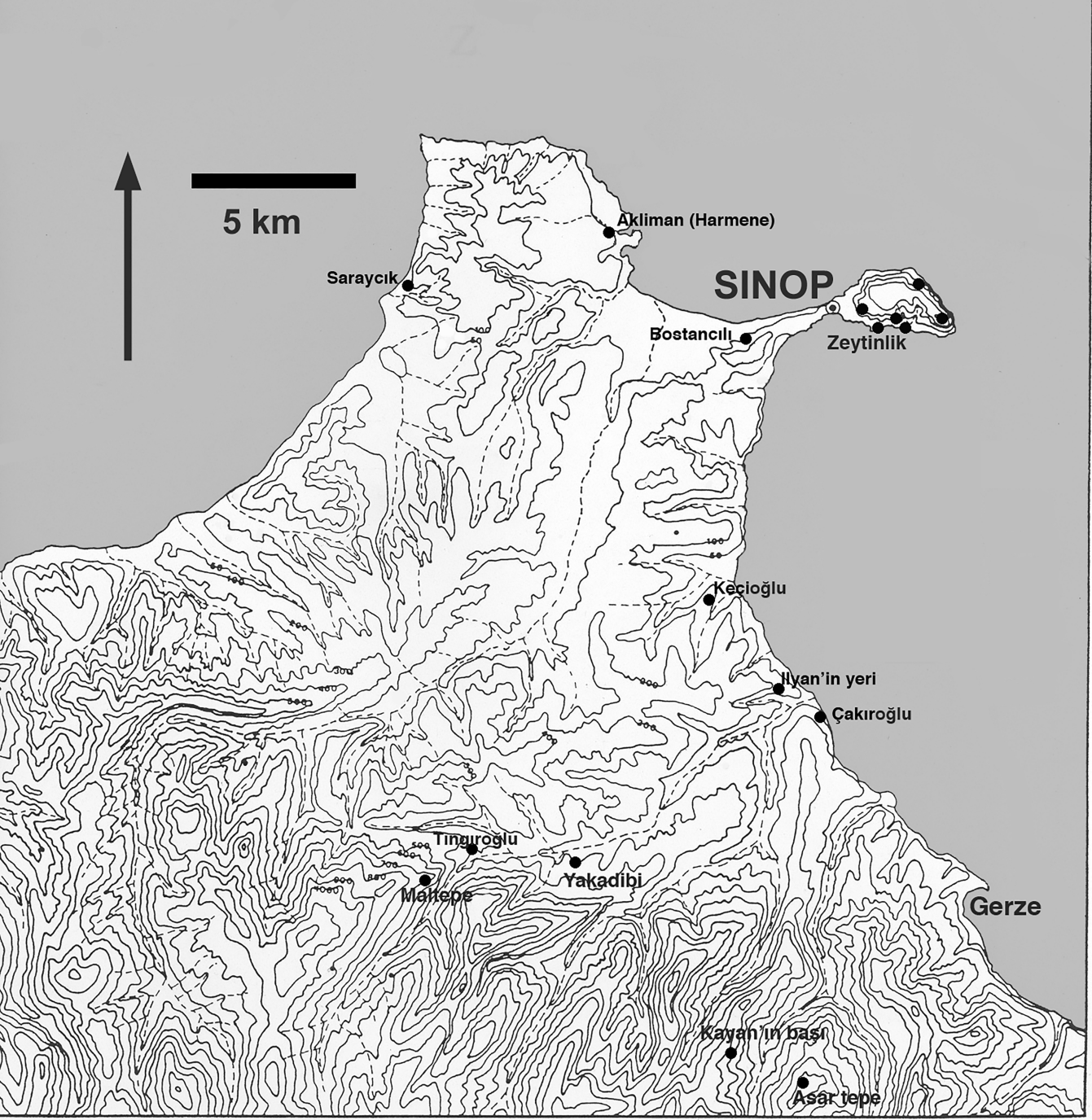
Table 4: Evidence for dependent territories of places mentioned in the text (compiled from Anfimov 1991; Doonan 2004; 2009; 2015; 2018; Doonan et al. 2015; Erciyas 2007; Guldager Bilde et al. 2012; Kopylov 2003; Kryzhitskii 2000; Maslennikov 1998; 2001a; 2001b; Nikolaenko 2006; Ochotnikov 2006; Odrin 2014; Rempel 2004; Smekalova, Smekalov 2006; Stolba, Andresen 2015).

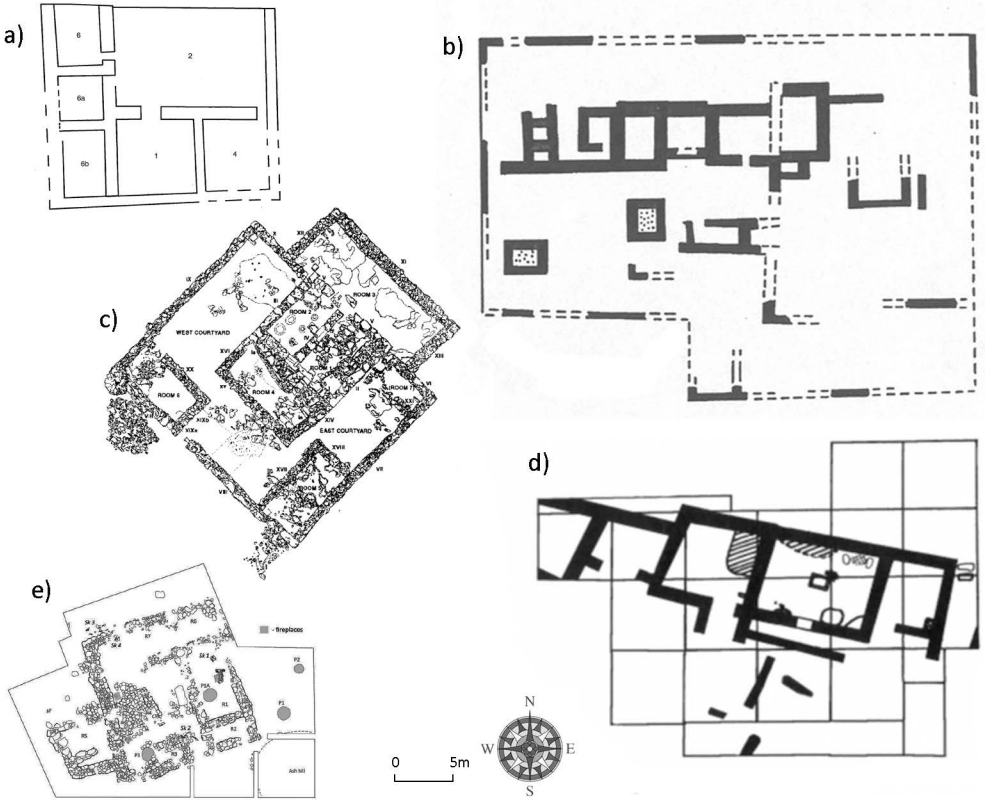
	'Further chora'	**Expansion beyond chora**	**Long distance connections**
Bosporan kingdom	x	x	x
Chersonesos	x	x	x
Western Crimea		x	x
Tarkhankut		x	x
Olbia		x	x
Tyras		x	x
Nikonian		x	
Kallatis		x	
Sinope	x (early)		x

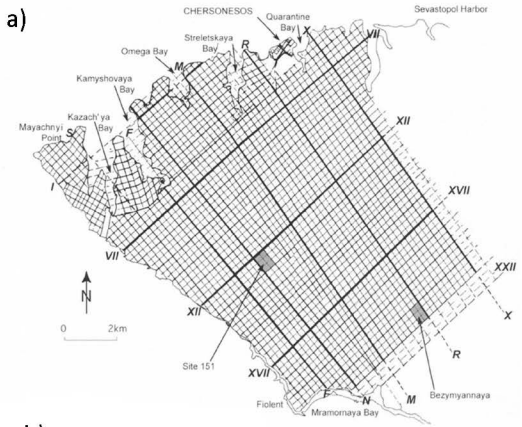

Scythians
Elizavetovskoe
Olbia
Nikonion
Tyras
Sea of Azov
site with evidence for increased rural settlement
Pantikapaion
Kerkinitis
Istros
Chersonesos
Theodosia
Gorgippia
Kallatis
Thracians
Black Sea
Colchians
Apollonia Pontika
Sinope
Phasis
Herakleia Pontika
Vani
Byzantion
Amisos
Kotyora
Trapezous
Kerasous
Pontic kingdom
N
W
E
S

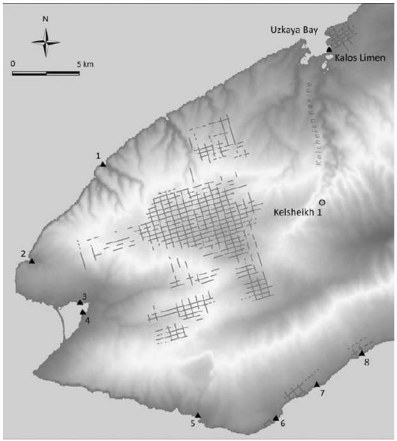

N
W
E
S
Kalos
Limen
1
2
3
4
5
6
7
8
Tarkhankut
peninsula
Kerkinitis
9
10
Black Sea
Chersonesos
0
50km
Herakleian peninsula

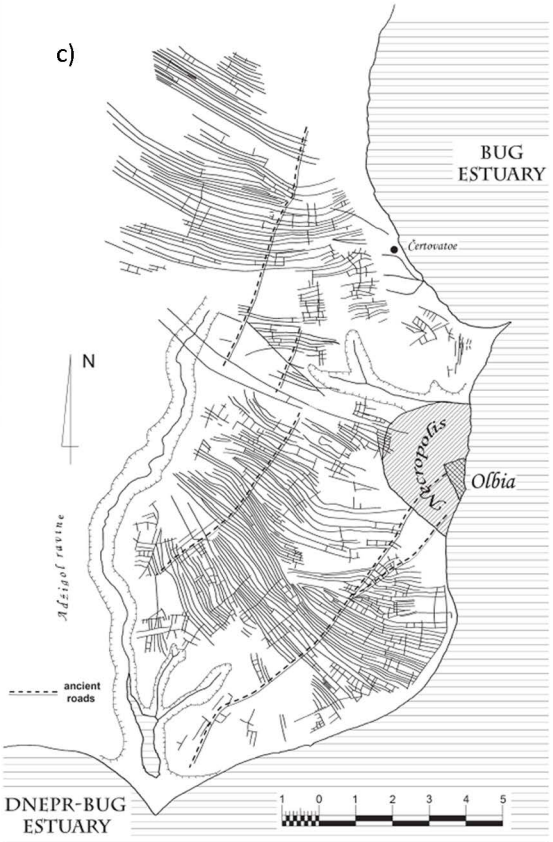

N
W
E
S
Sea of Azov
Urban centre
Settlement
Selishche
Ancient shoreline
Zenon Chersonesos
Porthmeus
Fontalovskii promentory
1
2
Myrmekion
Pantikapaion
Tyramba
Tyritake
Kepoi
3
Nymphaion
Phanagoria
4
Hermonassa
Akra
5
Theodosia
Kytai
Kerch peninsula
Taman peninsula
Gorgippia
Black Sea
0
10 km
20 km
30 km

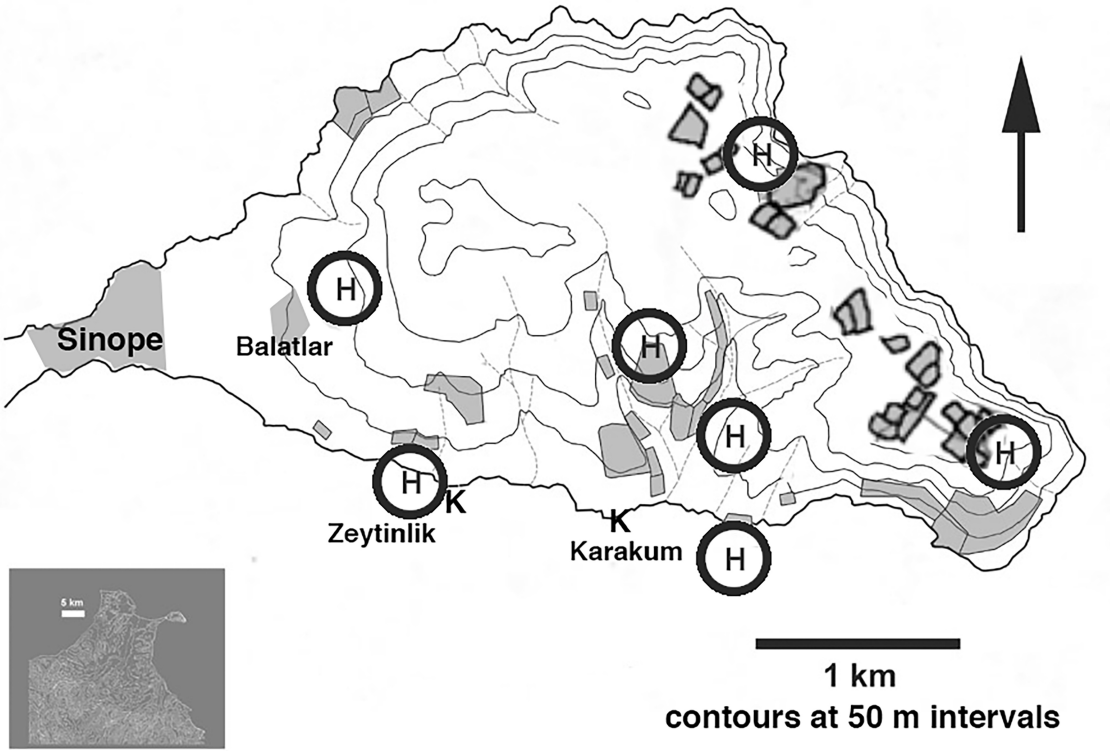

5 km
Akliman (Harmene)
Saraycık
SINOP
Bostancılı
Zeytinlik
Keçioğlu
İlyan'in yeri
Çakıroğlu
Tınaıroğlu
Yakadibi
Maltepe
Gerze
Kayan'ın başı
Asar tepe

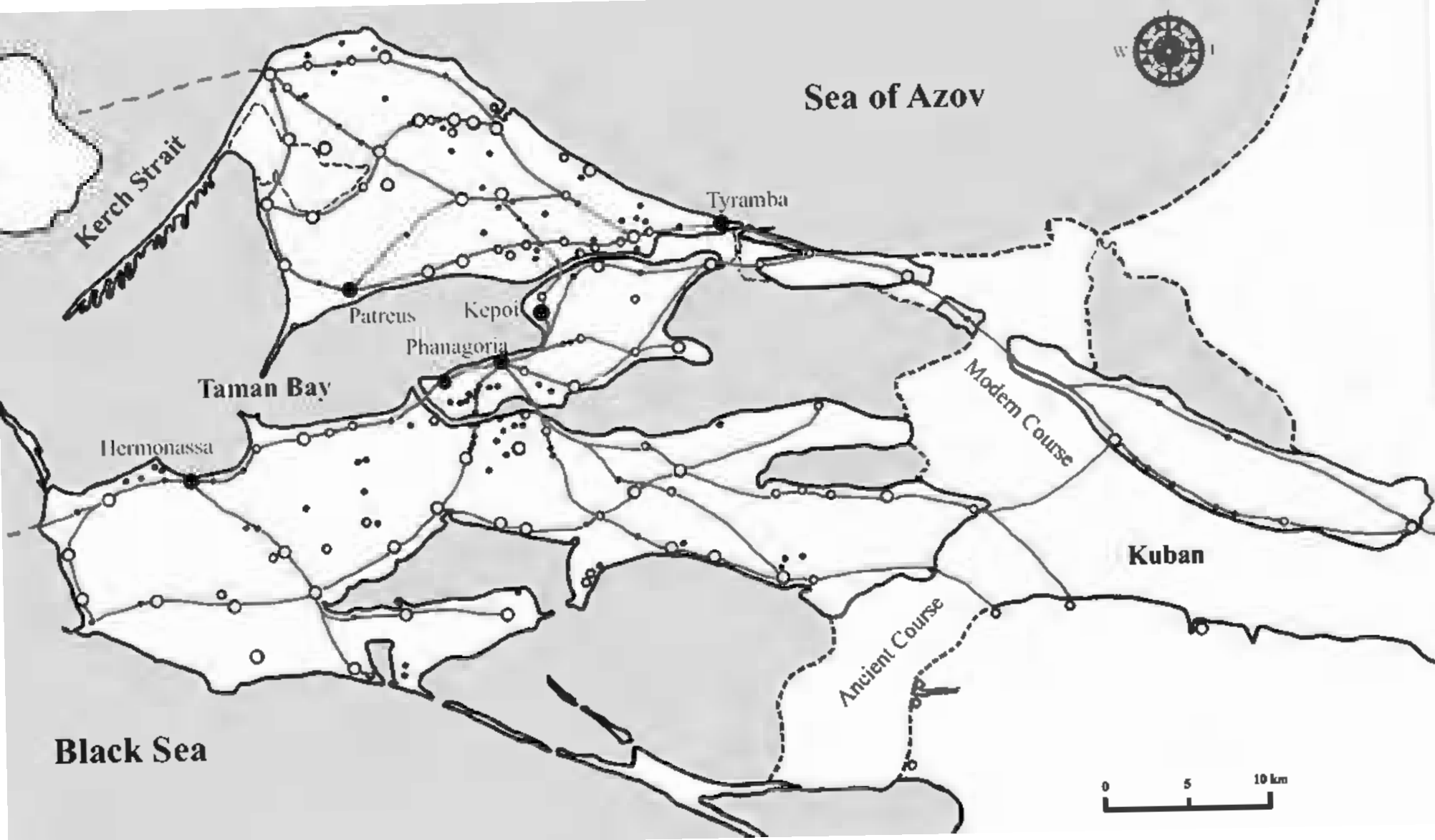

a)
6
2
6a
6b
1
4
b)
c)
WEST COURTYARD
ROOM 3
ROOM 2
ROOM 5
ROOM 6
ROOM 4
EAST COURTYARD
d)
e)
- fireplaces
Ash hill
0
5m
N
W
E
S


a)
CHERSONESOS
Quarantine Bay
Sevastopol Harbor
Streletskaya Bay
Omega Bay
Kamyshovaya Bay
Kazach'ya Bay
Mayachnyi Point
VII
XII
XVII
XXII
N
0 2km
Site 151
Fiolent
Mramornaya Bay
Bezymyannaya


b)
N
0 5 km
Uzkaya Bay
Kalos Limen
Kelsheikh 1
1
2
3
4
5
6
7
8


c)
BUG ESTUARY
Certovatoe
N
Necropolis
Olbia
Adzigol ravine
ancient roads
DNEPR-BUG ESTUARY
1 0 1 2 3 4 5


Sinope
Balatlar
Zeytinlik
Karakum
H
K
5 km
1 km
contours at 50 m intervals


Sea of Azov
Kerch Strait
Tyramba
Patreus
Kepoi
Phanagoria
Taman Bay
Hermonassa
Modern Course
Kuban
Ancient Course
Black Sea
0
5
10 km