

10,000 years of pastoralism in Anatolia: a review of evidence for variability in pastoral lifeways

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KEYWORDS

Anatolia; Turkey; ancient pastoralism; ancient mobility; archaeology

ABSTRACT

Archaeological and historical data show that pastoral systems in Anatolia over the last 10,000 years were characterized by a high degree of variability in degree of mobility, land-use, and animal preferences, target products and herd management strategies, and political organization. Long distance pastoral nomadism was a historically late development in the region, of the last 1500-1000 years. Ethnographic analogy currently structures the majority of archaeological conclusions concerning pre-modern pastoralism, but obscures the variability that recent archaeological work brings to light. Multi-disciplinary studies seeking empirical data on ancient pastoralism and mobility are critical for developing a more subtle and accurate picture.

INTRODUCTION

This paper integrates archaeological and historical evidence to explore diverse forms of pastoralism in Anatolia from prehistory to the Ottoman era. Archaeologists in the Middle East have tended to “fill in the gaps” concerning pastoralism in general and mobile pastoralist practices in particular through ethnographic analogies to twentieth century groups. Such approaches inherently emphasize presumed continuities in pastoral practices and environmental imperatives that are assumed to reinforce these practices through time (e.g., Bernbeck 2008: 46). Here, we move beyond these analogies and beyond characterizations of past pastoralists as existing timelessly in “marginal” or “peripheral” landscapes by focusing on concrete material and textual evidence for variability in pre-modern pastoralism, systematically breaking down the presumed homogeneity of basic pastoral communities through time. In particular, we focus on evidence for significant variability in Anatolian pastoral systems in regards to several variables: scale of mobility; land-use practices; political organization; and animal preferences, practices and management strategies. This type of analysis, targeting specific variables of pastoral systems that have often been lumped together and not critically explored, is necessary for understanding Anatolian pastoralism as a flexible and diverse set of adaptations to an ever-changing mosaic of ecological, economic, social, and political environments.

In the pages that follow we have attempted to synthesize an unwieldy combination of datasets developed by archaeologists, historians, and political scientists to build pictures of pastoral practices in Anatolia. As a result of the breadth of this undertaking there are necessary tradeoffs in regards to limitations on specific details and, moreover, the datasets available in various periods are not equal or in some cases very comparable. For prehistoric periods we have an ever-

increasing abundance of faunal and isotopic data describing foddering practices, seasonality, and mobility. In later periods, especially post-Classical periods, we are primarily informed about pastoralists via historical texts with very little complementary archaeological evidence at all. The periods in between are represented by varying combinations of archaeological and historic data unevenly spread across the expansive geography of Anatolia. Despite these methodological challenges, our review represents a first attempt at piecing together a broad picture of Anatolian pastoralism as an important and heterogeneous way of life as it evolved and responded to a myriad of influences over the past ten millennia.

DEFINITIONS AND METHODOLOGIES FOR THE STUDY OF ANCIENT PASTORALISM AND PASTORAL MOBILITY IN ANATOLIA

In the context of this review, we define pastoralism as a set of subsistence systems that include the use of domesticated herbivores, without reference to specific management strategies, mobility patterns, or number of animals (Meadow 1992: 262-263; e.g., Cribb 1991: 16-18). If archaeological analyses or historical records provide evidence for specific pastoral practices, adjectives such as “nomadic,” “vertically transhumant,” or “specialized” can be added to describe certain varieties of pastoralism and mobility (e.g., Wendrich and Barnard 2008: 7-8). In the sections that follow, unless adjectives regarding mobility are added, “pastoralism” refers fully sedentary herding, i.e., herding in a local catchment zone immediately surrounding an archaeological site. Further, we use the terms “nomadic pastoralism/pastoral nomadism” or “large-scale mobile pastoralism,” to refer to long-distance (regional) mobility between seasonal pastures by whole communities and their herds. Given that mobile and sedentary populations were not distinct or separate social, economic, or political entities during Middle Eastern history (e.g., Porter 2012: 8-64), the development of both sedentary and mobile herding strategies in prehistory were intertwined. Even though they are frequently conflated, the identification of pastoralism and the identification of mobility in the archaeological record are separate research questions involving different suites of methodologies (e.g., Howell-Meurs 2001a).

Recent archaeological research in Anatolia has used traditional and novel methodologies to investigate ancient pastoralism and mobility among ancient pastoralists. For pastoralism, the most significant methodologies include the analysis of faunal and paleobotanical assemblages collected during the course of excavation, which provide direct and indirect evidence of animal husbandry and both human and animal diets. Zooarchaeological methods for identifying and reconstructing pastoral economies are well established and are frequently applied to prehistoric, and increasingly, historic period sites in Turkey (e.g., De Cupere, Linseele, and Hamilton-Dryer 2013). However, the use of paleobotanical remains to draw conclusions about pastoralism has been less widely applied (Riehl 2006). Critical to these methods are several insights: that charred plant remains in archaeological contexts often derive from the burning of animal dung as fuel—and therefore are reflective of animal rather than human diets (Miller and Smart 1984; Miller 1984); that the ratio of cereals to wild plants in such contexts is reflective of the degree of emphasis placed on foddering versus grazing (Miller and Smart 1984; Miller 1997, 1996); and the characteristics of a wild plant assemblage are reflective of the relative quality of grassland available to animals (Marston and Miller 2014; Miller 2010; Marston 2012). Other important methods for the investigation of ancient pastoralism include survey of ephemeral campsites and

corralling areas in places where they have escaped destruction by modern agriculture (Hammer 2012, 2014; Ur and Hammer 2009), analysis of lake cores for evidence of long-term land-cover change that may be linked to grazing (Izdebski 2012; e.g., England et al. 2008), and the use of stable isotopes to investigate animal diets and grazing/foddering practices (Fuller et al. 2012; Henton, Meier-Augenstein, and Kemp 2010; Henton 2012). Additionally, analysis of oxygen and strontium isotopes from human and animal remains provide the most direct way to demonstrate mobility among ancient pastoralists and their animals (Mashkour 2003; Pearson et al. 2007; Welton 2011). Other methodologies for indirectly investigating the possibility of human and animal mobility in archaeological contexts include the nature of sites' stratigraphy and/or architecture (e.g., Bernbeck 2008) and various indicators of seasonality (e.g., Howell-Meurs 2001a).

ENVIRONMENTAL ZONES OF ANATOLIA

The geographical term “Anatolia” frequently denotes only the peninsula between the Black and Mediterranean Sea or the Anatolian plateau. Here we follow recent archaeological syntheses (Sagona and Zimansky 2009; Steadman and McMahon 2011) in defining Anatolia as including the central and eastern portions of modern-day Turkey. This region contains at least seven environmental zones (Sagona and Zimansky 2009: 2; Dewdney 1971) that differ broadly in their topography, seasonal vegetation, and water sources, and therefore also in their pastoral potential. In the discussion and synthesis that follows, we emphasize three zones within which archaeologists and historians have carried out recent investigation of pre-modern pastoralism: the central plateau, the eastern arc of the Taurus and anti-Taurus mountains, and the southeastern plains of the Tigris and Euphrates Rivers.

At the heart of Anatolia lies an area commonly called the central plateau, an uplifted, folded massif bounded to the north by the Pontus Mountains, to the south by the Taurus Mountains, to the east by the high mountain zone known as the East Anatolian highland, and to the west by the east-west flowing river valleys and headwaters of the Gedriz and Büyük Menderes Rivers. The “plateau” actually consists of areas with rough terrain interspersed with river valleys and internal basins. The four main valleys and basins are the volcanic area of Cappadocia, the Tüz Gölü (Salt Lake) basin, the Konya Plain, and the Behşehir Plain. The Kızılırmak and Sakarya Rivers drain large portions of the region. The elevation of the central plateau ranges from 600-1200 meters above sea level. This is a semi-arid area encompassing some of the driest parts of Anatolia, and mean annual rainfall is 350-400 mm. Elevations above 1000 meters regularly receive snow during the winter, but little rain falls during the hot summer. Xero-euxinian and Indo-Turanian steppe vegetation characterize the drier lowland areas, while forest cover is limited some areas of higher elevation above 1100 meters (van Zeist, Woldring, and Stapert 1975).

To the south of the central plateau, the anti-Taurus mountains form a ca. 600 km-long west-east arc across southeastern Turkey. With peaks 2000-3000 meters above sea level and occasionally over 3000 meters above sea level, these mountain ranges are annually blanketed by snow and therefore generally unsuitable for winter grazing. Characterized by hardy steppe-forest vegetation and deciduous mountain woodland, little precipitation falls in this region during the summer, but spring rains and snow melt provide water that feed streams and ensure lush spring and summer vegetation in many areas, particularly in intermountain plateaus.

A set of broad, gently sloping plains lying 400-700 meters above sea level extends southwards from the Taurus and anti-Taurus mountain ranges. The Tigris and Euphrates Rivers transverse these plains, forming alluvial plains in some areas and cutting steep gorges in others. Sets of low, rolling hills and one rugged volcanic massif (Karacadağ) separate the plains, which in terms of both geography and vegetation are extensions of the steppes of northern Syria and Iraq (Zohary 1973: 181). Along with the anti-Taurus foothills, these plains experience a pronounced summer drought. Almost all precipitation (annual mean 500-600 mm) falls as rain during the winter and spring, encouraging the growth of vegetation in uncultivated areas and providing rich pastures.

“TYRANNY OF THE ETHNOHISTORIC RECORD”

Finding archaeological evidence for pastoralists and pastoralism is one of the great challenges in archaeology. As a result archaeological datasets are often highly incomplete and ethnographic studies of twentieth century pastoralists, particularly those in Iran, have served as the most significant source of data for interpreting archaeological evidence for pastoralism in the history and prehistory of Southwest Asia (Cribb 1991; David and Kramer 2001; Kramer 1982; Gamble 1991). However, ethnographically studied twentieth century groups often practiced a form of highly specialized and highly mobile nomadic pastoralism. These forms of pastoralism were the result of distinctive and unique historical trajectories and represent a narrow cross section of variation in pastoral strategies. There is a long tradition of historical and anthropological thought emphasizing that traditional Near Eastern societies were characterized by separate, distinctive agricultural and nomadic components (Rowton 1977). As a result of the availability of ethnographic data on nomads and focus on the “dimorphic nature” of Near Eastern societies, archaeologists have tended to project the modern specialized systems known from ethnography back into the deep past, often in the absence of conclusive archaeological and historical evidence for mobility or other pastoral practices. Although this “tyranny of the ethnohistoric record” (Wobst 1978) is a well documented problem in understanding the history of pastoralism in the ancient Near East (e.g., Gilbert 1975), modern and recent historic examples continue to provide the dominant structure for most archaeological models of pastoralism.

Frequently, claims concerning the presence of (mobile) pastoralists in the ancient Near East and the predominance of pastoralism in ancient regional economies are based on negative evidence. Flawed general assumptions about past pastoral practices, including the static nature of land-use patterns in highland environments, unchanging pasture areas, and the tendency to eschew the use of pottery and fixed architecture, regularly and subtly creep into descriptions of ancient sites and landscapes. For example, archaeological studies of tell sites frequently assume the presence of mobile populations in the surrounding area because of the presence of twentieth century nomadic tribes in the general area and presume that mobile groups followed the same seasonality and migration patterns as recent pastoralists (Alizadeh 2010, 2003; see Potts 2008; Potts 2014 for detailed criticisms of this approach in Iran). Moreover, archaeologists often deploy (mobile) pastoralism as the primary explanation for periods where archaeological surveys have identified a decrease in settlement numbers or area (Zagarell 1975, 1978; Hole 2003; Adams 1965), based on assumptions that (mobile) pastoralists are “invisible” (Cribb 1991: 65-68) and that nomads disrupt sedentary life and/or that pastoralism thrives in the absence of strong regional authority (Khaldūn [1377] 2005). Specifically in Anatolia, the presence of historical or archaeological

evidence for an abundance of animals in arid regions with thin soils and twentieth century mobile pastoral populations is frequently taken as an indirect indication of “nomadism” without empirical demonstration of human or animal mobility and without questioning the scale, seasonality, or nature of mobility patterns (e.g., Hopwood 1991; Yakar 2006). In short, “nomadism” is often used as a *de facto* answer to explain an incomplete archaeological record.

Widespread historical evidence for mobile pastoralists in Anatolia in the Medieval and later periods following incursions of nomads from Arabia and central Asia, paired with historical evidence for spatially distinct ancient mobile pastoral tribes in areas immediately to the south of Anatolia (Luke 1965; Fleming 2004; Matthews 1978; Kupper 1957; Szuchman 2007) has led prehistorians to assume that mobile pastoral tribes were a constant feature of post-Neolithic Anatolia. Perhaps more critically, influential mid-twentieth century ethnographies strengthened the idea that recent groups could be used as a model for historical and even ancient mobile pastoralists. One of the conclusions drawn from Barth’s seminal ethnography of the Basseri of Iran is that the political organization of the tribe is distinct from the ecology and economy of pastoral nomads (Barth 1964). Following Barth, it has been argued that, while larger political groupings such as tribes and confederations are artifacts of external, dynamic political and cultural relations in the last few centuries of Iranian history, basic pastoral communities have always been the product of the (more static) ecological conditions of pastoralism and internal demographic and cultural factors (Tapper 2002: 23). By naming ecology as the main factor structuring basic (mobile) pastoral communities, archaeologists have projected the ethnographic picture of communities occupying specific environments back in time. In this way, historically specific land-use strategies are essentially reduced to reactions to environmental imperatives.

Available ethnographic accounts for Anatolia (Bates 1973; Beşikçi 1969; Hütteroth 1959; Frödin 1943; Erhan 1992; Planhol 1958; Skogseid 1993) are compressed in time (1940s-80s), when mobile pastoralism was in serious decline following centuries of Ottoman policy and forced sedentarization by the Turkish Republic. The concentration of research on mobile pastoral communities during in this period has left us with a synchronic view of these communities struggling to maintain their way of life under the spatial, economic, and political restrictions placed on them by a territorial state. Similar disciplinary histories in various areas of the world have caused pastoral groups to be viewed as “immutably locked in a pastoral ‘mode of production,’” rather than as products of particular historical situations (Koster and Chang 1994: 2). Essentially, researchers have treated mobile pastoralism as a general ecological adaptation rather than as a set of variable decisions and flexible strategies based on detailed knowledge of animal ecology and local environment within specific historical contexts.

In order for the archaeology of pastoralism to continue to be relevant and contribute to the social sciences in the twenty-first century as it did in the twentieth, it must engage in breaking down the fictional homogeneity of pastoral communities. Real variability exists in how pastoralists met the basic needs of their animals (even in similar landscapes), and real variability exists in how they used and viewed the same species of herd animals (economically and socially) over time. Through the collection of empirical data in the context of interdisciplinary collaborative research projects, archaeologists are working to show that pastoral strategies and pastoral communities are just as historically contingent as the political histories of city-states and recent state-tribe relationships. Recent work has begun to employ concrete archaeological and historical data to

define the parameters of past pastoral lifeways with an emphasis on variability rather than projecting the ethnographic present into a timeless pastoral past (Makarewicz 2013; Howell-Meurs 2001a; Marston and Miller 2014; Fuller et al. 2012; Arbuckle and Atici 2013; Peters et al. 2013). In the sections that follow, we contribute to this effort by exploring the archaeological and historical evidence for ten thousand years of pastoralism in Anatolia, highlighting the rich variability that this narrative exposes.

HISTORY OF PASTORALISM IN ANATOLIA

Neolithic (ca. 9000-6000 BC) and the origins of pastoralism

The origins of pastoralism can be traced back to the Neolithic period in Southwest Asia and Anatolia, when the domestication of livestock transformed animal economies from those based on hunting to those based on animal husbandry. This transformative process has long been a focus of archaeological attention and recent research has resulted in an increasingly fine-grained picture of the development of the earliest economic systems exploiting sheep, goats, cattle and pigs (Arbuckle et al. 2014; Arbuckle 2014; Peters et al. 2013; Vigne et al. 2011).

Recent work indicates that southeast and central Anatolia played key roles in the initial emergence and spread of the earliest pastoral economies and has dispelled two commonly held myths concerning the origins of pastoral life-ways. First, despite continued lingering references to the Marxian (and pre-Marxian) notion that pastoralism was an early stage in the evolution of human society preceding agriculture (Meeks 1976: 161; Rigby 1998: 72), there is no evidence in Neolithic Anatolia, or southwest Asia for that matter, for the development of a pastoral way of life separate from plant cultivation (although for north Africa, see Gifford-Gonzalez and Hanotte 2011). Instead, the domestication of ruminant livestock, as well as pigs, occurred firmly within the context of sedentary hunter-cultivator societies.

Second, despite common use of Childe's (1936) term 'Neolithic Revolution' to describe the origins of food producing economies in the early Holocene of southwest Asia, the development of early livestock economies took place over several millennia and exhibited an enormous amount of local- and regional-scale variation. Cultivator-herder communities likely experienced a variety of logistical and social difficulties during the domestication process (Arbuckle and Atici 2013). Recent zooarchaeological research has illuminated some of the characteristics of these earliest pastoral economies and emphasizes the idiosyncratic nature and diversity of these early attempts at pastoralism as well as the appearance of greater homogeneity and standardization in pastoral practices in the later eighth millennium BC.

Early Neolithic: Initial diversity in pastoral economies (ca. 9000-7500 BC)

Identifying the earliest stages of the process of animal domestication in the archaeological record has proven difficult since clear evidence for sustained control over the movement and breeding of animal populations is lacking prior to the ninth millennium BC (Zeder 2011). However, by the mid ninth millennium, there is firm archaeological evidence for the development of systems of livestock husbandry that included control over the movement, diet, and reproduction of animal populations.

Early evidence for the development of increasingly intensive control over sheep, goats, cattle, and pigs comes from sites in both southeastern and central Anatolia. At Nevalı Çori, Çayönü, and Cafer Höyük in southeastern Anatolia, a combination of zooarchaeological and isotope data provide some of the earliest evidence for animal husbandry (Helmer 2008; Hongo et al. 2004; Losch, Grupe, and Peters 2006; Peters et al. 2013). At the first two sites, we see the first evidence for reductions in body size compared to wild animals from the region (sheep and goat at Nevalı Çori; sheep, goat, cattle, and pig at Çayönü), which are interpreted as evidence for long-term human control over animal movement, feeding, and reproduction. At Nevalı Çori, nitrogen isotopes derived from animal bone indicate that the diets of smaller sheep and also goats differed from those of other taxa, such as gazelle, suggesting that caprines were either foddered or gained access to crops such as legumes being cultivated by the site's inhabitants (Losch, Grupe, and Peters 2006). However, biometric data do not indicate that early caprine husbandry at Nevalı Çori involved the selective culling of young males, a common feature of later pastoral management strategies (Peters, Arbuckle, and Pöllath in press; Peters et al. 2013). Further, early livestock management constituted only a small fraction of the animal economy, which continued to focus on hunting gazelle and wild equids. At Çayönü, isotopic data support claims of early management, showing that the appearance of gracile individuals coincides with changes in animal diets—likely reflecting human interference in the movement and feeding of captive animals (Hongo et al. 2009; Pearson et al. 2013). In the uplands of southeast Turkey, at Cafer Höyük, goats were the dominant taxon, and they are characterized by extremely high frequencies of juveniles, suggesting human control over these animals. However, goats as well as sheep at Cafer maintain a wild phenotype in the ninth and eighth millennia BC, indicating that herded caprines were not reproductively isolated from free-ranging wild populations. In addition, Helmer (2008) has argued that cultivator-herders at Cafer continued to exploit rich populations of wild game, including wild caprines, while managing herds.

In central Anatolia, the site of Aşıklı Höyük shows a steady increase in sheep and goats from 57% of the faunal assemblage in the late ninth millennium BC to 91% in the mid eighth millennium BC (Buitenhuis 1997; Stiner et al. 2014). Moreover, high juvenile kill-off and high frequencies of neonatal and fetal remains, along with evidence for caprine dung within the settlement, suggest that caprines were regularly kept on site, at least during the spring lambing season. High frequencies of fetal remains suggest that the managed animals were under high stress loads and are indicative of the difficulties encountered by early attempts at developing technologies related to controlling and husbanding phenotypically wild animals. Despite strong evidence for management, caprines at Aşıklı also maintain a wild phenotype through a millennium of the site's occupation, and biometrics do not provide clear evidence for the targeted culling of juvenile males (Peters et al. 2013). Moreover, isotope data indicate a narrow range of variability in both sheep and goat diet at Aşıklı (not seen in wild taxa at the site including aurochs). This suggests pastoralism was spatially limited, centered around the settlement itself, and did not involve extensive horizontal or vertical movements of herds to seasonal grazing camps, as was common amongst historic pastoralists in the region.

Together, the zooarchaeological evidence indicates that systems of control over the movement, feeding, and breeding of sheep, goats, and (on a more limited scale) cattle developed within communities of settled cultivators by the mid ninth millennium BC in southeast and central

Anatolia. However, the systems of animal management that emerged at Nevalı Çori, Çayönü, Cafer, and Aşıklı were all very different from one another and do not look much like pastoral systems from later periods. These diverse and localized early systems of pastoralism appear across Southwest Asia in the ninth and early eighth millennium (Arbuckle and Atici 2013) and provide the foundation for the development of more recognizable forms of sheep, goat, and cattle pastoralism that emerge in the mid eighth millennium BC.

Later Neolithic (ca. 7500-6000 BC)

In Anatolia and southwest Asia, the mid eighth millennium BC represents an important turning point in the development of pastoral economies. It is at this time that sheep and goat management emerges as the dominant component of the animal economy, finally eclipsing hunting as an economic and social strategy on a regional scale. In contrast to the previous period of 'initial diversity,' this is a time when herders over a wide geographic area began to consistently apply a range of productive animal management strategies, including young male culling, foddering, and penning, all geared towards exploiting primary (meat, fat, skins) and perhaps also secondary (milk, fiber) products, comparable in some ways to the use of herds in later periods (Arbuckle and Atici 2013).

This shift towards reliance on sheep and goat herding is seen in an increase in the frequencies of caprine remains and the spread of mixed sheep and goat herding into regions where it had not been previously practiced (Arbuckle and Atici 2013; Conolly et al. 2012; Arbuckle 2014). In central Anatolia, this shift is represented by an increase in caprine remains from a small portion of the animal economy (<10%) at late ninth millennium BC Boncuklu to the late eighth millennium BC occupation at Çatalhöyük, where they are the most abundant taxa (Baird 2012; Russell and Martin 2005). In southeast Anatolia, ninth millennium BC caprines represent only 12-15% of faunal assemblages at sites such as Nevalı Çori and the early levels of Çayönü but increase to >50% at eighth millennium at Gürcütepe II and the later levels at Çayönü (Arbuckle 2014; Peters et al. 2013; Hongo et al. 2004).

It is also at this time that livestock exhibiting clear morphological changes associated with domestication (reduction in body size, changes in horn morphology) become widespread across the Fertile Crescent region, including central and southeast Anatolia, signaling the widespread availability of large regional populations of livestock increasingly adapted to living under conditions of intensive human management. In addition to biological changes in livestock populations, fauna evidence indicates that new and productive management strategies also became widespread by the mid to late eighth millennium BC. Kill-off patterns indicate that the common pastoralist management strategy of culling surplus juvenile male caprines was widely practiced at this time (Arbuckle and Atici 2013) and demographic data further suggest that secondary products, including dairy and perhaps fiber, were exploited by the late eighth and seventh millennia BC (Vigne and Helmer 2007). The identification of dung deposits within settlements such as Çayönü, Çatalhöyük, and Aşıklı indicate that animals were frequently penned onsite (Stiner et al. 2014; Brochier 1993; Matthews 2005), while the identification of the remains of livestock within collapsed Neolithic structures at the site of Mezraa-Teleilat (southeast Anatolia) suggests that caprines were at least occasionally stalled, perhaps for milking and birthing (İlgezdi 2008: 87).

Isotopic evidence for an increase in dietary variability in the later Neolithic suggests that domestic livestock were increasingly provided with fodder and moved seasonally around the landscape to access more productive graze (Pearson et al. 2007; Baird et al. 2011; Makarewicz and Tuross 2012). However, isotopic evidence does not indicate the presence of long-distance seasonal mobility in these Neolithic pastoral regimes by the majority of a community's population. Instead, Neolithic pastoralism seems to have been largely tethered to permanent settlements. For example, at the site of Gritille (8000-6500 BC), in southeast Anatolia, Meiggs (Meiggs 2010: 277) found "extraordinarily homogenous" strontium isotope values in caprine teeth dating to the eighth millennium BC indicating that caprine herding was confined to the limestone plains surrounding the site and did not make use of nearby highland summer pastures outside of the Euphrates valley. In addition oxygen isotopes identified only one individual that likely originated in the uplands regions to the north, likely representing the inter-site exchange of animals rather than pastoral mobility. Similarly, at Çatalhöyük, researchers have argued that Neolithic herders did not utilize uplands to the south of the site for summer grazing but instead grazed their herds on the plains surrounding the settlement itself (Henton 2012; Bogaard et al. 2013). The scale of pastoral mobility on the Konya Plain seems to have been limited to within around 2 days' walk from Çatalhöyük itself, as evidenced by the site of Pınarbaşı B, a rockshelter 24 kilometers from Çatalhöyük that was likely used as a spring herder camp by members of the Çatalhöyük community (Baird et al. 2011).

In addition to the increasingly intensive herding of sheep and goats, domestic cattle also become more widespread in the mid to late eighth millennium BC in Anatolia. Cattle consistently represent the second most important animal resource after caprines and by the later portions of the Neolithic period may have been used for traction and milk as well as meat (Helmer and Gourichon 2008; Evershed et al. 2008). However, domestic cattle were late to appear in central Anatolia where aurochs hunting was deeply entrenched in the social and economic practices at Çatalhöyük (Arbuckle and Makarewicz 2009; Russell et al. 2013).

Although fundamentally local in nature, by the early seventh millennium BC pastoralism began spreading westward into southern, western, and northwestern Turkey (Arbuckle et al. 2014). In response to colonization processes, movement into new environments, and interaction with local populations of indigenous foragers, this expansion resulted in the development of increasingly divergent regional traditions of pastoralism adapted to local environmental and social needs and limitations (Conolly et al. 2012). It was these more regionally diverse late Neolithic life-ways as well as the increasing use of animals for secondary products and wealth accumulation that led to the systems we see in the following period, the Chalcolithic.

Chalcolithic (ca. 6000-3000 BC)

Initially, zooarchaeological data concerning the Chalcolithic period show some degree of continuity with the animal economies of the late Neolithic in that caprine herding continues to dominate, with a secondary emphasis on cattle. However, over the three millennia represented by this period, the data suggest a widespread increase in the use of cattle with a gradual displacement of caprines as the dominant livestock around settlements. In the Anatolian Chalcolithic there is isotopic evidence for the continuation of horizontal forms of local

transhumance, first documented in the Neolithic (Meiggs 2010) and also for the development of vertical transhumance involving caprine and perhaps cattle in central and southeastern Anatolia and the Pontic region. However, there is virtually no evidence for the presence of large-scale mobile pastoralism ranging over large territories. Instead, pastoral systems seem to have been operated primarily at a local level. Many of these shifts seem to be linked with rising inequality, concerns with increasingly intensive agricultural production, wealth accumulation, secondary products, and the provisioning of larger settlements and emerging political centers.

The Early Chalcolithic period in Anatolia (ca. 6000-5000 BC) is not well documented, but where it has been explored, zooarchaeological data show evidence for increasing intensity of sheep and goat pastoral production, accompanied by limited evidence for local-scale animal movement. At Çatalhöyük (West Mound) there is a shift towards increasingly intensive sheep and goat pastoralism. Although no isotopic data yet exists, researchers hypothesize on the basis of settlement data that there were increased movement of herds to seasonal pastures on the Konya Plain (Baird et al. 2011; Russell et al. 2013). In addition, at Köşk Höyük isotopic evidence suggests an early system of vertical transhumance was practiced in which uplands located within a day's walk from the settlement were exploited for summer grazing (Meiggs and Arbuckle 2010; Makarewicz and Arbuckle 2009). Intensive, yet apparently localized systems of caprine pastoralism continued to flourish in central Anatolia in the fifth millennium BC as well, where settlements such as Köşk I and Güvercinkayası were provisioned by increasingly specialized caprine herding activities, likely including management for a combination of primary and secondary products. Strontium isotope evidence indicates that herding was carried out on the plains and highlands immediately surrounding these settlements (Meiggs and Arbuckle 2010; Arbuckle, Öztan, and Gulçur 2009).

Regional variation in animal economies is increasingly evident following their expansion outside of southeast and central Anatolia (Çilingiroğlu and Çakırlar 2013). This regional variability includes renewed emphasis on hunting big game, including wild equids, at some sites in central Anatolia like Köşk Höyük and Orman Fidanlığı (Arbuckle, Öztan, and Gulçur 2009; Uerpman 2001), and variable emphases on either sheep/goat or cattle. In southeast Anatolia, in the Halaf cultural area, sheep and goats were the focus of the pastoral economy in more arid regions (e.g., Girikihacıyan (McArdle 1990)), while cattle increase in importance in regions with greater moisture (e.g., Çavi Tarlası and Domuztepe, where cattle represent 20-35% of the faunal remains (Schäffer and Boessneck 1988; Kansa et al. 2009)). In the humid, forested environments of northwest Anatolia, animal economies increasingly switched focus from caprines to cattle (Arbuckle et al. 2014; Conolly et al. 2012). At Ilıpınar VB and Menteşe cattle represent approximately 45% of the faunal remains, and chemical residues recovered from ceramics indicate the first widespread use of dairy (Evershed et al. 2008). Although mobility has not been well addressed in these contexts, pastoral systems emphasizing cattle, which have high water requirements, were likely characterized by constrained mobility, especially in the semi-arid regions of southeast Anatolia where they would be limited to river valleys.

The increasing importance of cattle herding continued in many regions into the Late Chalcolithic (4000-3000 BC), where it is linked to the rise of complex and hierarchical societies and is likely associated with both increasingly intensive agricultural production and elite wealth. This increase in cattle is particularly evident in the Malatya region and in the uplands of eastern Anatolia,

where cattle are among the most abundant taxa in archaeofaunal assemblages (e.g., Arslantepe, Tepecik, Norşuntepe, Sos Höyük) (Piro 2008, 2009; Howell-Meurs 2001b; Bartosiewicz 1998). High frequencies of cattle are also evident in Late Chalcolithic faunal assemblages in neighboring regions of Armenia and Azerbaijan, suggesting a robust regional economy emphasizing cattle pastoralism (Piro 2009; Chataigner 1995; Monahan 2007).

During the Late Chalcolithic, lowland southeast Anatolia witnessed dramatic social changes in response to the rise of state-level societies in greater Mesopotamia (Algaze 2005; Stein 1999; Rothman 2004), changes that were accompanied by a shift towards intensive caprine pastoralism not practiced in other parts of Anatolia. In the fourth millennium BC, indigenous settlements along the Turkish Euphrates including Hacinebi (B1 LC) and Arslantepe VII were characterized by reliance on a mixed economy, including a combination of caprines, cattle, and pigs. High frequencies of cattle and pigs suggest that animal economies in this region were spatially limited and operated largely within the Euphrates valley. However, with the expansion of southern Mesopotamian Uruk material culture and populations into this region, economies shifted increasingly towards caprines with a steep decline in pigs. This appears to reflect the establishment in southeast Anatolia of intensive and likely specialized and mobile caprine pastoralism from further south, where it was the dominant system on the arid plains of northern Syria (e.g., Tell Brak; Tell Rubeidheh; Kosak Shamali (Gourichon and Helmer 2003; Payne 1988; Emberling et al. 1999)).

Issues of Late Chalcolithic and Early Bronze Age mobility have been most extensively discussed for upland eastern Anatolia. Settlements in this area are associated with an archaeological horizon known as the Early Transcaucasian Culture (ETC) (3000-2000 BC). The ETC has long been associated with nomadic and transhumant caprine pastoralism, based on the presence of small, shallow settlements with ephemeral architecture and mobile material culture, its distribution over a wide area, and location in a region historically dominated by nomadic caprine pastoralists (Piro 2009; Batiuk 2013; Sagona and Zimansky 2009: 163-166, 186-191; Kohl 2009; Chataigner 1995; Rothman 2004). However, the direct evidence for nomadism and transhumance in the ETC is very limited (Piro 2009: 26; Batiuk 2013; Cribb 1991: 220-223). In fact, faunal evidence for Late Chalcolithic and Early Bronze ETC settlements indicate the presence of a pastoral economy focused on cattle rather than more easily mobile caprines, while seasonality indicators at Sos indicate year round occupation and a greater emphasis on agriculture than previously recognized (Howell-Meurs 2001a; Piro 2008, 2009).

Beyond the ETC, other arguments concerning Late Chalcolithic mobility center on sites in the Pontic region and areas north of Anatolia. Strontium isotope data from human remains from the 4th millennium cemetery at İviztepe indicate the presence of local (non-immigrant) individuals with lower and higher amounts of isotopic variability, and the individuals with higher amounts of variability (mostly men) are hypothesized to be transhumant pastoralists who moved seasonally to nearby uplands (Welton 2011). However, other plausible interpretations exist for isotopic variability, and fauna from the slightly later (although poorly dated) Early Bronze Age levels of İviztepe indicate an economy dominated by pigs, cattle, and deer (Tekkaya and Payne 1988). Recent archaeological survey in the region identified cave sites, including Okçular İni, used during the Late Chalcolithic and Bronze Age and argued on the basis of ethnographic analogy to have been used by pastoral groups moving regularly between uplands and lowlands in this

mountainous environment (Glatz et al. 2011; Düring and Glatz 2010), but direct evidence in support of this hypothesis is so far lacking. In the Pontic-Caspian steppe zone north of Turkey, Anthony (2007, 2013) has argued that the fourth millennium BC witnessed the emergence of systems of large-scale nomadic pastoralism fueled by the domestication and riding of horses and the use of heavy wagons by indigenous foragers. Although there is no sign of the infiltration of such a system south into Anatolia, the presence of horses (possibly domestic) in Late Chalcolithic sites in east and central Anatolia, including Norşuntepe and Çadır Höyük, suggests possible contact, perhaps via the ETC, with this region (Arbuckle 2009; Bökönyi 1978).

Bronze Age (ca. 3000-1200 BC)

For the Bronze Age, zooarchaeology as well as texts from the Late Bronze Age Hittite Empire (ca. 1600-1200 BC) and texts from Mesopotamian centers to the south provide valuable sources of information for reconstructing pastoral practices. Despite the fact that livestock were important sources of wealth and commodities in complex polities throughout the Bronze Age, there is currently very little direct evidence for the presence of large-scale mobile pastoralism in Anatolia involving whole communities moving seasonally over long distances. Instead, pastoral economies increasingly focused on cattle and were likely primarily organized on a local scale, tethered to settlements, nearby summer pasturage, and permanent water sources, as they had been in the preceding Chalcolithic. Although the lack of evidence for large-scale mobile pastoralism may partially be related to research practices that focus on large settlements at the expense of upland encampments, a combination of textual and archaeological evidence supports the general picture of Bronze Age pastoralism as a largely 'local' phenomenon linked to a framework of agricultural settlements and small herding catchment surrounding these settlements. Unlike northern Mesopotamia, where large scale mobile caprine pastoralism played a central role in structuring economies and political histories, the mountainous and more humid landscape of Anatolia, combined with the high degree of political fragmentation that characterized the Early and Middle Bronze Age in this region, appears not to have resulted in the development of systems of multi-regional pastoral mobility (Sari 2012).

Although there was a high degree of regional and local variation in Bronze Age Anatolian animal economies resulting from a combination of local geography, political economy, and histories of animal management, cattle were the dominant livestock in most regions. In fact, the frequencies of cattle in faunal assemblages increased dramatically in the Bronze Age compared to previous periods, from an average of ca. 10 percent (based on Number of Identified Specimens [NISP]) in the Early Neolithic of central and southeastern Turkey to 18 percent in the same regions in the Late Neolithic and Early Chalcolithic and peaking at 26-27 percent in the Early, Middle, and Late Bronze Ages (Arbuckle n.d. (in review)). As was the case in the Late Chalcolithic (fourth millennium BC) and continuing into the third millennium, cattle dominated ETC animal economies in eastern Turkey, where they are often the most abundant taxon. The relatively low representation of cattle remains in Bronze Age faunal assemblages (average of 26 percent based on NISP for the Bronze Age) has led to the misconception that Bronze Age animal economies in Anatolia were dominated by caprines, mirroring better documented examples from contemporaneous Mesopotamia (e.g., Matthews 1978; Postgate and Payne 1975). However, because of their large body size and resulting concentration of primary products (meat, organs, blood), cattle represented the single-most important source of animal products in Bronze Age

Anatolian economies (ca.75% of primary animal products based on meat weight) (Arbuckle n.d. (in review)).

The importance of cattle in Bronze Age Anatolia seems to be closely aligned with the rise of complex and hierarchical polities in the Early and Middle Bronze Age. Cattle formed the foundation of these early complex political economies as both a source of food and labor. Cattle became symbols of elite wealth and were incorporated into cosmologies and religious practices. The connection between cattle and political complexity is supported by the abundance of cattle in high status sites. At regional centers such as Early Bronze Age Achemhöyük in central Anatolia, Early Bronze Age Karataş-Semayük in western Anatolia, and Middle Bronze Age Sirkeli Höyük in southern Anatolia, cattle are the most abundant taxon (Arbuckle 2013; Hesse and Perkins 1974; Volger 1997). At Boğazköy, an important political center throughout the Bronze Age in central Anatolia, cattle were the most abundant taxon in the lower town in the Middle Bronze Age (ca. 43%) and were also well represented in the Late Bronze Age levels (37%) (von den Driesch and Pöllath 2004). In contrast, at small sites where political centralization was likely weaker in the Early and Middle Bronze Age (Çevik 2007), such as Kaman-Kalehöyük in central Anatolia and Troy in western Anatolia (Hongö 1996; Gündem 2010), cattle are less well represented and caprine herding was a more important activity. The importance of cattle pastoralism is clear at the Early Bronze Age ‘Royal tombs’ at Alacahöyük (Piggott 1962; Bachhuber 2011). Here elites were interred with bronze and silver statues representing cattle as well as the partial remains (heads and hooves) of up to twelve bovines, thought to represent a funerary sacrifice and feast. These findings are paralleled at several other Early Bronze Age cemeteries in central Anatolia (Zimmermann and Geniş 2011).

Although there is very little faunal evidence to characterize pastoral economies in the Pontic region of northern Anatolia, Late Bronze Age Hittite texts provide the earliest textual evidence for distinct pastoral groups in Anatolia in their description of the Empire’s Pontic neighbors and adversaries, the Kaska. From Hittite sources it is clear that although some Kaska lived in sedentary communities, others seem to have maintained a more mobile way of life (Glatz and Matthews 2005; Mineck, van den Hout, and Hoffner 2006). Hittite kings’ annals discuss disruptive Kaska people ‘occupying’ mountains, and a Kaska leader named Pihhuniya is reported to have attacked Hittite lands, have conquered a region called Istitina, “and made it his place of pasturing” (Mineck, van den Hout, and Hoffner 2006: 257). These references to the occupation of uplands and interest in securing pasturage suggest that a segment of the Kaska population was practicing a form of territorially bounded, seasonal, transhumant pastoralism. Hittite texts further clarify that the Kaska were incorporated into polities that were characterized by agricultural communities and fortified urban centers. Given the previously discussed zooarchaeological data demonstrating the central role of cattle on the Anatolian plateau and textual references to Kaska as cattle rustlers (Bryce 2002: 85; Hoffner Jr 2009) it is likely that cattle pastoralism was an important component of Kaska lifeways.

Both zooarchaeological and textual data point indirectly to constrained mobility among Bronze Age pastoralists in Anatolia. The emphasis upon cattle is suggestive of a less mobile pastoral economy that generally remains tethered to settlements and the permanent water sources that cattle must have access to each day. Hittite references paint a picture of animal economies on the Anatolian plateau as being fundamentally local in nature, tethered to agricultural settlements and

characterized by daily movements of livestock to pasture and seasonal movements to local summer pasturages (Bryce 2005; Miller 2013). In contrast to their Mesopotamian counterparts, the Hittites never mention the movement of large and politically powerful nomadic groups through their territories, suggesting that these groups were not a part of the Anatolian Bronze Age landscape.

In some parts of southeastern Anatolia, where aridity limited the number of cattle that could be supported, caprine pastoralism continued to play a central role. This is seen in the caprine-dominated faunal assemblages at sites in the Euphrates valley such as Gritille (Stein 1987) and Kurban Höyük (Wattenmaker 1998). This feature of the animal economy is likely connected to developments in areas to the south of Anatolia. Numerous recent studies have argued for the importance of mobile pastoral tribes and large-scale caprine pastoralism in Bronze Age northern Syria on the basis of textual, survey, and excavation data (Porter 2012; Szuchman 2007; Fleming 2004; Danti 2000; Kouchoukos 1998; Lyonnet 1997; Wilkinson 2004) and southern Mesopotamia (Zeder 1994; Steinkeller 1995). There are no geographic boundaries between the plains of southeastern Turkey and northern Syria and it is possible that seasonally mobile pastoralists regularly crossed between these regions, but we currently have no direct evidence for these types of movements.

However, caprine pastoralism was not predominant everywhere in Bronze Age southeast Anatolia. While sheep and goat were the most important taxa at Tilbeşar in the Euphrates valley during the Early Bronze Age, cattle increased in importance (by weight and meat yield) during the Middle Bronze Age (Berthon and Mashkour 2008), a pattern also evident at Titriş Höyük and Lidar Höyük (Allentuck and Greenfield 2010; Kussinger 1988). Furthermore, the fauna assemblages of sites in the upper Tigris basin, including Ziyaret Tepe (Greenfield-Jongsma and Greenfield 2013) and Hibermerdon Tepe (Berthon 2010), show significant variation in the structure of their pastoral economies. A study of faunal material from seven small rural sites in the same region has revealed a diversity of animal exploitation patterns during the Bronze Age, with some sites showing a greater reliance on cattle and others on caprine pastoralism (Berthon 2011, 2010).

Outside of the plains of the southeast, the only other regions where possibly mobile caprine pastoralism is likely to have flourished in Bronze Age Anatolia, although on a smaller scale, are the Konya Plain and the region around Lake Van. The Konya plain is a large steppic basin and one of the most arid regions of Turkey; archaeological surveys indicate that permanent settlements were extremely limited especially in the drier interior portions of the basin (Bahar 2004; French 1972; Omura 2004). Based on a combination of faunal work at the site of Acemhöyük, located on the eastern margin of the Konya plain, and analogy with land use in later periods, it has been suggested that this region was primarily utilized by mobile caprine herders cycling between basins and small upland plateaus (Arbuckle 2012). In the highlands surrounding Lake Van, a dearth of settlements combined with the appearance of cemeteries have been interpreted as evidence for occupation of this region by nomadic pastoralists in the second millennium BC (Özfiat 2005). Unfortunately, knowledge of pastoralism in this region is limited largely to analogy with later periods, and more detailed archaeological work is necessary to identify the details of pastoral mobility, land use, and seasonality.

Iron Age (ca. 1200-330 BC)

Iron Age pastoralism in Anatolia is characterized by the continuation and local adaptation of sheep, goat, cattle, pig, and equid husbandry and limited concrete evidence for long-distance mobility. Tell sites with long stratigraphic sequences and analyzed Iron Age faunal assemblages show a high degree of continuity with earlier phases of occupation in the Bronze Age, including Sos Höyük and Büyüktepe Höyük in northeastern Anatolia (Howell-Meurs 2001b) and Gordion (Miller, Zeder, and Arter 2009) and Kaman-Kalehöyük (Hongo 1996: 155-158) in central Anatolia. Despite a major political decline—the collapse of the Late Bronze Age Hittite Empire—there appear to have been no drastic changes in pastoral practices in the Iron Age. The differences that are visible through analysis of faunal remains appear to be attributable to changes in site function, such as at Gordion, where the site grew from a small settlement with a predominantly pastoral economy to become an urban regional center of the Phrygian kingdom supported by intensive agriculture ca. 950-500 BC (Zeder and Arter 1994), and at Çadır Höyük, which experienced ruralization and changes in the goals of herd management in the Early Iron Age following the end of Hittite hegemony (Arbuckle 2009). However, the assemblages at both Gordion and Kaman-Kalehöyük show a temporary increase in goat relative to sheep in the Early Iron Age, perhaps indicating a general deterioration in pasture quality in Central Anatolia (Hongo 1996: 155-158; Zeder and Arter 1994). Interestingly, different pastoral practices at Iron Age Gordion were also associated with different hunting practices. In periods where the wild plant/cereal ratio was high and sheep and goat were predominant, implying a more mobile (but still local) pastoral strategy focused on herding, deer were more prevalent among the small assemblage of wild animal taxa; in the period where the wild plant/cereal ratio was low and cattle and pig became more important, implying a less mobile pastoral strategy focused on foddering, hare were more prevalent among the wild animal taxa (Miller, Zeder, and Arter 2009).

In southeastern and eastern Anatolia, a major theme of research has been the effect of empires that came to dominate this territory in the Late Bronze and Iron Ages (Mitanni, Middle and Neo-Assyria, Urartu) on local culture. Several of these empires had complicated relationships with pastoral groups either within or on the fringes of their territory. Through time, the Assyrians traded predominance with the Arameans in southeastern Turkey and the Syrian steppes, tribal groups that are described in Middle Assyrian textual sources as pastoral nomads, but who may or may not have actually been mobile, and who were certainly largely sedentary by the time they formed small kingdoms in the Iron Age (Szuchman 2007), such as the Bit Zamani kingdom based at Diyarbakır (Szuchman 2009). The Urartian Empire unified, for the first time in history, large parts of mountainous eastern Turkey that were in the nineteenth and twentieth centuries AD inhabited by mobile pastoralists. On the basis of the empire's geography, ethnographic analogy, and the frequency with which animals are listed in kings' lists of booty, archaeologists typically assume that the Urartians ruled over vast pastoral populations practicing short-distance transhumance (Zimansky 1985; Burney 2012). However, we lack direct archaeological evidence of such pastoralists and evidence for specific pastoral practices. There are reasons to be skeptical of general claims that communities in eastern Anatolia must have practiced some form of mobile herding in all periods, including the Urartian period (such as in Yakar 2006: 56-58; 2011). A variety of seasonality indicators point to a fully sedentary pastoral rather than mobile pastoral economy in the Iron Age (and early Bronze Age) at Sos Höyük and Büyüktepe Höyük, which are

also located in mountainous areas with harsh, long winters where twentieth century mobile pastoral tribes were active and researchers have frequently assumed that ancient populations must have practiced mobile pastoralism (Howell-Meurs 2001a). Recently, research on Iron Age empires has been expanded at the site of Ziyaret Tepe to include the effect of these empires on pastoralism. Faunal and botanical assemblages analyzed from the Neo-Assyrian town show the continued importance of pastoralism, despite imperial historical narratives focused on agricultural intensification as part of empire expansion (Greenfield 2014; Rosenzweig 2014).

Roman Anatolia (ca. 200 BC-330 AD)

Little archaeological data exists on rural economy in Roman Anatolia. Fortunately, the first systematic publication of Roman period paleobotanical remains in Anatolia addresses two issues related to pastoral practices. The central Anatolian site of Gordion was a rural Roman military garrison and a civilian settlement dating from 50 AD to the early fifth century. Paleobotanists have argued that Roman animals were primarily pastured rather than foddered, as they were in earlier in the Iron Age. The ratio of “favorable” to “unfavorable” grazing plants in the assemblage suggests that the area around Gordion was severely overgrazed (Marston and Miller 2014).

Near another Roman site in southwest Anatolia, Sagalassos, archaeological survey data integrated with paleobotanical evidence has led researchers to argue that populations living approximately 25 km from Sagalassos in the Bereket Valley shifted from an economy focuses on agriculture to one focused on (settlement-based) pastoralism in the first half of the fourth century AD. During this period, a continuation in pottery density from earlier periods indicated that population density likely remained fairly constant. However, pollen cores from the valley show a reduction in crop cultivation. Given that there is no archaeological evidence for a crisis at this time and that the climate was actually becoming more humid, the researchers argue that this potential shift to pastoralism was a deliberate decision on the part of the local communities (Kaptijn et al. 2013). Isotopic evidence indicates that while pigs, cattle, sheep, and goat at Sagalassos and a nearby site were herded in the same area or kept in enclosures and fed similar foods in the preceding Hellenistic period, the Roman period witnessed the development of more specialized animal husbandry practices where different species had “specific and unique diets (fodders), grazing areas and care practices” (Fuller et al. 2012: 163). Heavy metal data from goat bones suggests that in the Late Roman period they were grazed at greater distances, outside the polluted area around the settlement (Vanhaverbeke et al. 2011). The fourth century shifts at Sagalassos foreshadowed a more complete post-Roman collapse of agriculture and presumed turn to pastoralism in the mid seventh century, again documented by pollen and charcoal data (Bakker 2012).

Summarizing Classical authors’ descriptions of the Roman province of Cappadocia (central Anatolia), Gwatkin (1930) and Broughton (1959) report that in the Roman period this region was known for its livestock production, with much of the region “given over to grazing” (Broughton 1959:620). The modern province of Kayseri was known for its cattle, which were pastured on the wide plains and on the slopes of the largest peak in the region. Horses were also produced in large numbers in this region from large agricultural estates owned by local elite families. To the northwest, Roman Galatia was know for its wool production, continuing a regional preference

for caprines, and sheep in particular, that extends back to the Bronze Age (Zeder and Arter 1994). The Konya region, known as the Axylon, or treeless steppe, was also known for its emphasis on wool production in antiquity (Broughton 1959).

Post-Classical Periods (ca. 330-1923 AD)

In post-classical periods, the nature of the data concerning Anatolian pastoralism drastically changes. Most significantly, the primary datasets come from history rather than from archaeological analyses, and focus on political organization and demography rather than on husbandry practices and patterns of provisioning and consumption. These differences stem from several factors. The archaeology of post-Classical periods is in its infancy, in Turkey and elsewhere in the Middle East. Where surveys and excavations of “late” material have been undertaken, researchers have typically concerned themselves with architecture, art, inscriptions, and artifacts rather than with the zooarchaeological, paleobotanical, and isotopic analyses that are likely provide the most direct data concerning pastoral practices, environmental change, and mobility. The paucity of archaeology data on pastoralism is part of a broader lack of evidence concerning common people, especially rural and secular populations, in the Byzantine (Cassis 2009), Medieval, and Ottoman periods (Baram 2009; Baram and Carroll 2002). Fortunately, this lacuna is somewhat balanced by the broader array of historical records available for some post-Classical periods concerning the rural countryside, specific pastoral tribes’ engagement with landed governments, animal markets, mobility patterns, and tribal demography. The sections below center on several overlapping, historically-defined periods as illuminated through the narrow range of available material evidence. The summary of historical evidence is limited to information that furthers this article’s goal of illuminating dimensions of pastoral variability.

Zooarchaeological and Survey Data for Post-Classical Periods

Zooarchaeological data concerning animal preferences and herd management strategies for post-Classical periods, comparable to the evidence presented for earlier periods in this article, has been published for a quite small number of sites, including Lidar Höyük (4th-13th centuries) (Kussinger 1988), Tilbeşar (11th-13th centuries, with excavated contexts 12th-13th centuries) (Berthon and Mashkour 2008), Gritille (12th-13th centuries) (Stein 1998a), Kinet Höyük (12th-14th centuries) (Redford et al. 2001), Horum Höyük (12th-13th centuries) (Bartosiewicz 2005), and Ziyaret Tepe (13th-15th centuries) (Berthon 2007; Matney et al. 2007; Matney et al. 2009), in southeastern Anatolia; Korucutepe (13th-14th centuries) (Boessneck and Driesch von den 1975) and Aşvan-kale (‘medieval’) (Payne 1973) in the Taurus foothills; Çadır Höyük (6th-11th centuries) (Arbuckle 2009) and Kaman-Kalehöyük (16th-17th centuries) (Hongo 1996, 1997) in central Anatolia, and Sagalassos (4th century BC-13th century AD) (De Cupere 2001; Fuller et al. 2012; Van Neer and De Cupere 2013) in southwestern Anatolia. These analyses frequently incorporated a small number of samples since the excavation teams often were primarily concerned with earlier historical periods underneath the medieval layers. The sites differ widely in their size, function, and ethnic composition. For these reasons, it remains unclear whether the conclusions of the studies are reflective of site-specific, local, or regional/broader patterns in Anatolian pastoralism. Further, in all cases, the sites excavated seem to be those of villagers who were primarily or entirely sedentary. Researchers often expressed interest in understanding the relationship of these villagers to the nomadic tribes that we know from historical documents

existed in Anatolia during these times, but the extent of interaction between mobile and sedentary populations remains entirely unknown archaeologically.

Following the influx of Muslim nomadic tribes from Arabia and Central Asia in the late first and early second millennia AD, choices of herd animals are interpreted as reflective of religious identity. Specifically, a decrease in pig production/consumption is seen as indicative of processes of Islamization, and the presence and frequency of pig bones are seen as indicative of the presence of Christian or non-fully Islamized populations. The presence and importance of pig versus sheep/goat in faunal assemblages can also indicate possibilities in terms of herding strategies and mobility.

However, diachronic research at Sagalassos indicates archaeologists should be cautious in making assumptions about pastoral practices on the basis of species preference, even over the last 2000 years. Stable isotope and heavy metal data on animal bones from Sagalassos and a nearby site show subtle changes through time in herding practices among pigs, cattle, sheep, and goat. Sheep and goat do not appear to have been herded together all the time in certain periods (Fuller et al. 2012), and goats were herded more freely at varying distances from the settlements (Vanhaverbeke et al. 2011).

Among the analyzed sites, several trends are visible. The Medieval levels of many sites show the same ranges of animals as in earlier (Bronze and Iron Age) strata—typically cattle, sheep, goats, and pigs—but with two additional livestock taxa, the water buffalo and the camel, becoming increasingly important. Although the timing of their initial introduction to Turkey is unclear, water buffalo have been identified in medieval deposits from Lidar Höyük, Korucutepe, and possibly also Kinet Höyük. Although camels first appeared in Anatolia in the Bronze Age in southern Turkey and were also used in the Roman period, Bactrian, dromedary, and hybrid camel bones are commonly encountered in Medieval assemblages, and have been identified at Korucutepe, Tilbeşar, Ziyaret, Lidar, Acemhöyük, and in the Yenikapı excavations in Istanbul (Onar et al. 2013). Water buffalo and camels are also present in the Ottoman period assemblage from Kaman-Kalehöyük. Animals from Medieval levels at Korucutepe (goats) and Ottoman levels at Kaman-Kalehöyük (sheep, goats, some cattle) were larger than comparable individuals from pre-Medieval strata at these sites, suggesting improvement of breeds over time (Boessneck and Driesch von den 1975: 219; Hongo 1997: 290-293). Although the number of Muslims living in Anatolia increased over time, especially from the eleventh century onwards, pig remained a source of meat at all of the studied sites except for Korucutepe and Ziyaret Tepe. At Kinet Höyük, a Crusader-era port town, Medieval Gritille and Lidar Höyük, which are also known to have had a significant Christian population, pigs were the dominant animal represented in the assemblage. Pigs were the second most abundant animal at Çadır Höyük after cattle (as opposed to earlier periods, when sheep and goat were dominant). Pigs comprised a notable proportion of the faunal assemblage at Medieval Tilbeşar and Medieval Horum Höyük. At Ottoman-period Kaman-Kalehöyük, the number of pigs decreased in comparison to earlier periods, but they remained a significant part of the assemblage. Except for Kinet Höyük, which was a trade port where people were engaged in the large-scale breeding of pigs and the breeding of sheep and goat for secondary products rather than meat (Redford et al. 2001: 73-76), none of the excavated sites shows evidence for large-scale specialized pastoralism where communities of pastoralists seasonally moved long distances with their herds. Herd management strategies indicate that

populations at these sites were engaged in generalized subsistence herding and low-risk production for local consumption of pastoral products. These final two trends could be due to two characteristics of the small number of studied sites. First, several of the sites were in areas that were controlled by Christian populations. Second, the sites excavated were chosen on the basis of their significance and centrality in the Bronze and Iron Age landscape rather than on their significance and centrality to the Medieval or Ottoman landscape, and in fact historical texts tell us about commercialized herding for regional meat markets in these periods.

Byzantine Period (ca. 330-1200 AD)

For the Byzantine period, the clearest picture of pastoralism comes from an archaeological and historical study of the Islamic-Byzantine border in southeastern Anatolia (Eger 2008). Various forms of pastoral transhumance were practiced in and around the ‘Amuq valley during this time, including migrations between lowland villages and upland fortified sites, mobility involving temporary camps and/or seasonal raiding, and pasturing animals on marshland during the winter and spending the summers in Byzantine-controlled highlands. These various forms of transhumance were adaptations both to environmental and political conditions (Eger 2008: 329-333). Conflict at the Islamic-Byzantine border was framed around pastoral movement. It involved competition between groups for access to the best pasture and grazing land during the migration to highland summer pastures, and migration schedules were linked with seasonal raiding (Eger 2008; Robinson 1996; Haldon and Kennedy 1980: 105, 114). Pastoralists secured migration paths through the construction of way-stations (some called *thughur* forts, appeared mostly in the eighth century) on north-south routes, which simultaneously afforded control of trade (Eger 2008: 416). Settlement patterns and historical documents for the broader region indicate that there were general waves of sedentarization in the eighth to tenth centuries, including historical evidence of seasonal camps that eventually became permanent quarters of sedentary settlements (Eger 2008: 350-354), and opposite trends towards re-nomadization in the tenth to eleventh centuries due to migrations out of Arabia (Eger 2008: 360-362).

This period of the “Arab incursions” has recently been studied regionally from an interdisciplinary perspective. Historical evidence indicating a collapse of late antique agriculture following Arab raids and lake core data demonstrating a major decline in cultivated species correspond chronologically in the seventh and eighth century AD. This correspondence has led scholars to argue that rural populations turned to pastoralism for several centuries in the Pontus and Paphlagonia regions (Izdebski 2012), Cappadocia (England et al. 2008), southwestern Anatolia (Bakker 2012), and other parts of northern and western Anatolia (Haldon et al. 2014). However, we have no direct archaeological data concerning the nature of the pastoralism that may have been practiced by these immigrants in their new surroundings, or by local populations who may have abandoned agriculture.

The relationship between borders, frontier conflict, and pastoralism seen in Byzantine southeastern Anatolia is in some ways paralleled a few centuries later on the fringes of the Greek Byzantine successor state in northeastern Anatolia, the Empire of Trebizond (thirteenth-fifteenth centuries), as this empire clashed with the Türkmen groups that surrounded them (Bryer 1975). The Chronicle of Panaretos and other literature provide evidence for vertical pastoral

transhumance in the Pontic mountain ranges in patterns that correspond to twentieth century transhumance in that region (Bryer and Winfield 1985: 7).

Arrival of the Turks (ca. 1000-1200 AD)

The most important historical event relating to mobile pastoralism in the second millennium AD is the eleventh-thirteenth century incursions into Anatolia of the Seljuks, Mongols, and other Turkic nomadic groups from the Central Asian steppes (Bosworth 1973: 315; Cahen 1968; Peacock 2010; Vryonis Jr. 1975). Many accounts dramatically present this event as a devastating one wrought by merciless raiding bands, resulting in the nomadization and Islamization of most of Anatolia (Vryonis Jr. 1971: 143-184; e.g., Khazanov 1984: 264). While this population influx clearly did result in major demographic change in eastern Anatolia, the transition has been largely unstudied archaeologically, and as the previous sections of this paper have shown, many forms of mobile pastoralism appear to have already existed in Anatolia. The arrival of the Turks may have resulted in significant changes in transhumance patterns as well as the sociopolitical organization of transhumant pastoral groups. The eleventh and twelfth centuries offer the earliest concrete historical evidence for the large, powerful nomadic tribal confederacies that were to have a substantial impact on Anatolian society and economy until the early twentieth century (Planhol 1959: 525; Şahin 2006:89).

In a recent historical analysis, Peacock (2010: 128-163) has convincingly shown the strong correlation between the location of the most fertile east Anatolian pastures and the areas first penetrated by the Seljuks and has thus argued that the pattern and logic of the eleventh century Seljuk incursions were driven by the desire to locate new summer and winter pastures for supporting a transhumant herding lifestyle (for more impressionistic versions of this idea, see Lindner 1983: 10-11; Vryonis Jr. 1975).

Predictable and consistent routes for seasonal migrations, a distinctive feature of recent pastoral nomads, are likely a modern phenomenon attributable to the unprecedented territorial control achieved for the first time by states in from the seventeenth century onwards. Frequent shifts in migration routes appear to have occurred spontaneously. For example, the Artukid Döger tribe originated in the Diyarbakır area of southeastern Anatolia sometime before the end of the eleventh century, but by the fourteenth century the tribe was located substantially further west along the Euphrates (Cahen 1968: 315; 2007 [1949-52]: 340-341). However, tribes frequently appear under different names within the changing constellation of confederations, so it can be difficult to confirm the continuity of certain groups' patterns (Cahen 1968: 315).

Even if the Central Asian incursions did not result in profound discontinuities in urban life and material conditions, they did result in a reorganization of the countryside towards mobile pastoralism. By increasing the number of mobile pastoral tribes and the importance of a pastoral nomadic economy, the incursions set the stage for the establishment of polities where pastoral nomadic tribes constituted the base. Such polities characterized Anatolia (and Iran) in the fourteenth and fifteenth centuries (Cahen 1955).

Although the majority of the zooarchaeological evidence (discussed above) comes from the centuries just following the arrival of the Turks, very little other archaeological evidence exists

concerning pastoralism, and there have been no scientific studies of mobility. Using survey data from the hinterland of Medieval Gritille, archaeologists argued that the clustering of sites around medieval springs indicated a focus on small-scale agriculture and a mobile pastoral economy (Stein 1998b). These sites with springs could have hosted camps of mobile pastoralists who annually moved between areas in and outside of the plain, perhaps grazing on post-harvest crop stubble for part of the year (Redford 1998: 277).

Age of Nomadic Confederacies ca. 1300-1508

The fourteenth and fifteenth centuries are a fascinating and unique period for Anatolian pastoralism because significant parts of the southeast and east were governed by Türkmen nomadic tribal confederacies, in particular the rival Akkoyunlu (“White Sheep” Türkmens) and Karakoyunlu (“Black Sheep Türkmens), about whom there is rich indigenous, contemporary documentation in many forms (Woods 1999: 215-234). This documentation provides the earliest historical evidence for specific long distance vertical migration patterns in eastern Anatolia, and some of these patterns continued to be followed, albeit by different tribes, until the twentieth century. Unfortunately, archaeological study of this period has been limited to the study of Akkoyunlu and Karakoyunlu architecture and tombstones, and no archaeological evidence yet exists to confirm or complicate the picture from historical documents. For several decades in the fourteenth century until they emerged victorious in 1467, the Akkoyunlu engaged in a territorial struggle with the Karakoyunlu. From their original land holdings in east-central Anatolia, throughout the fifteenth century the Akkoyunlu solidified control of a large area that eventually stretched across northwest Iran, Azerbaijan, and eastern Anatolia (Woods 1999: 55, 94, 135). Following Akkoyunlu expansion, large numbers of Türkmen pastoralists migrated out of Anatolia towards the east (Roemer 1986: 175, 188).

In this period there is ample evidence that political hierarchy drew from tribes consisting primarily of mobile pastoralists and that polities expanded with the goal of controlling certain pastures and migration routes. While the Akkoyunlu ruling class had long been sedentary and governed over large indigenous settled populations of Armenians, Kurds, Arabs, and Aramaeans (Roemer 1986: 154), the majority of their tribal power base remained mobile (Woods 1999: 15). Like the Seljuks, control of pastures and migration routes appear to have been a major governing logic in Akkoyunlu territorial expansion. An early political strategy of the confederacy was to consolidate control of interdependent systems of mountain pastures in eastern Anatolia and winter steppes in the Tigris and Euphrates basins (Woods 1999: 54). Access to summer and winter pasture areas depended upon Akkoyunlu control of both major urban centers and numerous smaller strongholds, including castles. These strongholds, while primarily for collecting protection and toll money, were also located strategically along the principal migration routes (Woods 1999: 29). The correspondence between the reported migration routes of the Akkoyunlu groups and trade routes in this period is not coincidental and probably indicates the intertwined dual-purpose nature of mobility: interregional trade and transhumance for the purpose of animal needs.

Within the territorial range described above, there were at least four pastoral migration patterns. The first three involved the Akkoyunlu Türkmen confederates themselves. Like later Ottoman and twentieth-century groups, some Akkoyunlu groups used the Diyarbakır area as a winter

pasture ground and migrated into the Taurus Mountains in the summer, a distance of 100-300 kilometers. Other groups followed a longer version of this route between summer pastures in the Taurus Mountains as far north as Erzurum and Bayburt and winter pastures in the Jazira as far south as Mosul and Raqqah, making the Diyarbakır region a transient camping area (Woods 1999: 29-30). The distances of these routes could be more than 500 kilometers. Among these were clans later called Bozulus by the Ottomans, who migrated between the area south of Mardin and Erzincan and Erzurum as well as Georgia and Iran (Sümer (Demirtaş) 1949: 39; Erhan 1992: 116-117). A third group of Akkoyunlu nomad confederates followed ‘lesser’ migration routes from winter pastures west of Mosul to summer pastures on the slopes of the modern Karacadağ, southwest of Diyarbakır, a distance of 200-300 kilometers (Woods 1999: 64).

Finally, one must consider the Kurdish tribes who were surrounded by and interspersed with the Türkmen groups. Some of these Kurds were also mobile pastoralists. A late sixteenth century Kurdish history, the *Sharafname*, describes a transhumant way of life for some Kurdish groups. For example, Kurds lived in hills on the edge of the plain of Muş, in a position from which they were able to migrate to summer pastures in the mountains above the plain (Sinclair 2001: 162). The sixteenth century Mahmudi and other mobile Kurdish clans in eastern Turkey, referred to a “tent dwellers” in archival sources, were only distinct from agriculturalists part of the time and established camp in the same lowland and highland locations every year. Great insecurity in the countryside due to frequent territorial wars and banditry forced pastoralists to settle around walled villages and upland forts. Stable transhumant routes were a product of the rural security situation, and sometimes tribes even had to spend winters in upland forts (Reid 2002: 12-14). While the social and economic organization of the Kurds and the Türkmen was very similar, Kurdish groups were rarely incorporated into the larger Türkmen nomadic confederacies in the fifteenth century. Kurds maintained separate tribal hierarchies, territories, and fortified strongholds (Woods 1999: 91-92).

Ottoman Empire (ca. 1300-1923)

Historical sources concerning pastoral nomadism are much more abundant and detailed for the Ottoman period than for the Akkoyunlu and earlier periods. Further, the stability of Ottoman bureaucracy resulted in a robust set of records (especially tax records, called *defters*) that allow scholars to document historical events and processes in Anatolia at relatively fine spatial and temporal scales. Pastoralists feature prominently in many of these documents because they were a significant element of society: in the sixteenth century, transhumant pastoralists comprised roughly a quarter of the total Ottoman population and up to 60% of the population in some districts of southeastern Anatolia (Hütteroth 2006: 19-21; Kasaba 2009: 18). A very different picture of mobile pastoral groups emerges than that of the Akkoyunlu period: over time pastoralist groups came to be completely enclosed by sedentary agriculturalists. Ottoman control led over several centuries to the widespread containment and decline of vertically and horizontally transhumant pastoral nomadism across the empire through forced sedentarization, shifts in territory, circumscription of migration paths to set, predictable routes, and the imposition of heavy taxes.

Tribes within the Ottoman Empire engaged a great variety of transhumance practices. Specifically in Anatolia, the Ottoman realm incorporated horizontally nomadic Arab Bedouin

tribes in the southeast that herded either sheep and goats or camels, and in mountainous areas of southern, eastern, and central Anatolia the Ottomans struggled with vertically transhumant pastoralists of both Türkmen and Kurdish ethnicity. These groups mostly herded sheep and goat, but occasionally horses or cattle instead, and practiced a wide array of transhumant patterns, ranging from movements of several dozen kilometers to higher summer pastures to long 300+ kilometer-long migrations. Ottoman sources recognized this variability through various terms, referring to nomadic tribes as Türkmen, Yörük (wanderer), or Kızılbaş (İnalcık 1994: 34). In general, there was a geographic and ecological distinction between Yörük and Türkmen. Yörük were found in western Anatolia and tended to practice shorter-distance vertical transhumance, while Türkmen were found in eastern Anatolia and tended to engage in longer-distance vertical migrations. The Yörük in the west tended to practice a greater degree of agriculture while the Türkmen in the east tended to be more completely dependent on mobile herding for their livelihood (İnalcık 1994: 40). The rough geographical line separating these two groups was located in central Anatolia around Kayseri and Kırşehir (Jennings 1978: 94).

These geographical distinctions, however, were not static, because there were several important long-distance permanent relocations among mobile pastoral tribes within the empire. The most important of these involved the largest nomadic political group of the early Ottoman period, the Bozulus, a confederation of tribes formed by some of the descendants of the Akkoyunlu who still inhabited areas of eastern Turkey. In the sixteenth century, more than 100 separate tribes formed the confederacy. These tribes collectively claimed more than 60,000 people and held around 2 million sheep. In the late sixteenth and early seventeenth centuries, some groups of the Bozulus were pushed by the Ottoman state to move to central and western Anatolia due to increasing nomadic populations and a resultant shortage of pasture (Gündüz 1997; Şahin 2006: 110; Sümer (Demirtaş) 1949; Woods 1999: 190). The Bozulus may have been partially motivated to shift westward by commercial reasons, specifically to decrease the cost of moving their sheep to large urban meat markets (Faroqhi 1984: 223-224). This out-migration of large portions of the Türkmen confederation significantly reshaped nomadism in eastern Anatolia. The vacuum created by the displacement of the Bozulus was partly filled by Kurdish nomads (Planhol 1959: 528-529). The dissolution of the large Türkmen confederacies in eastern Anatolia thus did not result in the end of long distance mobile pastoralism or of politically significant mobile groups.

The processes and actions that changed pasture situations and camping patterns for transhumant tribes included not relocation at the hands of the government (as with the Bozulus) and sedentarization programs, but also taxes, wars, the assignment of specific migration routes and pasture areas, agricultural expansion, and changing conceptions of state territoriality and private property. Long-term state policies and taxes significantly reduced the flexibility of pastoral nomadic land-use.

Most literature on pastoral nomadism under the Ottomans argues that the Ottomans aimed to contain and control nomadic tribes from the beginning of their reign, but a recent analysis argues that they initially encouraged and even expanded pastoral migrations because mobile tribes were a source of strength to the empire. Only with the emergence of ideas in Europe during the second half of the seventeenth century about territorially sovereign states with clear boundaries did the Ottomans become concerned with ruling a settled society (Kasaba 2009: 19-20, 30, 57). Certain

characteristics of the tribes themselves shaped Ottoman policy towards them. A historical study of four nomadic tribes near Ankara argues that geographically bounded tribes and tribes with a strong internal hierarchy were settled via mediation between government officials and tribal authorities, but that geographically scattered tribes without a strong internal hierarchy confronted coercion and military action during their sedentarization processes (Köksal 2006).

The independence of many mobile groups and their tribal structure presented a serious challenge to Ottoman state authority but these same characteristics made pastoralists important to the empire's local and regional networks of production, trade, and administration. The tribes' mobility lent them a threatening military capacity, an advantage that they seem to have frequently turned on vulnerable sedentary communities, travelers, and trade caravans (van Bruinessen 1988: 35; Vryonis Jr. 1971: 268). Raiding particularly increased as pasture situations worsened for the nomads over time. On the other hand, the Ottomans found it convenient to employ this independence and military prowess in the defense of their borders and trade routes, essentially contracting nomadic groups on the frontier to serve as buffers against outside groups and to serve as the state guards of mountain passes (İnalçık 1994: 41; Quataert 1994: 816-817). Large-scale specialized herding can be extremely productive under the right environmental and economic circumstances, and the Ottomans needed to supply their growing urban populations with meat and other animal products. During the sixteenth century, pastoralists in southeastern Anatolia supplied livestock to all of the major Ottoman cities, including İstanbul, Aleppo, Damascus, and Jerusalem (İnalçık 1994: 161). Cooking throughout Anatolia used clarified butter as its primary fat, and nomads were the main producers of this product (Faroqhi 1984: 213). Pastoralists also monopolized land transportation throughout the empire, and some individuals even hired shepherds in order to engage full-time in the transport and trade business (İnalçık 1994: 39; Kasaba 2009). Nomadic tribes and merchants sometimes made mutually beneficial arrangements whereby the tribes provided safe passage to caravans and pack animals for fees (Quataert 1994: 816-817).

The government attempted to generate revenue from the nomad tribes and to control their movements by taxing their possessions and migratory passage on certain routes and by assessing fines to those groups that left the boundaries of their assigned winter or summer quarters. As (Lindner 1983) has argued for the nomadic horse breeders of the Kayseri area, Ottoman registration of mobile people and imposition of taxes and fees may have removed the flexibility from systems that depended on plasticity and continued adaptation. The general effect of animal taxes was that they increased the minimum size of the herd needed for survival. Herds of less than 100 animals were no longer viable, and 300 became the typical minimum herd size across Anatolia. The government did not tax nomads for use of their assigned winter and summer pastures, but fees were assessed if flocks strayed from these pastures or from the assigned routes between them. Even minor fluctuations in climate and usage can have dramatic effects on pasture quality, quantity, and distribution in a given year, and to maintain their herds, shepherds needed to retain the possibility to move the flocks onto better grazing areas, particularly on the migrations between winter and summer quarters. The effect of taxes on pastoral nomads may have been different in southeastern Anatolia because of the more commercialized nature of herding in this area in comparison to central and western Anatolia (Faroqhi 1984: 223, 288; Salzmann 1995) and because of the existence of earlier tax codes, instituted by the Akkoyunlu ruler Uzun Hasan in the last quarter of the fifteenth century (Lindner 1983: 63). Furthermore,

there are many other indications in the tax records that nomadic tribes were able to accumulate wealth and in particular that many pastoral nomad households were better off than sedentary agricultural ones (Murphey 1984: 192-193).

Archaeological data on Ottoman pastoralism is limited to Kaman-Kalehöyük and to two other projects. Archaeologists have frequently dug hastily through the ephemeral layers on tops of more ancient tells, where pastoralists frequently camped during the last millennium. One exception to this generalization is the excellent excavation of a seasonal campsite in the top strata at Ziyaret Tepe, which was marked by stone alignments that were likely the foundations of tents and a variety of ceramics and small finds of the late Ottoman period (Matney et al. 2007: 25-29). Only kilometers away in the same part of southeast Turkey, an intensive survey of upland areas east of Hirbemerdon Tepe also yielded evidence for Ottoman-period pastoralism. The remains of more than twenty campsites of various sizes and layouts lie on sloped terraces beside deeply incised seasonal streams. The campsites were surrounded by other locales with evidence for pastoral activity, including cisterns, caves used as animal pens, stone-walled corrals, stone cairns, and small dams. The characteristics of these campsites and the water collection features that surround them suggest that the area was used as a winter camping area (Hammer 2012: 212-291; 2014; Ur and Hammer 2009).

DISCUSSION

This review has identified significant variation in the characteristics and organization of pastoralism in Anatolia over the last 10,000 years, demonstrating that analogies drawn from modern ethnographies cannot do justice to the diversity of pastoral adaptations in the past. This variation exists in multiple dimensions of pastoral life: mobility, land-use, and animal preferences; target products and herd management strategies; the political organization of pastoral societies; and the social role of animals.

From the available data it appears that pastoral mobility was surprisingly limited in prehistoric Anatolia. In the earliest Neolithic, pastoral practices are difficult to reconstruct because reproductive isolation of developing livestock populations from wild animal populations was rare, and settlements seem to have developed locally variable and unique systems of animal management. By the mid eighth millennium, domesticated populations of caprines, cattle, and pigs, better adapted to living and producing with humans, had emerged and herders were applying recognizable management strategies such as young male culling, foddering, and penning. However, Neolithic herding regimes, which were focused on caprine and secondarily cattle, seem to have been largely tethered to permanent settlements, exploiting relatively small, local catchment zones. There is virtually no evidence for large-scale or long distance movements of herds from summer to winter camps in this early period (but see Makarewicz and Tuross 2012 for evidence of mobility among Neolithic goat herders in the Levant). Although the early development and spread of intensive animal husbandry clearly took place within a social environment characterized by inter-site and inter-regional information (and livestock) exchange, there is currently no evidence that these social networks were facilitated by the presence of highly mobile nomadic pastoralists, which are cited as potential, yet invisible, vectors for inter-regional communication in many periods (Rosen, Tykot, and Gottesman 2005: 775; e.g., Frahm and Feinberg 2013: 1875).

Both vertical and horizontal forms of transhumance were practiced, probably widely, in the Chalcolithic and Bronze Age, but these systems appear again to have been characterized by local-scale mobility. Sheep and goat remained important in Chalcolithic economies, but cattle herding became increasingly significant in the Late Chalcolithic in southeastern and central Anatolia, along with increasing evidence for political complexity and hierarchy. This trend towards the importance of cattle continued into the Early Bronze Age, especially in central and eastern Anatolia, where cattle herding became a central economic and symbolic focus. Communities of the Late Chalcolithic/Early Bronze Age Early Transcaucasian Culture in eastern Anatolia, which have frequently been associated with pastoral nomadism in the archaeological literature, appear to have been only limitedly mobile and to have primarily herded cattle. Although Late Bronze Age Hittite texts indicate that some groups (the Kaska) likely practiced more mobile forms of cattle and caprine pastoralism, their movements seem to have been limited to territories within relatively small polities, and there is no evidence for the regular movement of large numbers of mobile pastoralists as documented Bronze Age texts for northern Syria. A lack of settlements and the appearance of highland cemeteries in eastern Anatolia near Lake Van has been taken as evidence for the presence of transhumant pastoralists in the second millennium BC, but currently no further information exists about these potential transhumant pastoralists or their practices, and data from the Bronze and Iron Age levels of sites in the eastern Anatolian highlands indicates that certain communities were practicing sedentary pastoralism.

In the Iron Age and Roman periods, Anatolian pastoral economies continued to be primarily based on caprines, cattle, and pigs, and there continues to be a lack of empirical data for long-distance mobility by whole communities. Less zooarchaeological data is available for post-Bronze Age periods than for earlier ones, and it is thus difficult to draw broad regional conclusions. Cuneiform documents of several Iron Age empires such as Assyria and Urartu suggest that transhumant pastoral tribes formed an important part of the population in southeastern and eastern Anatolia, but there is no direct archaeological evidence concerning these pastoralists and their pastoral strategies. Roman authors attest to the importance of several regions of central Anatolia in livestock and wool production.

One of our most significant observations is that long distance sheep/goat mobile pastoralism of the type practiced by some ethnographically studied groups, and often projected into the deep past, appears to have been a historically late development in Anatolia. The earliest clear historical and archaeological evidence for large-scale, long-distance pastoral mobility dates to the Byzantine period in southeastern Anatolia (eighth-tenth centuries AD), when both Byzantine and Islamic communities (some migrating out of Arabia) practiced seasonal transhumance that was intertwined with cross-border raiding and trade. Large-scale, long-distance pastoral mobility became widespread in Anatolia following the historically-documented incursion of mobile populations from Central Asia (eleventh-thirteenth centuries AD). Archaeological evidence dating to this period, however, has only been collected from sites whose communities were practicing sedentary village-based herding, where pig often forms an important part of the faunal assemblage.

The height of highly mobile long-distance pastoralism occurred in the thirteenth-fifteenth centuries AD, when powerful Türkmen nomadic confederacies ruled large territories in eastern

and southeastern Anatolia, controlling migration and trade routes. The first clear historical documentation of pasture zones and transhumance routes followed by mobile sheep/goat herders that are similar to those followed in the twentieth century dates to the Akkoyunlu period of the fifteenth century AD in southeastern Turkey and to the period of the Empire of Trebizond of the thirteenth-fifteenth centuries AD in northeastern Turkey. However, these medieval transhumance routes were much more flexible and subject to dramatic changes than they were in later centuries under the Ottoman Empire.

The Ottomans ruled over many mobile pastoral populations engaged in a wide variety of pastoral practices. The medieval and Ottoman periods (eleventh-eighteenth centuries AD) saw an increase in pastoral variability through the widespread incorporation of non-native domesticated herd animals into pastoral economies, in particular camels and water buffalo, which had been rare in previous periods. Pastoral mobility was important to Ottoman networks of food production, trade, administration, and defense, but governments in the late Ottoman period systematically worked to contain and sedentarize mobile pastoral tribes. Those groups that remained mobile into the twentieth century had seen their pasture locations, transhumance routes, herd sizes, and political organization dramatically transformed by centuries of Ottoman taxes and policies.

In terms of ancient pastoral social organization, the evidence from Anatolia suggests a different historical trajectory than that seen in neighboring areas of modern-day Syria. Pastoralism in Anatolia first emerged in the Neolithic within and as part of communities practicing agriculture. Animals and herding played important social and economic roles in Chalcolithic and Bronze Age Anatolian communities that were increasingly hierarchical and oriented towards the production of commodities such as wool and oxen for labor. However, until the first millennium AD, pastoralists appear to have been limitedly mobile, implying that agriculture and pastoralism were intertwined spatially and socially within individual communities. Contrary to this Anatolian evidence, documents from the site of Mari, to the south of Anatolia along the Syrian Euphrates, indicate the existence of distinct, spatially separate social groups related to Mari's sedentary inhabitants who solely or primarily practiced transhumant herding in the Middle Bronze Age. The mobile tribal element and sedentary people at Mari were ruled by Zimri-Lim, who refers to himself as a "nomad king." The influence of the rare picture provided by the Mari tablets has been enormous in near eastern archaeology, and a number of scholars have extrapolated from this evidence to make claims about the widespread existence of specialized mobile pastoralists across the Middle East, including Anatolia, in the Bronze Age and later periods (Arbuckle 2012). However, the Mari texts are exceptional in near eastern history, and the degree to which they are widely generalizable has been debated. Our arguments that clear historical evidence for specialized and independent groups specifically practicing mobile pastoralism in Anatolia does not exist until the Byzantine period suggests that the evidence for Mari is not generalizable northward into Anatolia. It remains unclear whether the lack of evidence for early independent or semi-independent mobile pastoral groups in Anatolia is real or merely due to the fact that archaeological and historical evidence are biased towards the narratives of sedentary groups.

CONCLUSION

Synthesis of the available evidence leads to a number of conclusions concerning the social organization of ancient and pre-modern pastoral groups in Anatolia, the historical time depth of certain pastoral practices observed ethnographically, and the future of Anatolian pastoral studies. In agreement with Potts' (2014) recent analysis of the history of nomads in Iran, and much earlier historical analyses concerning Anatolia (e.g., Planhol 1959), we argue that mobile pastoralism involving long-distance shifts to seasonal pastures by whole communities (i.e., nomadic pastoralism), a practice common among twentieth century groups and one that has been frequently projected back into the prehistory and early history of the region, was a historically late development in Anatolia, occurring in the last 1500-1000 years. However, both transhumant and non-mobile pastoral communities had long, rich, variable traditions in this region reaching back to the Neolithic. Some of these pastoral communities were politically complex, and (mobile) pastoral societies rather than sedentary agricultural polities dominated parts of pre-modern Anatolia for periods during its post-Neolithic history. We emphasize the great limitations of ethnographic analogy in understanding pastoral lifeways in the past, and criticize the widespread tendency to resort to environmental imperatives when speaking about pastoral practices. Pastoralism is a flexible adaptation to changing environments and local historical contexts, not a timeless or homogenous way of life trapped in a Marxian framework of social evolution. We want to refocus the conversation away from ethnographic analogies and long-term continuities in rural life and towards the diversity of strategies, preferences, and types of organization that make pastoralism a heterogeneous set of adaptations through time and space.

Although many more questions remain, archaeologists have made particularly great strides in illuminating the origins of pastoralism in Anatolia. A variety of case studies and comparative analyses indicate that early pastoral practices were diverse, variable, and adapted to local environmental and social conditions. In order to continue to build on the detailed understanding of pastoralism emerging for the Neolithic and Early Chalcolithic in Anatolia, the high-resolution methods utilizing faunal and human osteological materials that are increasingly applied to these early periods must be regularly brought to bear on materials from later periods. Further, paleobotanical methods must be more systematically applied in early and late periods to address questions of grazing versus foddering and the relative health of pasturelands. Although the application of multi-disciplinary work is beginning to take hold in the exploration of the Anatolian Chalcolithic and Bronze Age, it is still rare in later periods. More attention needs to be focused on pastoral diversity in the Iron Age and later periods. (although see the model of recent research concerning the Iron Age and Roman period at Gordion).

Beyond engaging in more zooarchaeological, paleobotanical, and isotopic studies focused on pastoralism and mobility, other steps can increase our knowledge of ancient pastoral practices. Archaeologists investigating all prehistoric and historic periods should excavate a wide variety of sites (not just mounded tells) in all environmental zones of Anatolia. Corrals and campsites directly related to transhumant pastoralism are most likely to be preserved in highland areas, where they will have escaped destruction by modern agriculture. Occasionally also with proper excavation and study, they will be preserved in "abandonment strata" on tells such as Ziyaret Tepe. More systematic survey and excavation are needed in upland landscapes and other agriculturally "marginal" areas in order to overcome archaeology's long-standing research bias towards larger sites in river valleys.

We stress that archaeologists must design collaborative, interdisciplinary research to directly test hypotheses concerning mobility and other dimensions of pastoral life and that they must move beyond the disciplinary and methodological divisions separating studies of pastoralism in the ancient and medieval eras. During future research, archaeologists should avoid making statements regarding pastoral practices (e.g., mobility, seasonality, pasture locations, animal preferences) without proper investigation through coordinated survey, excavation, and zooarchaeological, paleobotanical, and isotope analyses. Only by limiting conclusions to concrete evidence can we stop the unfortunate tendency to uncritically deploy “nomads” as an explanation for times, spaces, and movement processes that archaeology cannot yet otherwise explain. A major challenge going forward is to overcome the methodological and disciplinary divides separating the study of pastoralism in the prehistoric, ancient historic, Classical, and post-Classical periods. This will involve not only the collection of comparable archaeological material for all periods (i.e., more faunal, botanical, and survey data for the later periods), but also the resolution of the tensions that inevitably arise between purely archaeological and purely historical data in order to draw synthetic conclusions.

In short, there is exciting potential to continue to rapidly expand our understanding of the role of pastoralism in the history and prehistory of Anatolia. Identifying the historical depth of ethnographically documented pastoral practices and more fully documenting the variability present in pre-modern pastoral practices are essential for moving beyond the “tyranny of the ethnohistoric record” and developing a more detailed, subtle, and accurate picture of pastoralism in Anatolia.

FIGURE CAPTIONS

Figure 1: Physical geography of Anatolia with the features mentioned in the text. Topographic data from the Shuttle Radar Topography Mission.

Figure 2: Archaeological sites and modern cities mentioned in the text. Topographic data from the Shuttle Radar Topography Mission.

Figure 3: Chart summarizing the date of the earliest evidence for certain ethnographically documented pastoral practices and characteristics in Anatolia.

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