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Agriculture, Settlement and Landscape in Ottoman Cyprus

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The Ottoman period in Cyprus (1571-1878) has a wealth of archaeological material and relevant documentation, which is only now beginning to be exploited. After giving a brief overview of this data and its historical background, this article explores the relationship between agriculture, settlement and landscape during this period. Particularly relevant are the different types of rural site: villages, seasonal settlements, estates, monasteries, goat folds, field shelters, and water mills. An examination of this material in its landscape context allows an analysis of human activities within the landscape, such as settlement, travel, and labour, and the social and political relations that influenced them.

Introduction

It is a paradox that the later the period and the more material and documentation available, the less the archaeology of Cyprus is known and understood. If this is a problem for the Medieval period (Gregory 1987, 199), then it is all the more so in the Ottoman period (1571-1878). This is partly because of the still common 'archaeological aversion to the modern' (Baram 1995b, 126), and partly due to the understandable concentration by all sides on historical and political issues such as Turkish settlement, conversion to Islam, and the various rebellions.

And yet the Ottoman period in Cyprus is a rich one. The material culture includes a broad range of site types, artifacts, artistic genres and cultural landscapes. There is detailed historical documentation, not just from travellers and contemporary historians but from censuses and tax registers, which give invaluable information about population, agriculture and the economy down to the household level. Most importantly, all this data is more than sufficient for addressing a wide range of highly topical archaeological issues: subsistence strategies, demographic and social change, the impact of imperialism, archaeological correlates of ethnicity, and many more.

In this article I will give a brief overview of the material and documentary sources currently available to the archaeologist working on Ottoman Cyprus, and then discuss what this information tells us about the relationship between agricultural strategies, settlement patterns, and human movement and activities within the landscape. This involves examining the entire landscape, not just specific sites or a particular artifact class or building type. Too often it is assumed that the rural settlement pattern was simply a nucleated one, with people living in villages and working in their fields during the day (Christodoulou 1959, 61-2; Drury 1972, 169). It takes little exploration in the field to discover that there were several different types of rural site, such as farmsteads, estates and field shelters. Agricultural activities in the landscape and their corresponding human settlement patterns varied according to area, season, and individual. The settlements were linked together in a complex system of exchange by a network of travelling craftsmen, annual fairs, and a wide-reaching trade in staples. The other

important network which affected all villagers and farmers was that of taxation. Rather than oppressing rural life, however, taxation often stimulated intensive and efficient production, with an accompanying high level of social and economic organisation.

A study of elite sources alone, or the recording of a handful of major sites, cannot address these issues. It is more useful to examine the broad range of human activities within the countryside, which involved various degrees of temporary and permanent settlement. From this we can analyse the system of agricultural labour and settlement across the entire landscape. Tax records and administrative correspondence are more useful sources than brief descriptions by foreign travellers or elite historians. Survey data is the most important source of archaeological information, and much of this article will be based on data from the Sydney Cyprus Survey Project (SCSP), and from my own investigations in the surrounding areas of the North Troodos mountains (North Troodos Project, or NTP).

The Ottoman period in historical terms runs from the Ottoman invasion in 1570, with the occupation of the island completed in the following year, to the British occupation in 1878. In archaeological and social terms, however, the transitions were not so clear cut, particularly away from the cities. The sixteenth century was one of prosperity and high population in much of the island, evidenced by a widespread and dense distribution of pottery in the SCSP survey area and elsewhere (Knapp and Given 1996, 333-4; cf. Grivaud 1996, 224). It is not until the seventeenth century that travellers begin describing widespread rural abandonment and depopulation. At the other end of the period, the British took over the Ottoman administrative system according to the terms of the Congress of Berlin in 1878, and many aspects of local government and taxation stayed in place until after the First World War. It was the mechanisation of agriculture and the improvement in communications in the 1920s and 1930s which transformed the rural economy, not the change of political rule in 1878.

The Sources

Systematic and published excavations of Ottoman sites in Cyprus are almost non-existent. The Swedish Cyprus Expedition seems to have struck some Ottoman period storage pits on their way down to the Iron Age sanctuary of Ayios Iakovos in the 1920s, and recorded them carefully in case they were ancient (Gjerstad *et al.* 1934, 363, 367-8). A more honourable exception is the Venetian period industrial building at Athienou *Malloura*, which was modified and re-used in the seventeenth and eighteenth centuries (Toumazou, Yerkes and Kardulias 1998, 176).

>>> Fig. 1. Map of Cyprus, with places mentioned in the text

Archaeological surveys, because of their concern with long-term change and their need to deal with whatever they find, have a slightly better record. Extensive surveys have noted and recorded several abandoned Ottoman period settlements (Fig. 1), for example near Peyia (Baird 1985, 347), Pano Arodhes (Baird 1984, 64-5), Phlamoudhi (Symeonoglou 1972, 193-4), and Kalavastos (Gomez, Hansen and Wagstaff 1987, 9). Less helpful is a single reference to 'nine components of the Turkish period' in the Khrysokhou drainage in the northwest of the island (Adovasio *et al.* 1974, 352). The

Canadian Palaipaphos Survey Project found seven sites definitely dating to the Ottoman period (Rupp 1986, 39), and analysed the pottery from them (Gregory 1993, 167-8).

The Sydney Cyprus Survey Project has been working in the northern Troodos mountains since 1992, using an intensive survey methodology with an interdisciplinary team of archaeologists, geomorphologists, GIS specialists, oral historians, and a geobotanist (Knapp and Given 1996; Given *et al.* 1999). The extent of the Ottoman material across the project's 65 sq. km. area is striking. Of the sherds which have been collected and analysed, 2,488 are attributed to the Ottoman period, and this represents a much larger quantity on the ground. As well as a general distribution of pottery in arable land, 28 specific areas had high enough concentrations or architectural remains to warrant their being investigated more intensively ('Places of special interest'; referred to here by their village and locality names and inventory numbers, prefixed 'SCY'). The North Troodos Project, which consists of exploration in the northern Troodos mountains and the areas adjoining the SCSP survey area, has revealed another 82 sites and rural structures from the Ottoman and early Colonial periods (referred to by their village and locality names and inventory numbers, prefixed 'NTP'; see fig. 2). In addition to these, records show that almost all of the 65 villages in the area have been in existence from at least the early nineteenth century.

>>> Fig. 2. Northern Troodos: topographical map

As well as the ongoing pottery analyses for these various projects, several other classes of artifacts from the Ottoman period in Cyprus have been studied. Uzi Baram has produced a preliminary typology and chronology of clay tobacco pipes (1995a). For many years the study of icons from the Ottoman period was neglected in favour of those from the Byzantine and Medieval periods, but that is now being corrected (Sophocleous 1994, 30-32, 107-13). Two coin hoards from the Ottoman period have been published (Pitsillides 1980; Pitsillides and Egoumenidou 1994). Similarly, as well as the usual guide books (Jeffery 1918; Gunnis 1936), there are now several studies of Ottoman period architecture, including public buildings (Tekman, Feridun and Bağışkan 1982), town houses (Pihler 1993), and village houses (Sinos 1984; Ionas 1988).

Most well-known and widely available of the documentary sources for Ottoman Cyprus are the published travellers' accounts, conveniently collected by C.D. Cobham (1908); two important and more recently translated accounts are those of Basil Barsky from the 1730s (Barsky 1996) and Giovanni Mariti from the 1770s (Mariti 1909). These travellers regularly made observations of archaeological importance on such topics as abandoned villages, agricultural production, rural structures, and relations between the peasantry and the landowning classes. Records from the European consulates in Larnaca provide general economic and political information, which is however rarely applicable to regional archaeological studies (see, for example, Luke 1921; Duteil-Loizidou 1991; 1995). The same applies to diplomatic documents from European states (see, for example, Theocharides 1984).

More detailed documentation on the population and agricultural production of specific regions is given in the various administrative and taxation registers. A complete census was taken in 1572 for the purposes of organising the taxation of the new province (İnalçık 1973, 122-3, 134-5). This document, which lists the land holdings and annual income of every household on the island, is preserved in the Directorate-General of Cadastral and Land Survey in Ankara (Gazioğlu 1990, 186). Various documents held

by the Cyprus Research Centre have been published in summary form (Hidioglou 1971-72), and provide useful information on topics such as land and property sales. Tax and population figures for the 1820s and 1830s have been published and analysed in very useful detail (Papadopoulos 1965, 97-214; Theocharides and Andreev 1996).

Another class of documents consists of monastery records and correspondence, usually with the Ottoman authorities, and often concerning land purchases, grazing rights, and water rights. The correspondence of the rich and powerful Kykko Monastery is particularly well-published, if mostly in summary form (Hidioglou 1973; Theocharides 1993), but information is also available for other monasteries such as that of Ayios Iraklidhios in Politiko (Tsiknopoulou 1967) and Makheras Monastery (Tsiknopoulou 1968). Hopefully this trend towards publishing documents will continue; work in Greece, for example, has shown how valuable such information is to archaeological as well as historical research (see, for example, Kiel 1997).

Historical and Social Background

With the final capture of Famagusta by the Ottomans in August 1571, the Venetian rulers and most of the European landholding classes were killed or expelled, and Cyprus was incorporated into the Ottoman empire. The organisation of the new province followed lines similar to other Ottoman conquests (see Hill 1952, 10-34; Papadopoulos 1965, 16-36; İnalçık 1973; Sant Cassia 1986, 5-17; Hunt 1990, 226-33; Kyrris 1996, 253-62). The demographic profile of the island was altered by a Turkish garrison and a substantial but much disputed number of settlers from Anatolia, perhaps about 20,000 (Hunt 1990, 227; cf. Kyrris 1996, 260-2), and in many cases new Turkish estate owners took over from the old Frankish and Venetian feudal overlords. In keeping with the Ottoman *millet* system, the Orthodox church was given fiscal and administrative as well as spiritual control over its flock, with the Archbishop and the Dragoman ('interpreter') being allowed considerable personal power. The harsh Venetian taxes were rationalised and reduced, with the main sources of state income consisting of cereal tithes, generally set at about one fifth, the poll-tax, and dues for such things as animals, mills, beehives, and orchards (İnalçık 1973, 125-33).

The seventeenth and eighteenth centuries were most notable for their considerable decrease in population. Many of the European travellers commented with varying degrees of reliability on the changing population, and these figures have been carefully analysed by Papadopoulos (1965, 37-77). Most useful are probably the surviving Ottoman records. According to the 1572 census, some 85,000 Christian adult males were liable to pay the poll tax (Papadopoulos 1965, 17). A hundred years later in 1673, according to official papers captured in the siege of Vienna, only 12,029 households were liable to the poll-tax. This may in fact represent only the lowest of three taxable categories, which would put the total figure at about 30,000; this would be consistent with the 30,000 family heads reported by a traveller in 1670. Another traveller in 1668, however, gave a figure of 12,000 households (Papadopoulos 1965, 40-2). Whatever the actual figure, the dramatic decrease is clear.

At an anecdotal rather than statistical level, travellers in the seventeenth and eighteenth centuries are eloquent in their descriptions of abandoned villages (see, for example, Cobham 1908, 236, 258, 261, 303-4; Mariti 1909, 73, 79; Barsky 1996, 33). The abandoned villages mentioned in the survey reports discussed above are clearly a

result of this same phenomenon. The various causes of this depopulation include a series of devastating plagues, locust attacks, droughts, and earthquakes (Hill 1952, 67), as well as emigration partly due to these factors and partly because of increasing and sometimes arbitrary taxation.

Another feature of the Ottoman period was a series of rebellions, which until the nineteenth century were not so much nationalist uprisings as 'tax rebellions' (Kitromilides 1982, 92). Greek and Turkish Cypriots often protested together against the excessive depredations of the tax farmers and governors, who were generally collecting as much for themselves as for the Ottoman state. These social problems were expressed in uprisings, such as that against the governor Chil Osman Pasha in 1764, who among other extortions had doubled the poll tax to recoup what he had spent on bribes to gain his appointment. A deputation of Greek clerics and Turkish officials were appealing to have the tax reduced, when suddenly the floor of the Governor's palace collapsed underneath them, in what was apparently a deliberate attempt to remove them. Three months later, Chil Osman Pasha was killed by a mob of protesting Greek and Turkish Cypriots (Hill 1952, 80-82; Kitromilides 1982). Such affairs are dealt with by the historians of political events; regional archaeology and an examination of local documentation gives a fuller picture of the underlying social trends which manifest themselves briefly in these isolated instances (cf. Ziadeh 1995, 1001).

The major political event of the first half of the nineteenth century in Cyprus accompanied the outbreak of the Greek War of Independence in 1821. To forestall a sympathetic uprising, the governor first disarmed the Greek Cypriots and then began to execute their leaders, culminating in beheading three bishops and hanging the Archbishop on 9th July (Hill 1952, 125-35). In 1833 the uprisings returned to the old 'tax rebellion' model, with a Turkish landowner leading Turkish and Greek Cypriots in protest against heavy and arbitrary taxation (Hill 1952, 161-4).

The next fifty years saw a slow improvement in economic and social conditions, helped by partially successful attempts at reforming taxation. The population gradually increased towards its sixteenth century levels again, and trade and communications with Europe and the Levantine coast improved considerably (Rizopoulou-Egoumenidou 1996, 203-4). In 1878 a secret deal behind the scenes at the Congress of Berlin transferred the administration of Cyprus, if not its actual ownership, to Great Britain. Ottoman administrative and judicial procedures remained largely in force, though they were certainly better and more fairly managed than before. The poll tax for military exemption was only abolished in 1906 (Georghallides 1979, 27), and cereal tithes in 1926 (1979, 363). Because of this and the annual payment of £92,800 to the Ottoman Sultan (or rather to his creditors), there was little opportunity to reform or develop the island, and the rural economy and society were not dramatically transformed until after the First World War (Ifeka-Moller 1976, 593).

During the whole of this period the economic base at a local and state level was agriculture, particularly the cultivation of cereals, but also wine, silk and cotton, olive oil, various fruits and vegetables, and dairy products. According to the European consuls and travellers, who were more interested in production for export than local subsistence, Cyprus regularly exported large quantities of barley and wheat to Europe and Turkey in the late eighteenth and early nineteenth centuries (see, for example, Cobham 1908, 372, 426). This often healthy export trade, however, did not necessarily mean a large surplus. Kinneir in 1814 commented that grain was often forcibly bought or seized by the governor or the church for the sake of the profitable export trade,

leaving villagers to starve (Cobham 1908, 414). The large estates or *çifliks* were similarly geared to mass production for the foreign market, again at the expense of the peasants who provided the labour (Sant Cassia 1986, 15-16).

The system of landownership included many such large estates, some belonging to the church and others to Turkish *sipahis* or overlords who had been granted them after the Ottoman conquest in 1571; in many cases these were the successors of the feudal Medieval estates. Most land was owned by the state, but one major change that Ottoman administration brought about was that peasants were allowed and encouraged to cultivate their own land, pay taxes to the state, and bequeath their land to their heirs (Kyprianos 1788, 301; Hill 1952, 21-2, 28; Christodoulou 1959, 72). One beneficiary of this system was the church, which over the course of the period acquired large amounts of land, either by inheritance from peasants or by buying up from Turkish landowners (Melamid 1956, 364-5; Sant Cassia 1986, 10-12). These property transfers make up a large proportion of the monastery records (see, for example, Hidirolou 1973; Theocharides 1993).

The relationship between settlement and agriculture during the Ottoman period largely revolves round this issue of large estates *versus* small lots of privately owned property. Although the issue has been examined in general terms (Christodoulou 1959, 70-88; Karouzis 1977; Sant Cassia 1986), an approach which combines regional analysis and landscape archaeology gives a more concrete and nuanced understanding of how the system worked and developed in specific conditions. The northern Troodos is one such region which provides a wide range of documentation, surviving structures, and archaeological survey data. The clearest way of examining this data is by reviewing the major types of sites: villages, seasonal settlements, estates, monasteries, goat folds, field shelters, and water mills.

Villages

For Ottoman and colonial Cyprus, a village is most conveniently defined as a permanent community of small-scale landowners with shared social and economic institutions. They were inhabited all year round, with most farmers returning most nights from the fields. Increasingly throughout the Ottoman period these farmers owned their agricultural land; even at the beginning of the period they were entitled to the usufruct of it and could bequeath it to their heirs. As is often the case with essentially nucleated settlements of farmers, their land was usually scattered in small plots across the village territory (Christodoulou 1959, 85-7).

The communal organisations that characterised these villages included churches, mosques, fountains, and coffee houses. Most obvious in a Greek Cypriot village was its church. The role of the church in marking abandoned settlements is very clear in the accounts of the travellers described above, and its community role, especially on feast days and political festivals, is still very evident today. Even when they are on the edge of the village, rather than in the centre as is the widely accepted norm, this is often because of lateral shift on the part of the village. When the settlement had shifted far enough away from the village, a new church was often built to define the new centre of the village (Ionas 1988, 31, 36; Given, in press).

The importance of the coffee house in the social organisation of the village was widely commented on in the late nineteenth century, and clearly was significant for

much of the Ottoman period. Coffee itself first came into widespread use in the cities of Cyprus in the early seventeenth century (Jennings 1993, 332; cf. Vroom 1996, 11-14). After 1878 the British colonial rulers tried to demonstrate their control over them, and in 1886, for example, they issued widely ignored notices proclaiming the closing hours (SA1/4384/1886). By 1928 the 196 villages of Nicosia District had a total of 397 coffee houses between them (SurrIDGE 1930, 23). Their function within the village was much more than that of relaxation, in spite of the current western stereotype about them. They acted as information exchanges, and locations for villagers to buy and sell surplus produce and for travelling traders and craftsmen to sell their goods (Ionas 1988, 36). Architecturally there is often little to distinguish a coffee house from a village house, apart from sometimes a portico on the street; archaeologically the wares used, for example eighteenth century Kütahya ware in Turkey, are often readily identifiable (Vroom 1996, 9-10).

The most distinctive and well-preserved archaeological correlate of the Ottoman period village is, of course, the house. There are clearly problems in extrapolating from surviving pre-industrial houses to the Ottoman period in general, on the dubious basis that the 'traditional' is somehow 'timeless'. Greater and more widespread wealth and development after the First World War, for example, led to many village houses imitating the elaborate stone facades and more complex internal space of town houses. Most surviving mud brick houses in the villages are less than a hundred years old, with frequent repair and rebuilding phases. That said, careful architectural analysis combined with detailed reading of travellers' descriptions shows certain key elements which are common to houses throughout the Ottoman and early colonial periods, if not before: their grouping in organic, agglomerated clusters; a central courtyard used for a wide variety of domestic and agricultural activities; and a general accumulation of spaces and units round the courtyard according to specific needs (Ionas 1988, 44-5).

Characteristic building materials of village houses include local stone for the socle; packers made of small stones or else broken tiles or storage jars to fill the chinks; mud brick for the walls above the socle (proportions of stone and mud brick vary between the plains and the mountains because of availability); and wooden beams, canes and packed earth for the roofs (Christodoulou 1959, 65-6; Ionas 1988, 135-44). Flat roofs were the norm, and could be used as living spaces (see, for example, Moryson in 1596, quoted in Cobham 1908, 185). Tiles were rare in village houses till after the First World War. The other most important material manifestation of the village consists of the pottery, particularly *pitharia* (storage jars), *kouzes* (water jars), and a range of other reasonably well-documented domestic coarse wares and forms (London, Egoumenidou and Karageorghis 1990, 26-35; Ionas 1998).

The most important factors in the siting of villages in the Ottoman period consisted of security and the availability of water and arable land. The need for security saw a well-documented shift of major settlements away from the coast after the Late Roman period (cf. Drury 1972, 166), and even inland villages were often carefully sited so that approaching visitors could be easily seen (Christodoulou 1959, 63). The distribution map of villages in the northern Troodos mountains (Fig. 3) shows all those villages recorded by the census in 1881, just after the end of the Ottoman period but before British rule had shown any significant effect on the countryside (Census 1882). Of the 63 villages shown, all but five appear in the Christian poll tax records of 1825-6 (Papadopoullos 1965, 115-134); as two of the missing villages were Turkish Cypriot, it

seems that village numbers and distribution were largely unchanged in the nineteenth century.

>>> Fig. 3. Northern Troodos: distribution of villages by population in 1881

The importance of water sources (Drury 1972, 166-7) is clear from the distribution map, with villages following the major rivers, particularly the Peristerona, Akaki, and above all the Pedhieos. This mainly applies to villages in the plains, below the 400 m. contour, where wells could easily be dug down to the water table. In the foothills, where there is a band of smaller villages between the 400 and 600 m. contour, springs were more extensively exploited. Politiko, for example, has an Ottoman period two-spouted fountain, each spout with a pointed arch and a basin. The neighbouring monastery of Ayios Iraklidhios used a chain of wells leading in from the hills to the south, where SCSP investigated the remains of a small aqueduct (Politiko *Gastres*; SCY212).

The largest villages on Fig. 3, as well as being close to relatively abundant water sources, are clearly situated on the Mesaoria plain (below the 400 m. contour) which produced large amounts of cereals, and also irrigated vegetables and fruits in small pockets described by the travellers (Cobham 1908, 298). Very striking is the gap between the 600 and 1000 m. contours. This zone consists of diabase sheeted dykes, deeply incised by the rivers running north-south. The sides of the river valleys are in general too steep even for terracing, and the flood plains in the valley bottoms are minimal or non-existent. From about the 1000 m. contour the geology changes to gabbro, the rivers are nearer their source and have less incisive power, and the terrain is more broken up and suitable for small-scale horticulture and, above all, terracing for vines. Most of the small villages in the southwest corner of Fig. 3 relied on wine production to pay their taxes and provide a modicum for exchange (Christodoulou 1959, 159). According to the late eighteenth century British consul Michael Vezin, the Orini district (comprising most of the area on Fig. 3) had an annual production of 150,000 *kouzes* (1,815,450 litres) of *commanderia*, the heavy red wine popular in Venice (Cobham 1908, 372-3). For all the area's suitability for vines, producing cereals for subsistence was a considerable problem for these mountain villages.

In most cases the village's principal functions within the surrounding landscape were as a settlement for the cultivators and a location for much of the food processing. This is most clearly seen with cereals, the principal crop grown for subsistence and taxation. All stages from ploughing to reaping had to take place in the farmer's fields, which were scattered throughout the territory of the village, and occasionally beyond. The principal model of movement within the landscape was the familiar one of commuting, where the work force would travel daily to the fields by foot, donkey or mule, and in most cases return the same evening. The modern map of village territories, which are closely based on the colonial and Ottoman ones, shows a typical radius from the village of between one and three kilometres. Given that a farmer's fields were fragmented and dispersed, as is characteristic of a nucleated settlement and extensive farming system, this makes a reasonable daily distance to travel among different dispersed fields (Christodoulou 1959, 86-7; Stanley Price 1979: 72; Halstead 1987, 83).

Processing the grain, however, from threshing to storage, took place in the village. Instead of threshing it in convenient places near the fields, as was often the case elsewhere (see, for example, Halstead and Jones 1989, 41), the sheaves were transported to the village and threshed on threshing floors or *alonia* in a breezy area immediately

adjacent to the houses. From various historical accounts, and particularly from interviews in the village of Mitsero, it is clear that most families had their own threshing floor. This is in contrast to northern Jordan, for example, where villages used to have a communal threshing floor (Palmer 1998, 152). The construction of the surviving floors in Mitsero *Kato Alonia* (SCY202) displays this individual ownership through varied patterns in the laying of the paving stones: some are radial, some are laid in long strips, and others have centre pieces made of a particularly large slab or a slag cake from the nearby ancient copper smelting site. In every case the boundaries between family threshing floors are very carefully delineated, often with upright slabs or slag cakes.

Other agricultural activities similarly took place within the village and were organised on a family basis. Most families had no agricultural specialisation, and as well as growing cereals, olives and a few vegetables they would usually keep a modest flock of some ten goats or sheep. According to ethnohistorical sources in Mitsero and elsewhere, these were kept in the courtyard of the village house until the British introduced alternative theories of domestic sanitation. As with cultivation, these required daily movement out of the village to various pastures and a return home the same day. Stock-breeding and herding on a large scale by professional herders was in economic and social terms an entirely separate phenomenon from this small-scale family-based herding based in the villages (Ionas 1994, 435).

Olive oil production during the Ottoman period was mostly for local domestic consumption, rather than for export. Michael de Vezin in the 1780s commented that very little oil was exported from Cyprus, as it was mostly consumed by the Cypriots and by seamen (Cobham 1908, 372), and Turner noted in 1812 that it sometimes had to be imported (Cobham 1908, 426). Locally, production required organisation at both a family and a village level. Trees were owned by individuals (often by great numbers of individuals) and maintained and harvested on a family basis. The equipment required for crushing and pressing, however, was too large and expensive for any one village family, so villages had a communal olive press, which in the nineteenth and early twentieth centuries was generally owned by the church. Informants in Mitsero described the roller-mill and screw-press set up in the village square outside the church. Young men competed in trials of strength; all workers received a free meal of fresh bread, olive oil and wine; and the owner of the olives gave a percentage of oil to the church which owned the mill and press (cf. Ionas 1994, 438-9). Village plans from the early twentieth century show each village with one or two olive presses, often near the church. Because of their size the millstones tend to be well-preserved and easily identified; Mitsero *Mavrovounos* (SCY023) is one example of a sixteenth century village with a surviving olive millstone.

An essential role that the village played within the wider landscape was the storage of agricultural products won from that landscape. *Pitharia* for storing wine are mentioned by travellers in the early seventeenth century. William Lithgow, for example, described the storage of wine in great jars of earth enclosed in the ground with only their mouths showing, sometimes with their interiors coated with pitch (Lithgow in 1609-21, quoted in Cobham 1908, 202). The same system was clearly used in the eighteenth and nineteenth centuries (see, for example, Mariti 1909, 115; Clarke in 1801, quoted in Cobham 1908, 380). Villages abandoned in the seventeenth century and surveyed by the Sydney Cyprus Survey Project show a strikingly high proportion of *pithari* sherds, though these large, chunky pieces are much more visible in the rubble piles and thick undergrowth than smaller, finer sherds. The rubble piles of Mitsero

Mavrovounos (SCY023), which appears in fifteenth century statistics and sixteenth century maps as 'Mavrochio', contain a large number of *pithari* fragments, and though many are hard to date precisely they are clearly associated with the glazed ware, which peaks in the sixteenth century (Knapp and Given 1996, 324-5).

Another storage system which is remembered by elderly people in the villages and to some extent attested archaeologically is that of underground pits or *voufes*, which were fired, filled with grain, and sealed (cf. Ionas 1988, 49). The ones discovered by the Swedish Cyprus Expedition at Ayios Iakovos, unfortunately only dated as 'comparatively recent', were pear-shaped in section, about 1.2 m. deep, with maximum diameters ranging from 1.2 to 1.5 m. Their walls and bottoms consisted of reddish, half-baked earth, clearly the result of being fired, which left visible traces of burning and ash. Four of the pits still contained the flat stones used as lids (Gjerstad *et al.* 1934, 363).

Various methods of food processing were clearly important as a means of storage, though here we are more dependent on ethnohistorical and documentary data. Grain is still stored by some village families in Cyprus as *trakhana*, where bulgur wheat is boiled up with yoghurt into a paste, cut into strips, and left to dry in the sun. In the winter this is diluted and boiled to make a warming and nourishing soup (cf. the Jordanian *kishk*: Palmer 1998, 160). Drying bread to make rusks has a similar purpose (Halstead and Jones 1989, 46). Travellers describe various cheeses from the sixteenth century onwards, often kept in oil to preserve them (see, for example, Cobham 1908, 177, 247, 267). Similarly, fruit such as apricots can be dried or preserved in syrup as *gliko*; nuts such as almonds can be stored as they are; and in the 1920s 'a heap of onions and potatoes on a sack' was a common sight in a village house (Surridge 1930, 13).

What is clear from all of these various methods of food production and storage, as well as from the domestic architecture itself, is that they were all based on the household, and required no more technology and labour than could be provided by the extended family (cf. Ziadeh 1995, 1006). In some cases, such as the olive press or the water mill, the church provided the necessary equipment for a fee. Any sort of mass production and storage of food, however, required a much greater investment of time and labour, and that could only be provided by the estates or monasteries outside the economic and social system of the village.

Seasonal Settlements

Nucleated settlement and transhumant pastoralism are two models of rural settlement that are frequently applied to the post-Roman Mediterranean, often with too little regard for the complexities of specific situations. The seasonal settlements of Ottoman and early colonial Cyprus, though almost disregarded in the literature, demonstrate that seasonal movements can be associated with cereal production as well as pastoralism, and that patterns of movement within the landscape are much more varied and complex than simple daily commuting from a nucleated village.

Five such settlements have been identified so far in the northern Troodos mountains, mostly on the basis of ethnohistorical information (Fig. 4). These settlements are, however, clearly distinct from permanent villages, and share certain characteristics. They lie between 250 and 500 m. asl, close to the first good arable soil as one descends from the mountains through the river valleys. They tend to consist of smaller structures

more widely spaced than the complex, agglomerated villages. They contain a much higher number of threshing floors in relation to the number of houses than a village would. They also tend not to have communal institutions, in particular churches, though there are exceptions for historical reasons.

>>> Fig. 4. Northern Troodos: seasonal settlements, water mills, and goat folds

A good example of a seasonal settlement is Kato Koutrafas *Mandres* (NTP001), which lies at 280 m. asl in the northwest corner of the study area (Fig. 4). It occupies a broad area of deep alluvial soil, which is slightly calcareous and rates second on a five-degree scale of arable land quality (Republic of Cyprus, Calcareous Soil Map, 1987). 500 m. to the south begin the forested mountains, with steep slopes and thin soil of poor quality. Within these mountains lie the two villages whose inhabitants used this seasonal settlement, Galata, nine km. to the south, and Ayios Theodoros, four km. southwest (Ionas 1988, 20). The structures have high socles or entire ground floors of basalt river stones and limestone packers, with mud brick above. Some patches of surviving roof show that they were the characteristic pre-tile flat roofs, made of beams, branches, spiny burnet, and packed earth. A few have corner chimneys, implying that they were used during the winter.

Although the locality name, *Mandres*, suggests a collection of goat folds, there are no surviving large scale animal pens. The main function of this settlement is suggested by the large numbers of threshing floors. Two are still clearly visible immediately south of the main cluster of houses, roughly circular and paved with small limestone slabs. According to the 1:1250 village plan, which is undated but whose first version was probably made in the 1920s, this settlement had 42 threshing floors, the second largest number of any settlement in the north Troodos that has been investigated so far. The intensive production that this number implies supported some 20 houses. Each house, in other words, had over two threshing floors, in contrast to the permanent village of Mitsero where in the 1920s there were two or three houses to each threshing floor.

Seasonal settlements such as Kato Koutrafas *Mandres*, then, would have been used intensively in the ploughing, sowing and harvesting seasons, and would have produced a large surplus of grain intended for a whole mountain village. For four of them their ownership is known, in each case consisting of one or two villages between 10 and 15 km. up the river valleys into the mountains; the direction of movement forms a consistent pattern across the landscape of the north face of the mountains (Fig. 4). This system gives villages a wider range of resources to exploit, and encourages communications and exchange on a regional basis, including the maintenance of kin ties across areas of different resources (Stanley Price 1979: 70-3, fig. 17).

Ayios Yeoryios Kafkallou (NTP049), though similar to the rest in terms of layout of houses and numbers of threshing floors, differs in that it has a large church. Population figures from the late nineteenth century suggest that it did have a small permanent population, as well as visiting farmers from the mountain village of Kyperounda. This raises two important issues in the investigation of site types in the landscape. Sites can easily be partly permanent and partly seasonal, as seems to have been the case here. Similarly, a diachronic perspective (often missing in geographical studies) shows the changing function and character of such sites. In the Medieval period this settlement appeared on maps as 'Cafcallo', and was actually a royal estate given in 1461 by James the Bastard to Morabit (Boustronios 1489, 74). With characteristic staying power, the

church was maintained and rebuilt, most recently in 1990, even though the village round it became a seasonal settlement, and is now mostly abandoned (cf. Given, in press).

Estates

One of the most significant contrasts in the rural economy of Ottoman Cyprus is that between small-scale subsistence farming and large-scale estates. As in the rest of the Ottoman Empire, the term for an estate was *çiftlik* (*tsifliki* in Greek), deriving originally from the amount of land that a *çift* or 'pair' of oxen could plough in a day or work in a year (cf. the Arabic *faddān*: Palmer 1998, 139). In terms of their historical development, some estates derived from soon after the conquest in 1571, though it was more normal for the *sipahi* or cavalryman to be given a village of subsistence farmers who paid him tithes. Most estates were formed in the late seventeenth and eighteenth centuries, generally through forcible or legal dispossession of indebted peasant farmers, or else reclamation from abandoned land (Sant Cassia 1986, 16; İnalçık 1991, 19-23). The economic rationale behind them consisted of the mass production of cash crops for export, usually cereals or cotton. They generally occupied the best irrigated land in the south and southwest of Cyprus, and pockets elsewhere such as the Pedhieos and Yalias valleys (Christodoulou 1959, 76).

In eighteenth and nineteenth century Anatolia there were several diagnostic material features of an estate: a manor house or *konak*, with kiosks and coffee rooms; a stone tower for defence; huts for labourers; and facilities for a large-scale agricultural enterprise such as stables, storehouses, water mills, bakeries and smithies (İnalçık 1991, 25, 28). Almost nothing has been published about the Cypriot estates of the Ottoman period. In architectural terms they often consisted of four ranges of one or two storey buildings enclosing a large central square, often with an extra storey over the single gateway. Kouklia and Potamia (see Fig. 1) are the best-known examples of such structures. The Medieval sugar-growing estates of southern and western Cyprus are well known from excavated examples (von Wartburg 1983). Because of the characteristic sugar cones, their distribution can be analysed on a much wider basis by archaeological survey, even when no diagnostic architecture remains (Gregory 1987, 201).

In general, estates show evidence for the production and processing of agricultural produce at a large scale, in contrast to the household level of village subsistence production. One clear indicator of this is the size of the threshing floor. The average family floor is about 10-15 m. in diameter. The threshing floor belonging to the estate at Kouklia *Kapsalia*, recently investigated by a team from the University of Indianapolis (Bonny Bazemore, personal communication), measures 28 x 32 m., and the large and evenly laid paving stones imply a well-organised labour force. Because all the grain belongs to the estate, not to individual families, there is no need to separate the threshing areas with defined boundaries and characteristic decorations. Similarly, an estate can provide the skills and labour needed for the sophisticated lever-and-screw wine press (Ionas 1994, 438), as opposed to the stone *patistra* or treading trough used by the villagers.

Large estates such as Potamia are straightforward to identify, from architectural remains as well as agricultural practices, and tend to be reasonably well-documented. Smaller ones can be harder to distinguish from seasonal settlements, monasteries, or even single farmsteads, particularly when no historical documentation is available.

Kalokhorio *Alonia* (SCY130), for example, is probably a seasonal settlement for a mountain village to the south (see Fig. 4), hence its characteristic scatter of small structures and its locality name ('threshing floors'). One of the structures, however, is a high status village house dating to the late nineteenth or early twentieth century, built with cut stones and a main room supported by stone arches. This is clearly not a mountain villager's summer house, and may be a successor to a small estate house. In the river valleys of the northern slopes of the Troodos mountains there is a considerable number of single but substantial rural houses with several rooms and considerable storage facilities, such as at Lythrodondas *Kyprovasa* (NTP054) or Platanistasa *Yefiri tis Panayias* (NTP008) (Fig. 5). These are too complex to be seasonal field houses, and highly unlikely to be peasant holdings. The most likely explanation is that they are small estates, perhaps belonging to a larger estate or monastery elsewhere.

Monasteries

Throughout the Ottoman period the Greek Orthodox monasteries played a major role in the rural economy, quite apart from their religious, political and social importance. Most of them were bought back from the Ottomans in the late sixteenth century, soon after the conquest (Kyprianos 1788, 438), and by the eighteenth century some of them had become extremely rich and powerful (Rizopoulou-Egoumenidou 1996, 194). As economic units they were entirely separate from the household system of the villages, and functioned more on the scale of the estates. In terms of their material culture, the presence of a church and its accessories is one of the few ways in which a monastery can be distinguished from an estate.

Religious duties aside, a community of monks and various paid servants can clearly concentrate on agricultural activities, without the need to support families, so monasteries were well suited to the production of a considerable agricultural surplus. This meant that they could own large and technologically sophisticated olive and wine presses and water mills, unlike villagers who had to use smaller and less efficient methods or else pay to use those belonging to the major landowners or monasteries. Similarly, grain could be stored in large, communal silos, such as the one photographed at the Panayia Eleousa Monastery in the Karpass in the 1880s (Ohnefalsch-Richter and Ohnefalsch-Richter 1994, 66a).

The monastery of Ayios Mnason (SCY111), immediately west of the village of Politiko, is a good example of a small, largely agricultural, Ottoman period monastery (Fig. 5). Though it was certainly in existence in the early eighteenth century and probably before, it was rebuilt in 1777 and 1836 (Tsiknopoullou 1967, 81). The courtyard and the north and east walls were bulldozed when the church was rebuilt about twenty years ago, but the remains of the cells on the south and west sides can still be seen, and were mapped by SCSP. They show an irregular layout, with perhaps as few as ten rooms. Immediately to the west of monastery is an oval threshing floor, which measures 30 x 25 m. As with the threshing floor at the estate of Kouklia *Kapsalia*, this is far larger than the family threshing floors in the villages, and was clearly intended for the processing of communal grain.

>>> Fig. 5. Northern Troodos: monasteries, farmsteads, and field shelters

The agricultural activities of this small monastery were described by the Ukrainian monk Basil Barsky, who visited it in 1735 before it was rebuilt, when it only had two monks and two or three cells:

This monastery is extremely poor, with the monks living in it feeding themselves with great difficulty. They have no forest or livestock, but only a few fields, and partly through agriculture, by the sweat of their brow, and partly through collecting alms each year in the surrounding Christian villages, they earn the bread which they eat. I think that they may also have a few goats. (Barsky 1996, 78-79)

Less than forty years later, according to the Archbishopric Property Codex of 1773, the monastery of Ayios Mnason owned a certain amount of agricultural land in the region: 18.6 ha. of fields (presumably for cereals); 9.2 ha. of orchards (mostly olives); and 3.1 ha. of vines. They also had 240 sheep and goats, three goat folds, and a wine press, as well as a considerable collection of household and agricultural equipment (Tsiknopoullou 1967, 81). Even this tiny monastery, which in 1825 still only had six monks (Papadopoulos 1965, 180), was an agricultural enterprise on a much larger scale than a village family.

A much larger monastery, the neighbouring Ayios Iraklidhios (SCY326), not only possessed much larger amounts of land in 1773, it could also own and run a wide range of agricultural machinery, including an olive mill, a wine press, two goat folds, a water mill in Pera (which still survives: NTP035), and various agricultural and domestic tools. It also owned a large number of houses for rent in the surrounding villages (Tsiknopoullou 1967, 62-3). Some of this agricultural equipment is visible in a photograph taken in the 1880s or 1890s, including a milking pot, a yoke, a well-windlass, handmills, and water jars in a rack (Fig. 6; Ohnefalsch-Richter and Ohnefalsch-Richter 1994: 34). Much of this surplus production went to the Ottoman authorities, as was described by Basil Barsky in 1735 (Barsky 1996, 79).

>>> Fig. 6. The courtyard of the Monastery of Ayios Iraklidhios (SCY326) (Ohnefalsch-Richter and Ohnefalsch-Richter 1996, 34; reproduced by courtesy of the Cultural Centre of the Cyprus Popular Bank)

Many monasteries were considerable landowners in their own right, using intensive labour to produce cash crops for export in just the same way as the large secular estates (Christodoulou 1959, 74-5; Sant Cassia 1986, 4, 9-10; Rizopoulou-Egoumenidou 1996, 194). Usually this meant that they possessed several estates themselves. William Turner in 1815 commented that the 200 or more monks and priests of Kykko Monastery were spread out in farms across the island, as well as living at the monastery itself (Cobham 1908, 439). Similarly Makheras Monastery acquired an estate (*'tsifliki'* in the original document) at Tymbou in 1810, which consisted of huts, two stables, three barns, eleven cells for the workers, two grain stores, three cotton stores, a small cellar, a kitchen, a bath house, a salt pit, two goat folds, and various other agricultural and domestic facilities (Konstantinou 1963, 33-4). After the suppression of the incipient uprising in 1821, this and five other estates were given up to the Ottoman authorities (1963, 43). In economic and morphological terms, these monastery-owned estates were no different to the secular Turkish-owned ones.

Goat Folds

An average household in a village might have kept 8-10 goats or sheep, to complement the characteristically broad variety of agricultural activities that supported them. There were also specialist herders, often working for estates or monasteries. Judging from early twentieth century practices, these required some 60 to 80 animals to support themselves (Surrige 1930, 70; Ionas 1994, 435). The clearest material correlate of this large scale, professional pastoralism was the *mandra* or goat fold. Although the more recent examples tended to lie on the outskirts of the village, many of the older stone-built ones are situated in the forested mountains, and are often very remote. Dating is clearly a problem; smaller sherds of fine ware, even if it was used, tend to be invisible in thick vegetation, while coarse wares such as storage jars and water jars are often hard to date any more closely than Medieval/Modern. One useful historical indicator is that almost immediately after their occupation of the island in 1878 the British started delimiting the forest and excluding pastoralists, apart from specified concessions to forest villages and monasteries. Most of the abandoned goat folds in the forests clearly date to the nineteenth century and before.

Because they tend to be in remote forest areas, these goat folds are harder to discover than, for example, churches or abandoned settlements, so the apparent east-west clustering in the distribution map (Fig. 4) mainly reflects areas that have been more intensively studied. The north-south clustering, however, is more reliable in terms of survey coverage, and it does seem clear that the large goat folds were largely restricted to mountain and forest areas. In particular they appear in the zone between 400 and 800 m. asl, where the steep sided mountains and deeply incised river valleys preclude large settlements. This is confirmed by ethnohistorical information: villagers on several occasions indicated the forested mountains above their villages and declared that there used to be several goat folds there. This distribution pattern may be partly because such stone structures survive better in remote areas, but the well-documented rivalry between arable farmers and pastoralists (Sant Cassia 1993, 780-2) would encourage the goatherds to base themselves away from the settlements where possible. The distribution map seems to reflect this tendency.

The characteristic layout of a stone-built goat fold in the forests consists of an irregular enclosure with a diameter of between 10 and 20 m. In one corner or along one side there are between one and three small rooms which may have been roofed. Sometimes the enclosure is divided into two or three separate pens. Enclosure walls tend to be of rubble masonry; one example, Mitsero *Klouvaes* (SCY325), has the remains of spiny burnet on top, which was presumably a common way of increasing the height of the walls. The goat fold at Klirou *Petalloudhia* (NTP028) is the simplest in plan of any studied, with a large oval enclosure measuring 34 x 42 m. and a roughly built 3 x 2 m. room in the northwest corner. Because the enclosure has recently been ploughed and planted with almonds, the pottery is more visible than is usually the case. Most abundant were large sherds of *pithari* for storage, concentrated in and around the room; there was also a considerable number of *kouza* or water jar handles, as well as body sherds in the same fabric. More diagnostic of period were some Kornos ware pieces dating to the nineteenth or early twentieth centuries.

Further south into the mountains, Politiko *Mandra tou Anayiyou* (NTP050) lies on a small spur facing west, 4 km. northeast of Makheras Monastery and 3 km. southwest of Philani village. This route passes through a steep and difficult river valley, though the remains of a mule track built up above the river gorge are still visible in places. The goat fold has a relatively complex layout, with an enclosure 32 m. long at its greatest extent and 15 m. wide, and two separate pens at the north and east. In the northwest corner is a single room measuring 3 x 11 m., apparently roofed at a more recent stage in its life with half-round village tiles (probably in the early 20th century); this room is distinctly better constructed than the enclosure walls, with square corners and vertical faces.

It is clear from the historical sources that many of these goat folds belonged to the mountain monasteries (although the property of monasteries is always better documented than that of villagers). When the British colonial rulers tried to restrict goats from Makheras Forest in the 1880s, for example, they found all the political forces of the Church ranged against them. Makheras Monastery, wrote the Abbot's secretary, had possessed pasturage rights within the forest *ab antiquo*, confirmed by a Golden Bull from a Byzantine Emperor; what was more, their many goat folds in the forests demonstrated their long-standing rights (SA1/2289/1886). Many of the poorer or more remote monasteries relied on pastoralism for their livelihood, as Basil Barsky described in 1735 for the monastery of Panayia Zalagiotissa, near Peyia in the west of the island:

It stands in a cool spot with thin air, in a hard stone valley devoid of water. ... They have very little ground for sowing, so they make their additional income from herding goats, of which they have sufficient number to make enough profit to feed themselves, to clad themselves, and to pay their taxes imposed by the Turks. (Barsky 1996, 55-6).

As with the estates and the production of cereals, the monasteries aimed at producing a surplus of specific commodities, as well as food for their own subsistence, even though much of this surplus was taken in taxation. Given the economic importance of pastoralism, the monasteries jealously protected their grazing rights, not just against the new British colonial government, as Makheras Monastery did in the 1880s, but against local landowners and villagers. When the *sipahi* or landowner of Lefka, for example, tried to charge Kykko Monastery for pasturing its flocks in 1786, the monks appealed to Constantinople, citing their longstanding grazing rights, and the *sipahi* was instructed to let them pasture their goats without charge (Hidiroglou 1973, 120-1). This level of herding was clearly a professional operation intended for the production of a large surplus, and it was protected by the political power of the monasteries. This was on a totally different level from the subsistence-and-taxation production of the village households.

Field Shelters

Too often the nucleated settlement pattern model does not take into account the importance of temporary residence in the countryside, whether on a seasonal basis or even for one or two nights. Seasonal settlements such as Kato Koutrafas *Mandres* (NTP001) would have been inhabited for a month or more at a time, possibly for the

entire summer by some people. Other agricultural activities require briefer periods of local residence. The archaeological correlate of temporary residence, the field shelter, has been examined in the Aegean (see, for example, Sutton 1991, 388, 394), but not in Cyprus. In the northern Troodos mountains, above the 400 m. contour, these *kalifia* or *kalives* were almost all concerned with viticulture.

The various consuls' reports from the Ottoman period show that wine was an important export product of the island in the eighteenth and nineteenth centuries (see, for example, Cobham 1908, 247, 281, 372). This includes the area round Tamassos in the northern Troodos (Kyprianos 1788, 42). Travellers also record that wine was produced extensively for local consumption, though Richard Pococke in 1738 described it as being 'exceedingly bad' (Cobham 1908, 252). There is little viticultural information in these sources, though the Archbishopric Property Codex for the monastery of Ayios Iraklidhios in 1773 records that the monastery owned 7.3 ha. of vines, with a wine press in the village of Philani 5 km. to the southwest, and five pruning-hooks (Tsiknopoullou 1967, 62-3).

Ethnohistorical data provides more useful information about the activities and movements within the landscape required for the growing of vines. Vines were generally planted in May, so that during the summer the cuttings would put down roots but not produce many leaves, which would cause unnecessary water loss through transpiration. With the help of a *skala*, a forked digging stick with a metal point, this was not a laborious process, and took place in relatively comfortable weather. The harvesting took place in September or October, with the grapes being transported back daily by mule or donkey; again, this did not require any sort of shelter. In January, however, the vines had to be pruned with a *kladheftira* or pruning-hook; this was not too arduous, but in addition the steeply terraced vineyards had to be ploughed to check weeds from growing. As well as being a long and hard process, it was usually cold and wet in the mountains in January, there was less daylight, and it was a long trek by mule-track to the village, especially with a plough and a pair of oxen. The obvious solution was to stay at the vineyard for one or two weeks, with some sort of shelter against the weather.

The vineyard shelters observed in the north Troodos mountains (Fig. 5) are strikingly uniform in size and plan. Typically they are U-shaped constructions, built roughly of stone and measuring 3 x 2 m. The sheltered end is left open for access, and where any of the roof survives it is constructed out of wooden beams, canes, and a mound of brushwood (Fig. 7). As with many such structures, they are hard to date and almost no pottery was found at any of them. Judging by the surviving roofs, most of them were in use until the middle of the twentieth century, and a couple are clearly still used for casual storage or daytime sheltering from the weather.

>>> Fig. 7. Vineyard shelter at Episkopio *Peratis* (SCY341)

There are three striking examples along the higher road between Alona and Palekhori, at an altitude of about 1300 m. asl. (NTP044-NTP046) (Fig. 5). They are spaced out at intervals of just over a kilometre, and the most northerly one is 3 km. along the modern hair-pinned road down the precipitous mountain side from the nearest village of Alona, still well known as a wine-producing village. This short distance today would have taken much longer by mule-track. The shelters themselves are in the middle of the elaborately constructed vine terraces and conform to the general pattern, except

that two have an entrance on the long side, rather than at one end; this is clearly because of the need to build them into rocky outcrops. One still has an intact roof of brushwood, neatly supported on that versatile modern building material, the flattened oil drum.

Another series of isolated rural structures is quite clearly typologically and functionally distinct from these vineyard shelters. In structural terms these are proper houses, usually of the *dhikhoro* type with a central roof-beam, and often with tiled roofs. The middle Phterykoudhi river valley has a series of six of these, at and to the south of Yefiri tis Panayias. They are spaced about a kilometre apart on the narrow strip of arable land in the river bottom, or else occupy little pockets of arable land further south where the sides of the river valley close in (Fig. 5). One of these was conveniently dated to 1936 by its builder's son, who was still using it, and the others probably date from a similar period. In functional terms, these fieldhouses are much closer to the seasonal settlements, and were used by farmers from distant villages at periods of the year when intensive work was required. Unlike the settlements, however, they are more spaced out, partly because of greater rural security after fifty years of British rule, and partly perhaps because of an increasing emphasis on individual ownership.

Water Mills

A rural economy so heavily based on cereals clearly requires the technology for processing them, and one of the most labour intensive stages was the grinding. At a household level, this was often done by hand using rotary quernstones. This was observed in the village of Athienou in 1801 by Edward Clarke, who commented that it was just being done by the women (Cobham 1908, 385). The monastery of Ayios Iraklidhios owned one hand mill in 1773, though this is clearly insufficient for its 59.6 ha. of fields (Tsiknopoullou 1967, 63; cf. Fig. 6).

For most purposes a mechanised water mill was much more efficient, provided that there was a sufficient supply of water power, and the necessary capital to build and operate it. The first record of a Cypriot water mill dates to the twelfth century (Ionas 1994, 439), and they are well-known in the Medieval period. The feudal estate at Psimolophou in 1318, for example, had two mills, each with its miller who had to be paid by the estate during the two days it took to repair them (Richard 1947, 151-2). In the Ottoman period they are regularly mentioned by the travellers (see, for example, Cobham 1908, 247; Barsky 1996, 44, 74).

The mechanics of these water mills with vertical shaft and horizontal wheel are relatively familiar (Curwen 1944, 134-43), and the Cypriot examples are generally the same as those elsewhere in the Ottoman empire, such as in Jordan (Greene 1995, 759). The water was channeled from upstream along a plastered stone channel about 40-50 cm. wide, and was led across a small aqueduct to the top of a stone tower about 5-6 m. high. Here it filled either a shaft some 1.5-2 m. in diameter, or else a larger hopper-type tank; the pressure of the water in this holding tank forced out a jet at the base, which turned a horizontal wooden wheel. The vertical shaft of this wheel passed upwards through the lower millstone and turned the upper millstone, so that no gears or belts were necessary. As a nineteenth-century mill engineer explained, the advantage of these was that they were simple to make and construct; the disadvantages were that they were not very powerful, and they needed a relatively constant supply of water (Evans 1853, 169).

In its middle reaches the Akaki river has incised a deep gorge in the alluvial plain which supports the agricultural villages of Kalokhorio, Klirou, Malounda, and Ayios Ioannis. In this stretch there was a total of six water mills (Fig. 4). The one at Kalokhorio *Satas* (SCY308) is a typical example of a mill with a hopper-type holding tank (Fig. 8). It is also conveniently dated by a Greek inscription to 1757, though unfortunately the rest of the inscription is too fragmentary to be read. A now disused walking or mule track descends the steep side of the gorge and fords the river immediately beside the mill, thus providing access to the mill from both sides of the river. The remains of the plastered channel bringing the water in are still visible, though of the mill itself only the main tower remains, as is generally the case. The front of the tower, facing the river and once overlooking the wheel room, has the characteristic stepped appearance, with some ashlar corner blocks and plastering.

>>> Fig. 8. Water mill at Kalokhorio *Satas* (SCY308)

Some mills were certainly owned privately, though usually only by Turkish Cypriot landowners, or else by rich Greek Cypriots such as the Dragoman Hadjigeorgakis Kornessios (Rizopoulou-Egoumenidou 1996, 203). Clearly no village household had the capital with which to build and run such a large and expensive structure, nor to buy the necessary water rights (Ionas 1994, 439). Another possibility was shared ownership in a mill, as was often the case with land and fruit trees. A priest's daughter in 1715, for example, owned the use of a mill at Evrykhon for three days and three nights every 30 days (Theocharides 1993, 447).

The inscription on the mill at Kalokhorio *Satas* (SCY308), albeit mostly unreadable, does suggest that ownership was something to be displayed. The figures of the date on this inscription are arranged around a cross: '17†57'. While this is probably just a dedicatory convention, it is certainly known from documentary and ethnohistorical sources that water mills were frequently owned by churches and monasteries. A mill (NTP041) which still survives on the southern edge of Akaki, for example, was purchased in 1804 by a monk called Hadji Nikolas from its Turkish Cypriot owner (Theocharides 1993, 1755). Basil Barsky, always interested in how monasteries made their living, describes the monastery of Panayia tou Sindi in the Paphos district, and its two water mills:

It is located near a road in a bare spot with very few fruit trees and only two mills, one in front of the monastery while the other one is on the other side of the stream. In them, by grinding other people's grain, they derive an income. (Barsky 1996, 59)

The Islamic equivalent was ownership of a mill as part of a *waqf*, or Islamic endowment, whereby the original owner had bequeathed the mill and its proceeds in perpetuity to a mosque or other charitable institution. Two and a half such mills near Malounda in the Paphos district were owned by the *waqf* of the main mosque in Ktima (Upper Paphos); to gain an income for the mosque, they were rented out in 1768 to the monks of Kykko monastery (Theocharides 1993, 999). (The other half of the third water mill is unexplained in the rental document.) More recently, a village priest in the earlier twentieth century was reputedly known as 'The Tsar', according to village memory, because of his ownership of the village's water mills, olive presses, and shops.

Looking more broadly at these mills in their landscape, their siting is clearly critical, and relatively well demonstrated in the distribution map (Fig. 4). If necessary, grain can be carried to the mill; water cannot. They need to be high enough so the rivers last for most of the summer, but not so high that they have not yet collected a sufficient volume of water (cf. Greene 1995, 760). In the northern Troodos mountains, where thanks to published maps they are easily found, they mostly cluster between the 200 and 400 m. contour, though there are a couple of small and isolated outliers further up (Fig. 4). Clearly the villages of the plains, where the rivers were slower and lost more water through seepage, evaporation and irrigation, had to take their grain to the mills in the foothills. Judging from conditions in the early twentieth century, one mill might serve as many as ten villages (Morris 1984, 169). This was an economic system which linked the villages of a particular area, and had its social effects as well: according to villagers in Mitsero, waiting for your grain to be ground at the water mill was a good place for meeting people from other villages and arranging marriages for your children.

The same need to travel in order to take grain to the water mill applied to an even greater degree to the villages of the Mesaoria, the broad alluvial plain where much of Cyprus's cereals were grown (Fig. 1). Villagers had to travel considerable distances, particularly to Kythrea on the southern slopes of the Kyrenia Mountains, which because of its plentiful and powerful springs had many water mills to grind the grain for the capital's bread (Ali Bey in 1806; see Cobham 1908, 398). So great was the economic importance of this environmental factor that the water mills of Kythrea played a major role in the politics of the country. During the combined Greek and Turkish Cypriot revolt against Chir Osman in 1764, for example, the rebels diverted the water from the Kythrea flour mills, so the capital was starved of bread (Mariti 1909, 98-9). Because of the shortage of flour, the inhabitants of Nicosia were reduced to eating broad beans, haricot beans, pulses, and vegetables for 50 days; and what flour there was had to be ground in hand mills (Kyprianos in 1788; see Cobham 1908, 360).

Conclusions

Human activity in the landscape of Ottoman Cyprus was based largely on the village. Farmers moved on a daily basis to their fields or pastures, and produced enough to feed their household and pay their taxes. However accurate this model of nucleated settlement and daily commuting might be in general terms, it does not do justice to the complexity and variation in the system of rural settlement and economic activity. There were significant seasonal variations, when particular tasks such as harvesting distant fields or ploughing distant vineyards required settlement away from the village on a temporary basis. Annual festivals of local saints produced another pattern of seasonal movement, often connected with specific stages in the agricultural cycle. The dependence of water mills on a strong and steady flow of water required several communities to share a specific mill, thus including them in an economic system which encompassed many such villages. Specialised herders had a daily pattern of movement entirely independent of the villages.

The sophisticated technology of water mills and threshing sledges and a complex and intense system of labour meant that the rural economic system was capable of rising above the subsistence level; pressure from tax-levying authorities meant that it had to do so. One mechanism for achieving this was by linking the countryside in a system of

exchange. For a small-scale village farmer, this involved paying travelling craftsmen for specific items requiring specialised skills. The makers of *pitharia*, the large storage jars, travelled throughout the mountains from their villages during the summer (London 1989, 65), and smaller jars were taken round villages and fairs by their potters (Ionas 1998: 148-9). The flint knappers who made inserts for threshing sledges had a specific circuit of villages which they would travel round just before the harvest, producing inserts for new and damaged sledges (Hornell 1930, 137; Pearlman 1984, 145, 150, 170-1; Fox and Pearlman 1987, 228-9). Annual saints' festivals were usually the venue for large rural fairs, where a large variety of domestic and agricultural items were sold (Christodoulou 1959, 101-2; Ionas 1988, 6). On a larger scale, estates and monasteries were linked into international exchange networks, with cash crops such as commanderia, cotton and wheat being exported to other parts of the Mediterranean and to Europe.

The factor that did the most to raise the economic system, if not the village farmer, above the subsistence level was the demand from the authorities for taxes. The tithes alone, which were separated out when the grain or legumes were lying on the threshing floor, constituted as much as one fifth of a farmer's income (İnalçık 1973, 128). To produce such a large surplus required intensive labour, efficient organisation, and sophisticated technology. Even so, it took little corruption or venality on the part of the tax collectors to put an intolerable strain on the rural economic system. One indicator of this is a series of land sales documents, where a common formula gives the reason for the sale as the need to pay the tithe to the *sipahi* (see, for example, Theocharides 1993, 1159, 1647, 1703, 1817). When the demands of governors or middlemen became impossible, the underlying tensions caused by the need to produce such a surplus flared up in intermittent tax rebellions (Kitromilides 1982, 92).

As well as the need to produce a surplus to pay their taxes, village farmers needed additional supplies to buffer themselves against the frequent droughts, locust attacks, earthquakes and plagues of the period. One consequence of these various pressures was the depopulation of the seventeenth and eighteenth centuries. Another consequence, which may come as a surprise to anyone familiar with the standard political histories, was the response of the peasant farmer, and of the rural economy as a whole. The pressure to produce such a large surplus, that would feed the household, pay the taxes, and provide a buffer against bad summers, stimulated a rural economic system that was often intensive, efficient and sophisticated. Far from being 'primitive' or 'downtrodden', the farmers and villagers of Ottoman Cyprus worked intensively and elaborated a complex social and economic system to counter the often punitive taxation by colonial and local elites. This conclusion is based on detailed regional analysis, an examination of the subsistence base of the economy, and the findings of landscape archaeology. It cannot be read in the political histories of the period.

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Figure captions

Figure 1. *Map of Cyprus, with places mentioned in the text*

Figure 2. *Northern Troodos: topographical map*

Figure 3. *Northern Troodos: distribution of villages by population in 1881*

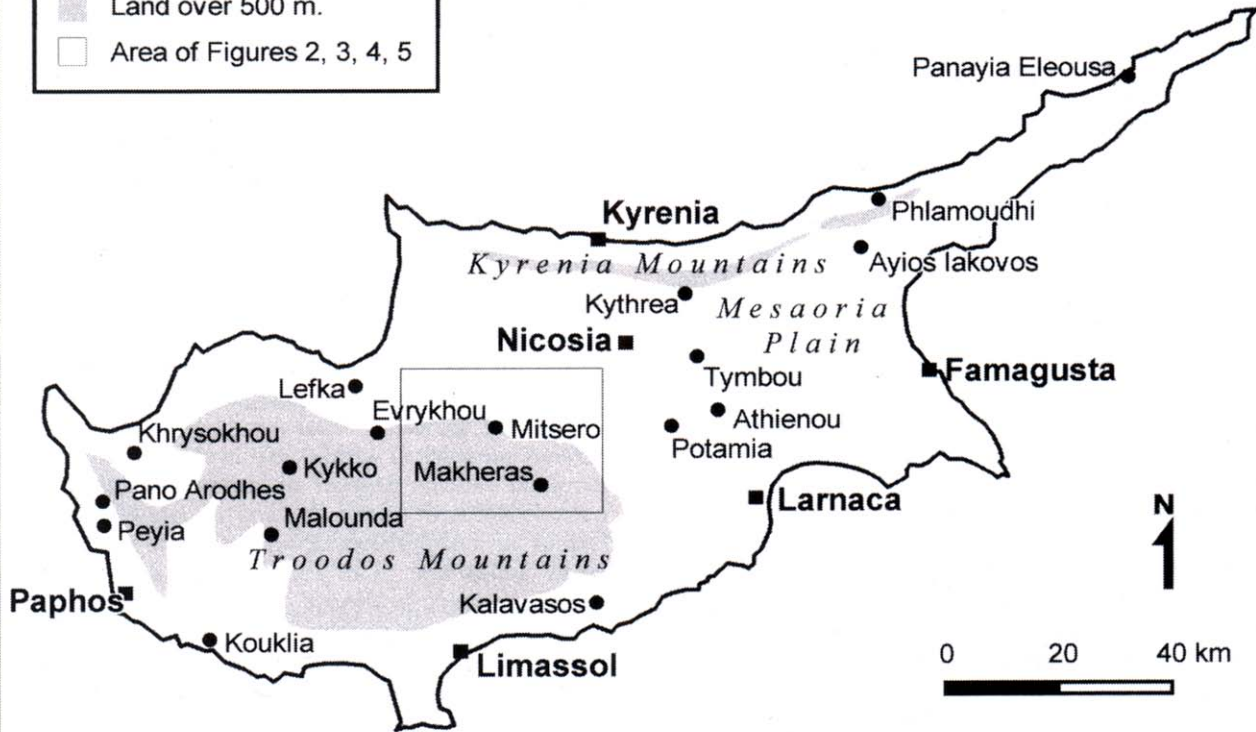
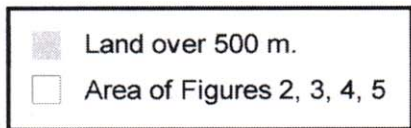
Figure 4. *Northern Troodos: seasonal settlements, water mills, and goat folds*

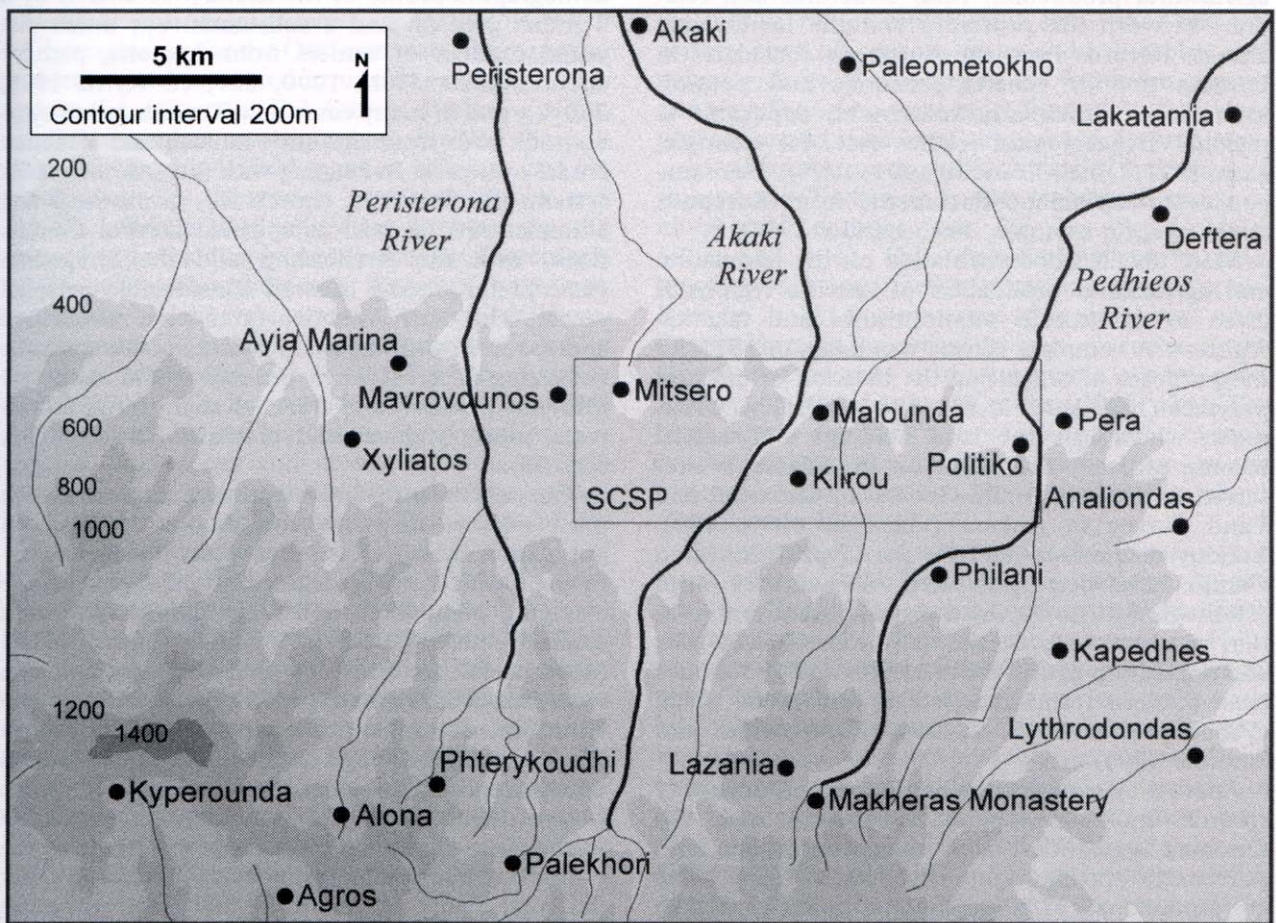
Figure 5. *Northern Troodos: monasteries, farmsteads, and field shelters*

Figure 6. *Courtyard of the Monastery of Ayios Iraklidhios (SCY326) in the 1880s or 1890s (Ohnefalsch-Richter and Ohnefalsch-Richter 1994, 34). Reproduced by courtesy of the Cultural Centre of the Cyprus Popular Bank*

Figure 7. *Vineyard shelter at Episkopio Peratis (SCY341)*

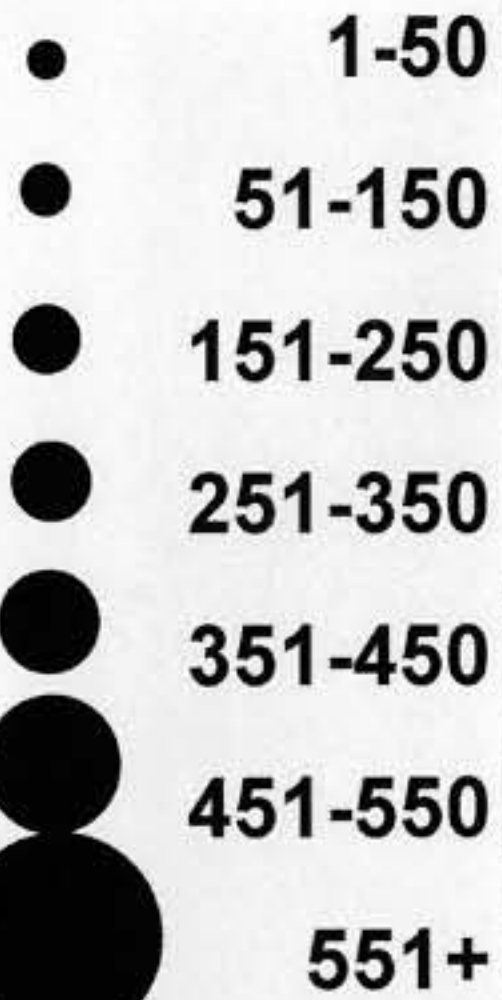
Figure 8. *Water mill at Kalokhorio Satas (SCY308)*



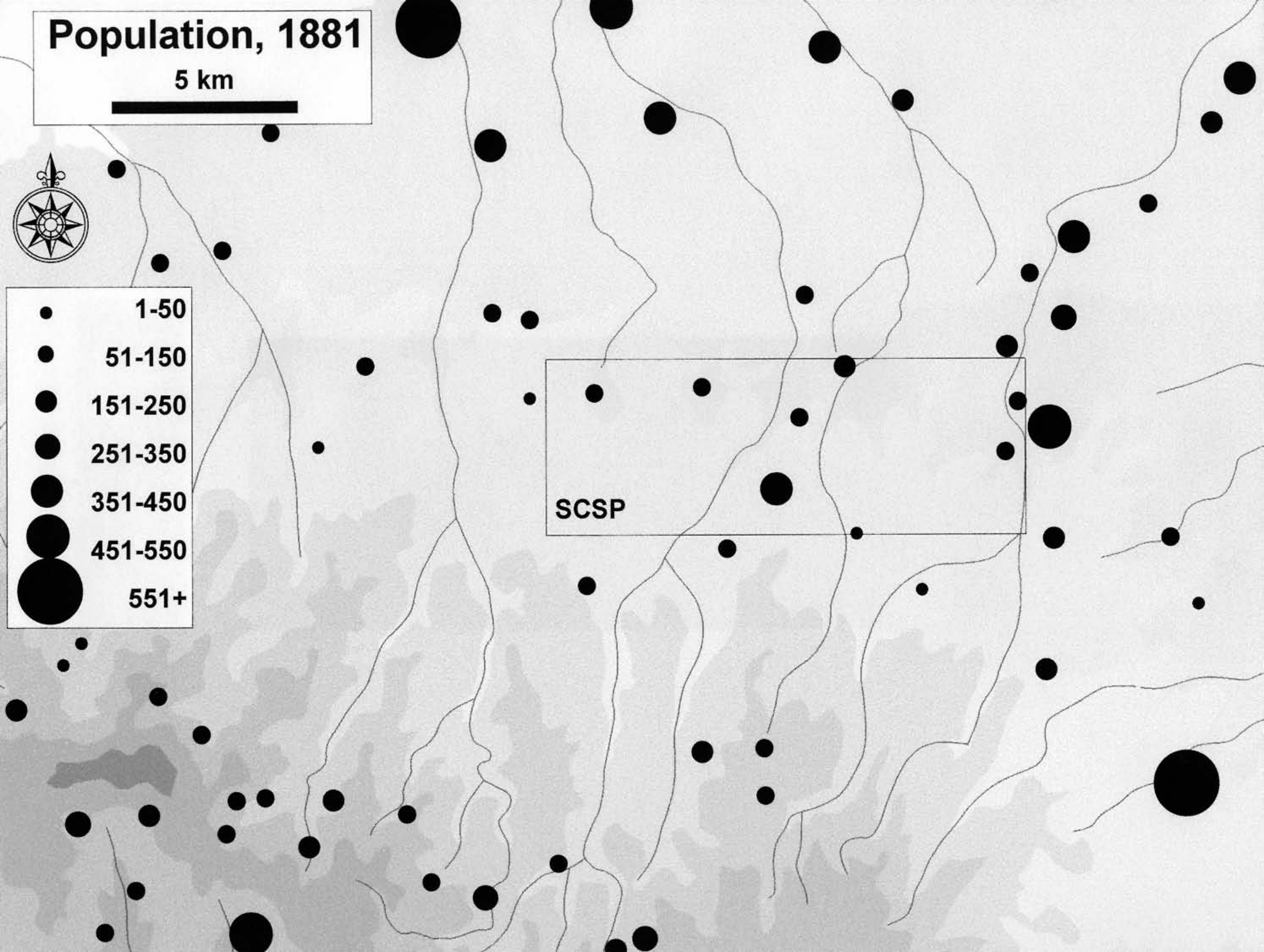


Population, 1881

5 km






SCSP



5 km

Contour interval 200m



-  Water mill
-  Seasonal settlement
-  Goat fold

200

Mandres

400

600

Ayios Yeoryios

800

1000

1200

1400

Clouvaes

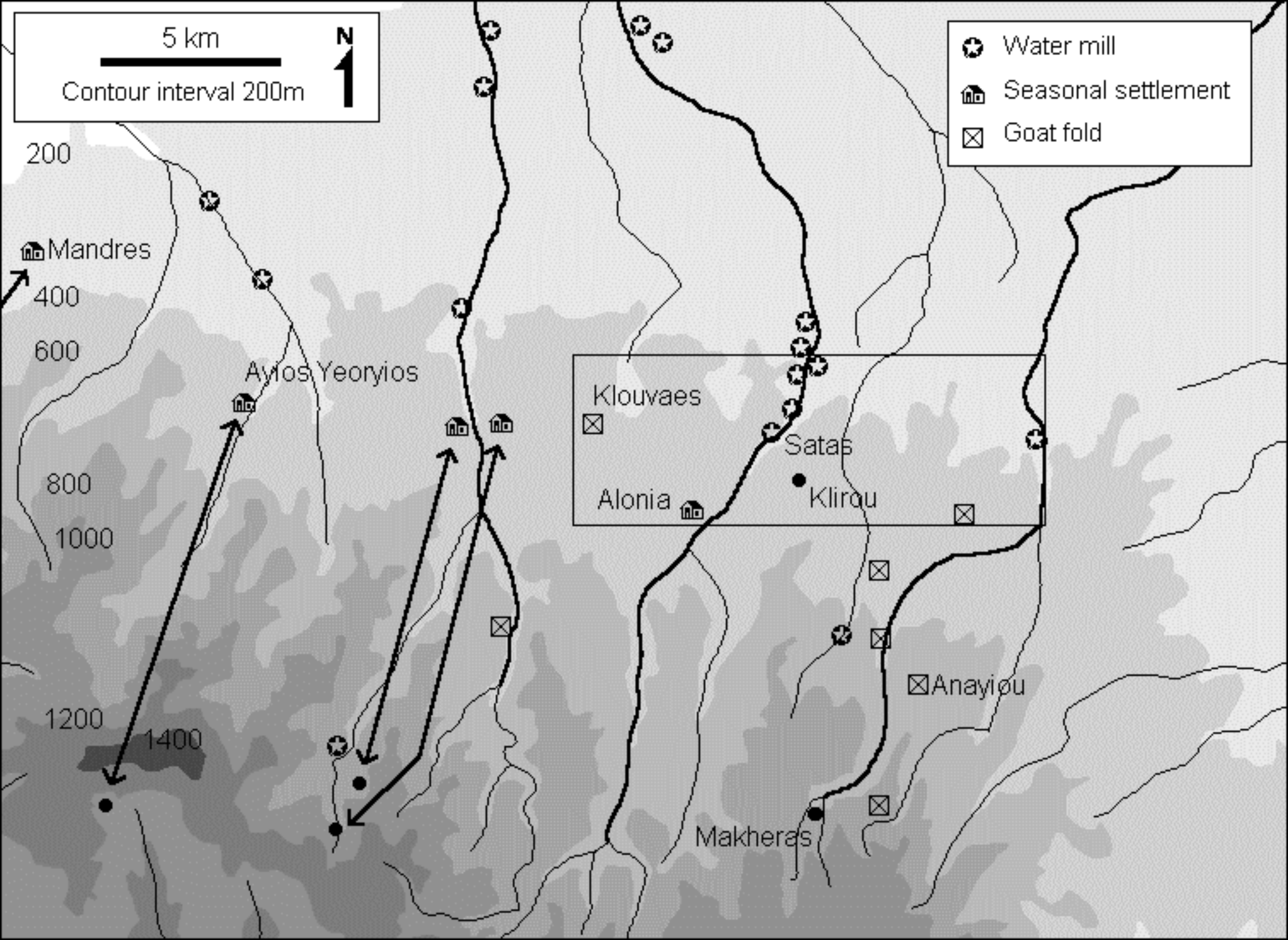
Alonia

Satas

Klirou

Anayiou

Makheras



5 km

Contour interval 200m

N



- Monastery
- Fieldhouse/farmstead
- Vineyard shelter

200

400

600

800

1000

1200

1400

Yefiri tis Panayias

Alona

Palekhori

Makheras

Ayios Mnason

Ayios Iraklidhios

Kyprovasa

