Faunal Remains as an Indicator of Change in Social Stratification at Pecica *Şanţul Mare*

Brett Meyer

Department of Archaeology and Anthropology, University of Wisconsin-La Crosse, La Crosse, WI

Student: brettmeyer04@gmail.com
Mentor: anicodemus@uwlax.edu

ABSTRACT
The Bronze Age tell settlement of Pecica "Şanţul Mare" in Romania is regarded as a regional center of the Mureş culture due to the flourishing of higher-status activity experienced during the Florescent Period (1820-1680 B.C.). Recent excavations at the site began to examine whether this higher-status activity was present during the Initial Period (1950-1900 B.C.), the earliest period, or if it grew out of the transition between these periods. This analysis compared faunal remains from the Initial Period and the Florescent Period to examine changing inequality over time. Species utilization, cull patterns, and body part representation were used to infer social organization during these periods. The combination of secondary product utilization, low quantity of horse, and presence of low quality meat during the Initial Period suggests that social inequality intensified over time and reached its pinnacle during the Florescent Period. These results can also be used to examine the development of social stratification in the Bronze Age as a whole.

KEYWORDS
Pecica; Zooarchaeology; Social organization; Power and Wealth; Bronze Age; Elite Activity; Horse Breeding; Tell Settlement

1. INTRODUCTION

Social and economic inequalities, political hierarchies, and other forms of social stratification are almost ubiquitous throughout the world today. Since very few societies today are egalitarian, the concept of everyone being equal can be difficult for people to grasp. However, for most of human history, societies have been organized in relatively egalitarian forms. The process of transitioning to a more socially stratified society is an important focal point to study as it reveals how power structures develop. By looking at this transition, it is possible to understand how humans acquire and consolidate power as well as the changes that occur in the everyday lives of the people, such as subsistence strategies, trade, and social relations.

The Bronze Age site of Pecica "Şanţul Mare" in present-day Romania (**Figures 1 and 2**) provides a compelling case study for the development of social stratification and the emergence of power. According to O'Shea and Nicodemus,[1] Pecica was an economic center sitting along the Mureş River, which enabled its inhabitants to control trade from the Carpathian Mountains to the confluence of the Tisza and Mureş rivers. Its regional prominence manifested itself through the trade of horses and metal production. Though it started off as a small tell settlement, Pecica quickly grew into one of the largest settlements of the Mureş (Maros[A]) culture through the aggregation of people from other abandoned settlements.[1] Pecica thus serves as an excellent case study for examining the emerging social hierarchy of the Mureş culture as well as the Bronze Age more generally.

Figure 1. Location of Romania in Eastern Europe.

Figure 2. Location of Pecica Şanţul Mare in Romania.

A. Since Pecica is in Romania, the Romanian spelling, Mureş, is used rather than the Hungarian spelling, Maros.

Recent excavations at the site (2005-2015) have begun to study this development. While these excavations have revealed an abundance of information regarding the later periods of the site, including its peak, the early periods have received little analysis. Understanding the development of social stratification from the early periods to its peak not only benefits the comprehension of the site's transition, but it also allows for better insight into emerging stratification during the Bronze Age on a broader scale. As such, it is imperative to examine the early periods to better understand the characteristics that existed before social stratification developed or when it was in its preliminary stages. This can then be compared to what is already known to add to the larger picture of the development of power during the Bronze Age.

Previous research has focused on metal or other human-made artifacts to examine social stratification during the Bronze Age. However, the excellent preservation of faunal remains at Pecica allows for the analysis of animal usage to provide a lens to study developing stratification. By examining changes in the frequency of certain species, skeletal elements, and age categories, shifts in animal management and preferential consumption of quality meat can be observed. These shifts can be used to examine how those in power are controlling the animal economy and when they solidified their power. At Pecica, changes in the composition of the faunal assemblage between periods permits tracing the shifts in the animal economy over time. Through the comparison of periods, general trends can be established, and the timeline of development can be narrowed.

Social stratification at Pecica was most prominent during the Florescent Period (1820-1680 cal. B.C.) during which horse breeding and metal trade were at their peak. Based on previous research, it is unclear whether social stratification developed during the Formative Period (1900-1820 cal. B.C.), immediately preceding the Florescent Period, or was present in the Initial Period (1950-1900 cal. B.C.), when the site was first founded.[1] The faunal data from layers Ea7 and F was used to examine the degree of social stratification between periods. The data from these two layers will be used to discern what species were exploited, the culling patterns of these species, and what body parts were most common which are used to identify the presence of social distinctions.

The study of the development between the Initial and Florescent periods will not only contribute to the understanding of changes at Pecica, but also other changes in the region and the Bronze Age as well. It can also be used as a proxy for the development of social hierarchies among the Mureş culture in Eastern Europe. Finally, it serves as an example of broader trends taking place throughout Europe during the Bronze Age. Through the examination of the faunal assemblage from the early periods at Pecica, the development of social stratification can be applied to various scales from the site specifically to the Bronze Age as a whole.

2. BACKGROUND

2.1 The Bronze Age

In Eastern Europe, the Bronze Age lasted from 2800-700 cal. B.C. (**Table 1**) and was characterized by an increase in metal production and trade, particularly Bronze for which it gets its name.[2] At the climax, the exchange networks reached across most of Europe.[3] It was through these networks that horse trading also took place and became the one of the distinguishing attributes of Pecica. At the heart of the trade in the Carpathian Mountains was the Danube River with its branches, including the Tisza and Mureş (**Figure 3**), also playing a significant role in the trade and development of the regions

Early Bronze Age	2800/2500-2000/1800 B.C.
Middle Bronze Age	2000/1800-1400/1200 B.C.
Late Bronze Age	1400/1200-700 B.C.

Table 1. Eastern European Bronze Age chronology.

As a result of the propensity for trade, many settlements were built along the rivers. Settlements in this region existed in two forms: tells and "open" sites. A tell site is a settlement that has been built on the debris of previous habitation making the site located on a mound or hill. Tell sites were typically fortified by surrounding ditches or embankments. Open sites, on the other hand, are sites located off-tell and are unfortified. While residences were mostly off-tell, the tell settlements were typically the location of the social and political hierarchy with the surrounding open sites falling under its control.

An example of a tell settlement system can be seen at Százholombatta, a site similar to Pecica, in Hungary. This fortified tell settlement was divided internally into the acropolis and the village with smaller, outlying settlements also under its power.[2] This is a good example of the division of power within the site and between the site and surrounding villages. Tell settlements, like Százholombatta, were highly populated but did not reach their zenith until the Middle Bronze Age (2000-1200 cal. B.C.). It is during this time that stratification within societies became clearer.[2] This period also marks the founding of Pecica and the development toward its eventual stratification.

While the tell may have been the seat of power, it is the surrounding settlements that supported the tell and provided the resources necessary to survive. The outlying villages grew wheat, barley, and millet, as well as raised animals for their own use but

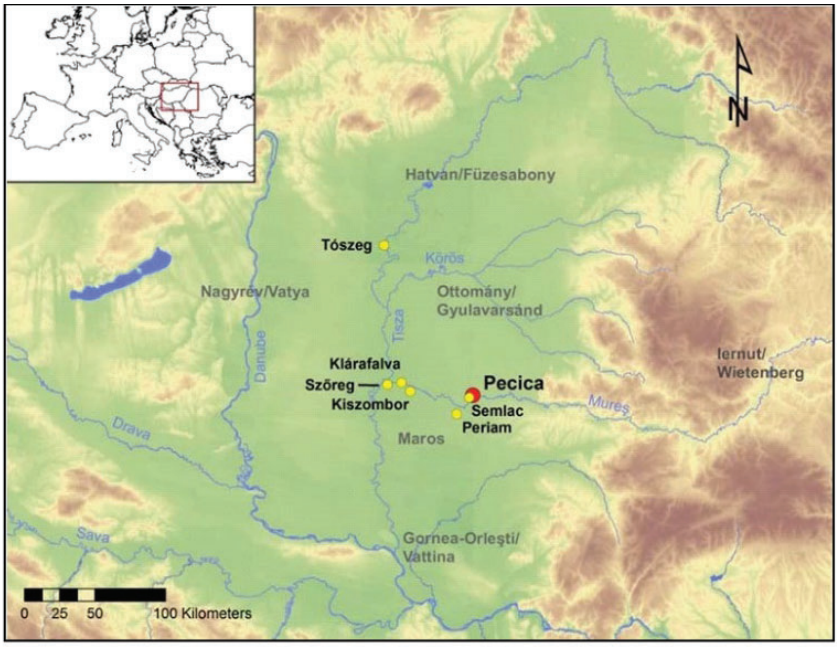

Figure 3. Location of Pecica and other Mureş sites in the Carpathian Basin, except Toszeg.[4]

also to supply the tell.[2] Sheep and goats (caprines) were the dominant species for consumption followed by cattle and pigs. Horses and dogs were also present but served mostly the purpose of supplying secondary products, such as labor and companionship.[2] The settlements primarily subsisted on these domesticates but supplemented their diet with wild animals as well. It is through these animals, both wild and domestic, that Pecica will be examined.

2.2 The Mureş Culture

Pecica is part of the larger cultural group known as the Mureş. However, while Pecica is culturally similar to other Mureş groups, it is politically different. It is the political differences that make Pecica unique. As such, Pecica is referred to as the Middle Mureş, while other groups in the region are referred to as the Lower Mureş. These designations refer to their location on the Mureş River as well as designate their differences.

John O'Shea's book, *Villagers of the Maros: A Portrait of an Early Bronze Age Society*,[5] explores this culture group in detail. Inhabiting the marshland regions at the confluence of the Tisza and Mureş Rivers in present-day Hungary, Serbia, and Romania, the (Lower) Mureş culture existed from 2700-1500 cal. B.C. and is known for its highly-structured cemeteries. Based on these cemeteries, status differences could be determined by the presence of certain burial objects. In addition, symbolic treatment like orienting the body north versus south to indicate sex.[5] However, this only allows for social status to be examined in relation to the cemetery and not specific settlements since several villages are associated with a single cemetery.

Like the other Bronze Age cultures in this region, the Mureş built tell settlements surrounded by satellite communities. According to O'Shea,[5] these satellite settlements focused on agriculture, which included growing barley and einkorn wheat and exploiting a variety of animals. The economy was based on raising livestock as well as weaving cloth, manufacturing ceramics, and metallurgy.[5] Pecica exhibits these same characteristics.

As stated earlier, while the cultural characteristics are similar, the political structure of groups on the Lower Mureş and Middle Mureş, including Pecica, differ. The Lower Mureş communities were organized in autonomous villages where each village was self-sufficient and independent from the rest. These groups typically consisted of small hamlets. This is contrasted with Middle Mureş groups, however, which were organized around a two-tiered hierarchy, or simple chiefdom, with the central site being a large fortified tell, such as Pecica.[1,5] Under this system, Pecica was the center of power and had control over the surrounding villages. As a result, there existed an obligatory flow of materials from the outer villages to Pecica at the center due to the political asymmetry between the two. This typically was exhibited by the smaller villages paying tribute in the form of subsistence goods to the political center.

2.3 Pecica

2.3.1 History of Excavations

According to O'Shea *et al.*,[6] archaeological excavations have been carried out at Pecica as early as the nineteenth century. The earliest known excavations were done by Ladislau Dömötör in 1898 and subsequent excavations were carried out sporadically through the 1960s. However, these excavations only explored the Iron Age deposits at the site. As a result, the Bronze Age deposits were left intact until a project led by John O'Shea, Florin Draşovean, and Peter Hügel aimed to excavate and analyze these layers beginning in 2005.[6] The preliminary analysis of the Bronze Age deposits concluded that the majority of faunal remains consisted of livestock, which increased in frequency over time compared to wild resources. Pigs (*Sus scrofa domesticus*) were common in all levels as well as caprines, the latter of which increased in proportion over time. In addition, carp (*Cyprinidae*) were common.[7]

During the next few excavation seasons, the faunal remains continued the trend of being dominated by domestic livestock. However, the prevalence of fish changed as very few fish were found in these earlier deposits. They were replaced by the influx of an abundance of horse (*Equus caballus*) remains during the Florescent Period, which would become known as the peak of the site. The importance of horse at the site can be seen through the presence of a row of features in which horse long bones were vertically placed in association with braziers.[8] This placement probably represents ritual activity, demonstrating the significance of horse during this period.

Following the 2009 season, Nicodemus[9] reported on the preliminary results of all the fauna analyzed up to that point. Overall, the fauna at Pecica has a heavy reliance on animal husbandry. Caprines were most abundant followed by pigs and cattle which were used equally. Caprines were raised for their meat as evidenced by the killing of prime-aged subadults. Pigs, on the other hand, were killed in their first year to control the population size since not many animals are required for breeding. Cattle were used primarily as a meat source, though they were also exploited for dairy as evidenced by sex data.[9]

2.3.2 Chronology

Pecica's history is divided into four periods (**Table 2**). The first period is the Initial Period and lasted from 1950-1900 cal. B.C. This period was characterized by an economy reliant on metal working and other craft production along with long distance trade.[1]

Era	Culture Group	Site Period	Site Phase	Date (cal. BC)	Site Layers	Structures	Major Developments
Medieval	Árpád			AD 1000-1100*		Str. 9	
Iron Age	Dacian			300-100	(intrusive pits)**		
Middle Bronze Age	Mureş	Final	1	1615-1545	B1-3	Str. 0	Final MBA occupation
			2	1680-1615	C1-3	Str. 0, 1	Decline in occupation intensity, settlement contraction
		Florescent	3	1765-1680	C4-5/ D0-2	Str. 2, 4, 10	Peak metallurgical production, platform construction, settlement expansion
			4	1820-1765	D3, E1	Str. 3, 4	Peak horse breeding, feasting deposits
		Formative	5a	1875-1820	E2-3	Str. 5-8	Final combed ware, initial baroque ceramics
			5b	1900-1875	E4-6	Str. 11, 14	Construction of 'great ditch,' establishment of central site plan, construction of central plaza
		Initial	6	1920-1900	E7-F	Str. 15	First rusticated wares
Early Bronze Age			7	1950-1920	G-I	Str. 12, 18	Site leveled, erection of ritual structures
Middle Copper Age	Hunyadi halom			3935-3800	J-M	Str. 13, 16	

*date from off-tell Medieval Structure 9 (in test unit 3)
**Medieval and Dacian layers and features excavated in block area by Crişan (1978).
Only several deep Dacian pits cutting into Bronze Age deposits left *in situ* and dated

Table 2. Chronology of Pecica including Copper Age and Iron Age settlements.[11]

The subsistence economy during these early periods was focused on raising livestock with an emphasis on secondary products. Activities like hunting, fishing, fowling, and mollusk collecting took secondary roles.[10]

What makes this period unique, aside from the founding of the settlement, was the discovery of pierced pig mandibles in the floor of a house in association with broken and unfinished axes. These were found in a house with a series of objects argued to be legs to an altar, some of which were zoomorphic.[1] While this suggests ritualistic behavior and possibly the presence of higher-status individuals, not much is known about the social organization during this period. As such, research to this point has been unable to determine the magnitude of the presence of higher-status individuals during this period.

The next period is the Formative Period, which continued until 1820 cal. B.C. Metallurgy and craft production continued to abound, however, the subsistence economy changed. It appears that neighboring tells may be subsidiaries of Pecica by providing labor and subsistence goods to those on the tell. Regardless, there is still evidence of the management of livestock on the tell. The Formative Period also experienced an intensification of horse production, which carries over into the following period.[1]

Following the Formative Period, the Florescent Period, which lasted until 1680 cal. B.C., was the pinnacle of Pecica's regional influence.[10] This period experienced an increase in occupation intensity that was concurrent with a peak in horse production and metallurgy. Horse breeding became the main focus of the higher-status individuals during this period and it appears they engaged in conspicuous consumption of prime reproductive-age mares. In addition, horse trading flourished with age and sex data indicating local stock breeding. This is also the period in which the vertical bone pits were found, representing remains of feasts focused on valuable breeding mares, demonstrating an even further emphasis on horse as a ritualized animal. Horses became symbols of status and prestige and create the basis of this period.

With the pronounced presence of higher-status activity on the tell came changes in the subsistence economy. There was a shift from an emphasis on secondary products to the increase of high-quality meat on the tell, presumably for consumption by higher-status individuals. In addition, the presence of off-tell settlements became pronounced, though they did not have access to this high-quality meat.[1] This disparity in meat quality, as well as significant socioeconomic differentiation, exhibits the separation of the two settlement areas with the tell at the center and the off-tell settlement serving a subsidiary role. The Florescent Period is the first instance when intense higher-status activity is definitively seen so far, though more research is required to examine when this stratification emerged since this period is the peak of this activity.

The Final Period at the site saw a quick collapse and abandonment of the tell by 1545 cal. B.C. The intense metalworking, horse production, and manufacturing of high-value crafts all broke down and were replaced once again by a generalized subsistence economy. This site would not be occupied again until the Iron Age when the Dacians built a settlement here. Pecica was not the only settlement to meet its end in this region. Around this time, all remaining Mureş settlements were abandoned as well as most polities across the Carpathian Basin.[1]

It can be seen through this overview of the chronology of the site that the later periods, particularly the Florescent and Final periods, are well understood. However, the analysis of the earlier periods is lacking, and much is yet to be learned. One glaring gap that is the focus of this paper is the insufficient understanding of the social organization preceding the Florescent Period. While it is obvious that this period exhibits the height of control by higher-status individuals and social stratification at the site, the knowledge of the beginning and transition to this consolidation of power is missing.

2.3.3 Indicators of Status

The results of this faunal analysis can do more than just demonstrate what the inhabitants of Pecica were eating and using for work. The fauna can also be used to infer social organization, including the presence of inequality. Nicodemus's article "Food, Status, and Power: Animal Production and Consumption Practices during the Carpathian Basin Bronze Age"[12] examines the role animals play as markers of status. Food can be manipulated by the higher-status individuals since they prefer meat with higher quality, quantity, and procurement costs because it demonstrates the power and wealth they obtain to be able to afford this more costly meat. Therefore, social differentiation can be exhibited by a shift to high quality products rather than focusing on less costly animals that minimize risk, typical in small scale breeding practices.[12, 13] It seems that, early on at the site, Pecica's animal economy was focused on a mixed strategy of large quantities of meat and secondary products and was characterized by a low number of horses. However, during the Florescent Period there was an increase in horse remains at the expense of caprines, which was coupled with an increase in the culling of young animals and scheduled off take indicating a control of the economy by higher-status individuals.[14]

Political centralization and social inequality can also be shown through a tribute system where outlying settlements give goods to the tell settlement, demonstrating that they are under the control of the tell.[12, 15] Smaller scale societies and those without

stratification take place in a direct distribution system where goods go directly from the producer to the consumer.[14, 15] For example, in a direct distribution system, the crops and animals that are grown or raised by the producers would be directly exchanged with the people of the village. Larger scale and stratified societies, on the other hand, are usually characterized by indirect distribution systems where the consumer does not receive goods directly from the producer. These systems may include provisioning, which focuses on animals that have achieved maximum body weight, large animals, and favors animals of a particular age and sex to show power over herd reproduction.[14, 15] In this system, the higher-status individuals on the tell receive tribute from the surrounding settlements and then redistribute it to support their agendas and some may be given to the people of their tell, which in turn solidifies their power. However, the redistribution by the higher-status individuals is not an act of generosity. This action serves to create hierarchy, display power, and generate debt relationships. In some cases, the goods may never be redistributed to the people but rather kept by the higher-status individuals to support their own interests. Pecica exhibited only a direct distribution system at the beginning and end of its occupation but displayed some aspects of an indirect distribution system at its peak as well when higher-status individuals were most prevalent.

In addition to these indicators of social stratification, differences in status are also apparent through feasting activities, which are evidenced by collections of high quality parts, large animals not consumed on a daily basis, and animals with a symbolic significance. The vertical horse bone pits mentioned earlier hint at the occurrence of feasting, which is furthered by the evidence that these bones were protruding above the ground surface as a display of conspicuous consumption. Supplementary evidence for feasting at Pecica comes from deposits containing bones of large animals and high-quality meat portions. The use of high-quality meat on-tell contrasts with the low-quality body parts found off-tell.[14]

The presence of horses at Pecica is a unique indicator of social stratification since they were used for more than just transportation. Horses were used in ritual feasting, in the case of the bone pits, as well as prestige items in trade. Pecica was one of the only settlements in the region with horse breeding, giving it a monopoly on horse trading. For this reason, the use of horses in ritual feasting is even more significant since it was a display of power by being able to kill and eat such a valuable animal.[14]

3. METHODS AND PROCEDURES

Using basic faunal analysis techniques, faunal remains from two layers and their associated features from the Initial Period were studied to gain a better idea of the role animals played in society at Pecica. Layer Ea7 and Layer F were chosen to answer this question because they had not been analyzed yet, and they would give an insight into what was occurring with the animal economy during the early periods at the site. Much is known about other aspects of the economy during these periods, but there is no faunal data to supplement this.

Layers Ea7 and F date to roughly 1920-1900 cal. B.C. These layers exist outside of the structures and therefore contain generalized refuse debris rather than debris from specific households. The faunal remains from these layers was collected by hand recovery. Flotation was done throughout the site to check for bias against fish in the recovery method. However, most bone found through flotation was unidentifiable mammal with very little fish, most of which was unidentifiable.[11] As a result, the use hand recovery does not significantly affect the results.

For analysis purposes, these layers are not only examined on their own, but they are also combined with other Initial Period data when appropriate to increase sample size. Initial analysis began with identifying all remains to taxon, element, portion, side, age, and sex when possible. Identification was accomplished through the use of the reference collection at the Mississippi Valley Archaeological Center as well as the *Atlas of Animal Bones: For Prehistorians, Archaeologists, and Quaternary Geologists* by Schmid.[16] While a concerted effort was made to identify all remains, many were too fragmented to identify beyond their class size. For those that were identifiable, taxon was narrowed down to species if possible and elements were identified by diagnostic characteristics.

Determining the differences in goat (*Capra hircus*) and sheep (*Ovis aries*), which exhibit similar skeletal morphology, was aided through guides by Boessneck,[17] Zeder and Lapham,[18] and Zeder and Pilaar.[19] In many cases, the differences between goat and sheep were unable to be distinguished and were subsequently placed in a general caprine category. Age was recorded based on dental wear stages. Dental wear stages were established according to the stages laid out by Grant.[20] Age was also examined through epiphyseal fusion, but the sample sizes were too small. There was also a high degree of carnivore destruction, which disproportionately affects bones that fuse later. For these reasons, epiphyseal fusion data was eliminated to prevent skewed results. In addition, basic measurements of the bones were taken in accordance with the standard measurements found in *A Guide to the Measurement of Animal Bones from Archaeological Sites* by von den Driesch.[21]

With this set of data, the basic quantification methods of NISP (number of identified specimens) and MNI (minimum number of individuals) were calculated. NISP is calculated by counting the number of specimens or the total number of elements. This method generates the maximum number of individuals at the site, however it is limited in that it does not account for associated

elements and ignores the role of fragmentation. MNI, on the other hand, counts the quantity of the most abundant element from a single side. This produces the minimum number of individuals possible at the site, which means it does not over-estimate taxa and it takes associated elements into account. However, it can over-represent certain taxa that may not actually be abundant and is affected by animals without symmetrical elements.[13, 22] Overall, NISP minimizes the importance of species represented by only a few specimens and exaggerates the importance of those easily recognizable, while MNI over-emphasizes the importance of rare animals, specifically in highly fragmented assemblages.[22] For this analysis, MNI was calculated separately for each layer because they are stratigraphically distinct and are therefore mutually exclusive.

These two methods were used to not only give a general overview of animal use at the site, but also to begin looking for differences in species exploitation within the Initial Period and across periods at the site. Using these numbers, %NISP and %MNI were calculated to indicate further differences in species exploitation by variations in the percentages of certain species or animal classes. These percentages were calculated by dividing the NISP or MNI of a certain taxa or size class by the total NISP or MNI for each layer.

In addition to basic bone counts, the significance of meat was also studied through meat utility. This examined the quantity of meat for an element since higher-status individuals generally prefer meatier elements with better cuts of meat.[23] Utility classes were based on Binford[24] and were divided into very high, high, medium, low, and very low. The different classes and the elements associated with each can be seen in **Table 3**. Broader classes were examined by combining very high through medium into a higher category and low and very low into a lower category, which was useful when small sample sizes were encountered. These classifications can be used to establish if there was a focus on higher quality body parts during certain periods or in certain areas that could indicate potential status differences.

Utility Class	MGUI	Element	Utility Class	MGUI	Element
Very high	100-80	rib	Medium	30-20	radius
		costal cartilage			ulna
		sternebra			astragalus
		pelvis			calcaneus
		sacrum			naviculocuboid
		femur	Low	20-10	cranium
		patella			atlas
High	55-30	mandible (with tongue)			axis
		hyoid			carpals
		cervical vertebra (no C1/2)			metacarpals
		thoracic vertebra			tarsals
		lumbar vertebra			metatarsals
		vertebra (gen)			caudal vertebra
		scapula	Very low	<10	1 phalanx
		humerus			2 phalanx
		tibia			3 phalanx
		fibula			sesamoid
					horn core
					antler

Table 3. Meat utility classes for artiodactyls.[11]

As explained earlier, dental ages were recorded according to Grant,[20] which were used to create mortality profiles. These profiles indicate different culling, or killing, patterns. These patterns can inform on the primary use of animals at the site. For example, an economy focused on meat procurement will exhibit a high culling of prime-age animals, while one focused on secondary products will exhibit a high culling of old age animals.[22, 25] A natural mortality profile shows both medium deaths of young as well as old animals with only a few deaths of prime-age individuals. Based on this, deviation from this profile indicates the use of animals by humans, especially in the case of a high culling of young animals, which could be an indicator of preferential access to meat by higher-status individuals.[22] In addition to being an indicator of animal use, the aging data also assist in narrowing the MNI counts by either eliminating or demonstrating the possibility that two elements belong to the same individual.

A final statistical analysis of the data was done with chi-square tests to examine the variability in the data within the assemblage and across periods at the site. Chi-square tests can test for variability in the NISP and MNI, counts of meat utility categories, and age ranges. These tests allow distinctions to be made as to whether the Initial and Florescent periods are similar or different regarding these variables. It can then be evaluated whether or not high levels of social inequality were already present as early as the Initial Period or if it appeared later during the transition in the Formative Period.

4. RESULTS

The results of this analysis focus on three lines of evidence: species exploitation, culling patterns, and body part representation. The analysis of NISP and MNI can inform on the species that were most important to the economy and the diet of the people at Pecica. The mortality profiles created by the dental ages display the cull patterns that occurred and indicate the preference for animals during the different periods at the site. It is important to note that sex data would be beneficial to better understand these mortality profiles, however there were only three elements that could be reliably sexed. Finally, body part representation is used to show potential differential access to meat, which in turn is used as an indicator of social stratification. In all of these categories, differences observed between the Initial and Florescent periods may be either an indication of a shift in social and political organization resulting in the emergence of stratification or an increase in the social differentiation that was already present at the beginning of the site.

All three categories were analyzed first by comparing layers Ea7 and F to identify any differences and argue for the validity in combining these two layers with each other as one analytical unit. Once determined that the two layers were similar, they were combined with existing data from the Initial Period, and the results were compared to the Florescent Period to examine broader trends over time. The layers were able to be combined with previous Initial Period data since other evidence, such as craft production, was also similar indicating a congruence between the samples.

4.1 Species Exploitation

4.1.1NISP

At Pecica, the NISP data (**Table 4, Table 5, and Table 6)** reveal an economy based on caprines (*Capra hircus*, *Ovis aries*, and *Caprinae*), pigs (*Sus scrofa domesticus*), and cattle (*Bos taurus*). Overall, caprines make up the largest proportion of livestock including horses at 71% for Layer Ea7 and 75.9% for Layer F for a total of 73.4% of the total NISP. Pig follows behind with 21.8% and 15.8% for Layer Ea7 and F respectively and 18.9% of the total. While the NISP for cattle consists of approximately 20 specimens per layer, they only equal 6.8% and 7.5% of the assemblage for Layers Ea7 and F respectively and 7.5% of the total. Even though horse (*Equus caballus*) is also included in the calculations of proportion of livestock, only one horse element was found between the two layers making it 0.2% of the total assemblage.

Species	Ea7	F
Mollusk	544	1364
Sheep/Goat	180	190
Pig	64	44
Cattle	20	23
Sheep	15	17
Goat	13	4
Red Deer	13	2
Domestic Dog	4	4
Roe Deer	2	1
Horse	1	0
Wels Catfish	0	1

Table 4. NISP of all faunal remains for Layer Ea7 and Layer F.

To examine the significance of the variation in abundance of taxa identified to species, chi-square tests were used. It can be determined that the differences in NISP observed between layers Ea7 and F are not significant ($\chi2 = 4.544$, df = 3, p = .208), and they can therefore be combined for comparison as a single unit. These layers also can be combined with the data from previous analysis from the Initial Period, done by Amy Nicodemus in 2005 and 2014-15, and be compared to the Florescent Period.

When combined, the proportions of each livestock taxon are similar between this previous data and the new results. The united data show that caprines comprise 64.9%, pig 22.4%, cattle 12.4%, and horse only 0.3% of the total assemblage for the Initial Period (**Table 6)**. When compared to the Florescent Period (**Figure 4**), where the assemblage is distributed with 33.8% caprines, 27% pig, 18.8% cattle, and 20.5% horse, there is a significant shift in the utilization of livestock animals, as indicated by the NISP ($\chi2 = 410.1$, df = 3, $p<.0001$). In particular, there is a far lower use of caprines and a dramatic increase in the number of horses.

Class	Ea7	F	Total
Mollusk	37.0%	58.2%	50.1%
Mammal	62.8%	41.4%	49.6%
Fish	0.2%	0.3%	0.3%

Table 5. %NISP by class for Layer Ea7, Layer F, and total.

While the focus was on domestic animals, they also exploited wild resources. Though small, a total NISP of 15 red deer (*Cervus elaphus*) and 3 roe deer (*Capreolus capreolus*) bones were found in layers Ea7 and F. As a result, wild mammals consisted of 3.0% of the total mammal remains. This contribution is comparable to the wild mammal used throughout the other periods at the site. There was also a small contribution of fish, which comprise 0.3% of the total assemblage **(Table 5)**. More significantly, mollusks contributed an enormous portion of the assemblage with 50.1% of total faunal remains **(Table 5)**. This is almost equal to the %NISP of mammals, but nonetheless does not represent a large quantity of meat.

	Layer Ea7				Layer F				Initial Period			
Species	**NISP**		**MNI**		**NISP**		**MNI**		**NISP**		**MNI**	
Caprine	208	71.0%	10	52.6%	211	75.9%	8	61.5%	754	64.9%	31	59.6%
Pig	64	21.8%	5	26.3%	44	15.8%	3	23.1%	260	22.4%	8	15.4%
Cattle	20	6.8%	3	15.8%	23	7.5%	2	5.3%	144	12.4%	11	21.2%
Horse	1	0.3%	1	5.3%	0	0.0%	0	0.0%	3	0.3%	2	3.8%

Table 6. NISP and MNI counts of livestock for both layers and the Initial Period as a whole.

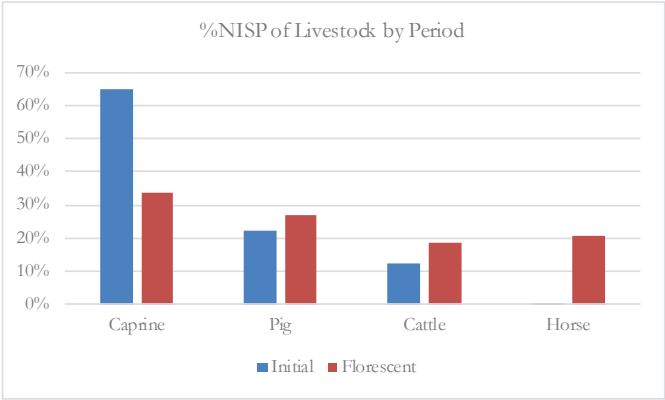

Figure 4. Percent NISP comparison of Initial Period (n=1161) and Florescent Period (n=1970).

4.1.2 MNI

MNI, as shown in **Table 7**, was calculated to compare against the results given by NISP data and to estimate a lower limit for the number of individuals present at the site. As was seen with the NISP, caprines were most abundant with pig and cattle following behind. The smallest MNI belongs to horse again with the presence of only a single element between both layers. Based on the MNIs, the distribution of livestock between the layers is similar to those of the NISPs with caprines at 52.6% for Layer Ea7 and 61.5% for Layer F, pig at 26.3% and 23.1%, cattle at 15.8% and 5.3%, and horse comprising only 5.3% and 0%. The total distribution of livestock for these two layers includes: 56.3% caprine, 25% pig, 15.6% cattle, and 3.1% horse. These numbers indicate a similar trend to what was seen with the NISP with an emphasis on caprines and a lack of horse.

Species	Ea7	F
Mollusk	81	175
Pig	5	3
Sheep	4	3
Sheep/Goat	2	4
Goat	4	1
Cattle	3	2
Domestic Dog	1	1
Roe Deer	1	1
Red Deer	1	1
Horse	1	0

Table 7. MNI and %MNI of Layer Ea7 and Layer F.

When these two layers are compared to each other, they also indicate that the differences in MNI between these layers are not significant ($\chi 2 = .826$, df = 3, p = .8431), and they can thus be combined into a single unit. When added to the preexisting data from Initial Period, the distribution of livestock is 59.6% caprine, 15.4% pig, 21.2% cattle, and 3.8% horse (**Table 6**). This compares to the Florescent Period assemblage of 30.1% caprine, 17.7% pig, 20% cattle and 31.5% (**Figures 5**). Like the NISP data, there is a significant difference ($\chi 2 = 20.12$, df = 3, p = .0002) between the MNIs of the Initial and Florescent periods.

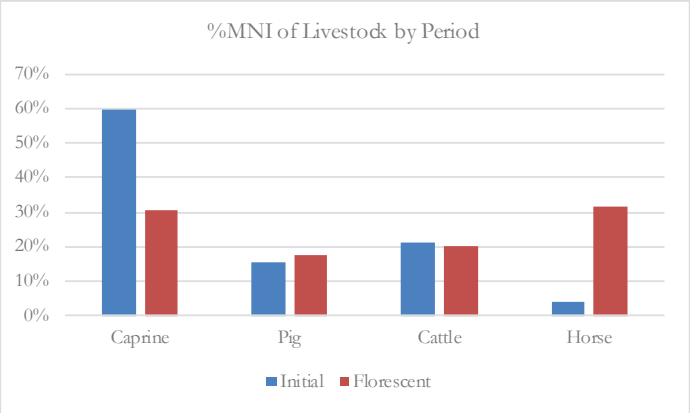

Figure 5. %MNI comparison of Initial Period (n=52) and Florescent Period (n=130).

As stated earlier, while domestic livestock make up a large portion of the assemblage, the people of Pecica did also utilize wild resources. Though comprising a small percentage of the assemblage, both layers contained a MNI of one red deer and one roe deer. The contribution of these animals was slim with them supplying only 10.5% of the total mammal remains. However, like the NISP, this contribution is similar to what is observed in the other periods at the site. Fish once again comprise a small portion of the assemblage at 1% **(Table 8)**. However, mollusks comprise the majority of the assemblage at 83% compared to only 15.8% for mammals **(Table 8)**.

Class	Ea7	F	Total
Mollusk	73.2%	88.4%	83.0%
Mammal	25.9%	10.1%	15.8%
Fish	0.9%	1.0%	1.0%

Table 8. %MNI by class for Layer Ea7, Layer F, and total.

4.2 Mortality and Aging

4.2.1 Dental Ages

Dental ages were first broken down by an age range in months and then converted into the more condensed categories of juvenile (less than 12 months), subadult (12-36 months), and adult (greater than 36 months) to coincide with the categories of young, prime-aged, and old for analyzing the age category preferred during the Initial Period.

	Caprine			Sus			Bos		
Layer	Juvenile	Subadult	Adult	Juvenile	Subadult	Adult	Juvenile	Subadult	Adult
Ea7	2	9	6	1.5	3.5	0	0	0	0
F	1	0	1	1	3	1	0	1	1
Period									
Initial	7	17	18	4.5	17.5	1	0	3	5
Florescent	5.5	12.5	5	20	18	2	6.5	12.5	7

Table 9. MNIs of each age category for livestock between layers and periods.

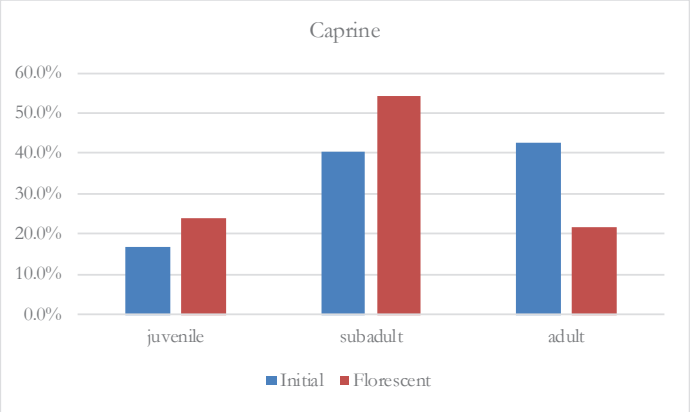

Figure 6. Comparison of age classes for caprines (Initial n=42, Florescent n=23).

4.2.1.1 Caprines

Among caprines, most individuals fell into the subadult and adult categories in the Initial Period when combined with layers Ea7 and F (**Table 9**). This indicates a focus on secondary products, like wool and milk, and animals which have reached maximum weight. When the distribution for the Initial Period[B] (16.7% juvenile, 40.5% subadult, and 42.9% adult) is compared the Florescent Period (23.9% juvenile, 54.3% subadult, and 21.7% adult) (**Figure 6**), the variations in the MNIs of the categories are not significant ($\chi 2 = 2.909$, df = 2, p = .234). However, while not statistically significant, substantial differences are seen in the age classes, which indicates a shift from a focus on secondary products to an emphasis on younger animals and high-quality meat production.

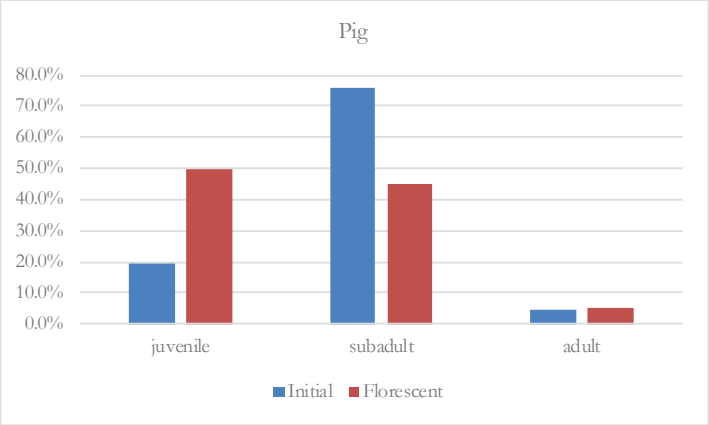

Figure 7. Comparison of age classes for pig (Initial n=23, Florescent n=40).

4.2.1.2 Pig

The majority of pigs fell into the subadult category during the Initial Period (**Table 9**). The Initial Period consisted of 19.6% juveniles, 76.1% subadults, and 4.3% adults, while the Florescent Period broke down into 50% juveniles, 45% subadults, and 5% adults (**Figure 7**). The differences these proportions reflect in the MNIs are significant ($\chi 2 = 5.996$, df = 2, p = .0499) and indicate a shift to culling younger animals as reflected by the large increase in juveniles between the two periods. Once again, this is a shift from maximizing meat to using costly young animals.

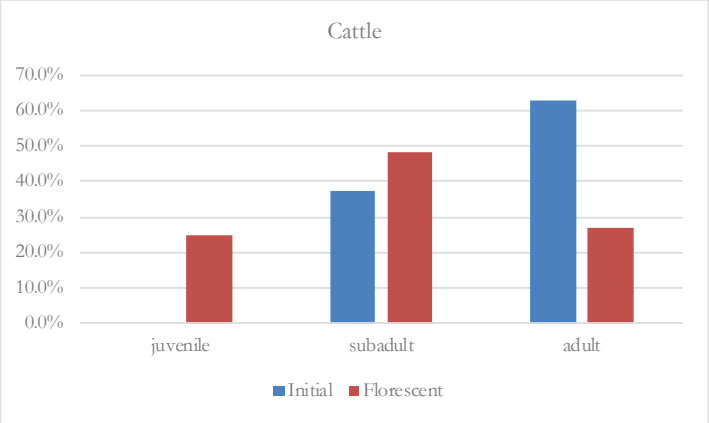

Figure 8. Comparison of age classes for cattle (Initial n=8, Florescent n=26).

4.2.1.3 Cattle

Unlike the other taxa, the Initial Period expresses an absence of juveniles followed by only 37.5% subadults. As such, adults comprise the largest group at 62.5% indicating the extended use of an individual for secondary products, like traction and dairy. When viewed in relation to the Florescent Period (**Figure 8**), which is made up of 25% juvenile, 48.1% subadult, and 26.9% adult, the differences in MNIs are not statistically significant ($\chi 2 = 4.344$, df = 2, p = .114). However, like caprines, the small sample

B. The chi-square tests comparing Layer Ea7 and Layer F showed no statistical differences and were therefore combined with the Initial Period to allow for comparison to the Florescent Period.

sizes affect this since n<5 for some categories. In reality, the substantial differences in age categories, especially the increase in juveniles, likely indicate a switch from a focus on secondary products to the production of high-quality meat.

4.2.3 Body Part Representation and Meat Utility

As stated earlier, body part representation and meat utility can indicate status differences since higher-status individuals prefer higher quality meat, such as elements with a higher amount of better tasting meat, while commoners are resigned to settle for low quality and smaller portions of meat.[23] Elements, based on MNE, were separated into higher and lower categories to facilitate a more general look at how different quality meat was represented. The higher category consisted of the very high, high, and medium classes based on Binford,[24] while the lower category was comprised of the low and very low classes.

Initial	OC	Pig	Cattle
Higher	284	119	61
Lower	122	56	56
	OC	**Pig**	**Cattle**
Higher	70.0%	68.0%	52.1%
Lower	30.0%	32.0%	47.9%

Table 10. Meat utility for the Initial Period.

4.2.3.1 Initial Period

For comparison to the Florescent Period, layers Ea7 and F were combined with previous Initial Period data. This combined data showed the split between higher and lower quality meat favored the higher quality meat (**Table 10**). Higher quality meat made up 66.8% of the assemblage with lower quality meat elements at 33.2%. This difference was visible in the meat quality categories of each animal. Caprines displayed a disproportionate amount of high quality meat at 70% with only 30% lower quality. Likewise, pigs showed a greater abundance of higher quality elements at 68% with only 32% for the lower quality category. Cattle, on the other hand, exhibited a relatively equal distribution of higher and lower quality elements at 52.1% and 47.9% respectively. The differences seen between these categories is significant ($\chi 2 = 14.782$, df = 3, p = .002), favoring higher quality meat for caprines and pigs, with virtually no difference for cattle.

Florescent	OC	Pig	Cattle
Higher	416	333	160
Lower	209	144	174
	OC	**Pig**	**Cattle**
Higher	66.6%	69.8%	47.9%
Lower	33.4%	30.2%	52.1%

Table 11. Meat utility for the Florescent Period.

4.2.3.2 Florescent Period

The Florescent Period also displayed a preference for higher quality meat (**Table 11**). Overall, 66% of the elements fall into the higher quality meat category indicating the preference for better quality meat that was also seen in the Initial Period. Both caprines and pig reflect this preference with 66.6% and 69.8% of the elements, respectively, being higher quality meat. Cattle once again, showed a nearly equal distribution with 47.9% higher quality and 52.1% lower. The differences between the higher and lower categories for each species is significant ($\chi 2 = 72.364$, df = 3, p<.0001), demonstrating the predilection for the better quality meat.

5. DISCUSSION

Overall, the data gathered from Layer Ea7 and Layer F followed the same trends that are seen in the previous analysis from other Initial Period layers. This is important in that it ensures the results can be used to compare subsistence economies between the Initial and Florescent periods. Following the same lines of evidence as above, species representation, cull patterns, and body part representation from layers Ea7 and F are discussed in relation to the similarities and differences in comparison to the Florescent Period. For the most part, everything seems to support the hypothesis that the level of social inequality during the Florescent Period was a change from what was present in the Initial Period.

5.1 Species Representation

The dominant livestock animal during the Initial Period was caprines, with pigs and cattle taking secondary roles. The consumption of cattle was not a common occurrence. Cattle are large animals carrying a large quantity of meat, more meat than

can be consumed in a reasonable amount of time. Since there were limited ways to store meat, the animal would need to be eaten relatively quickly once it was butchered. To be able to consume an entire animal, many families would be required to partake in the meal, and cattle were therefore most likely reserved for feasts or other large gatherings where most of the individual would be used. While it could be argued that a market exchange existed to distribute the meat, most of the individuals were old, indicating they were more important for their secondary products than their meat. In addition, raising cattle required a large expenditure of time, food, and labor. To reach maximum body weight, cattle require three to four years of growth. This also points to the use of them for only special events since the time needed to raise a new animal to maximum weight is so lengthy.

Caprines, on the other hand, are small and can be consumed more quickly than cattle. While it would still take several days to consume an entire individual, it is a significantly less amount of meat than cattle. Caprines are also easy to control, require little labor and food, and reach maximum weight in only two to three years. The low cost of raising them combined with quick growth made them perfect for a regular meat supply. So even though cattle and pigs provide more meat to the inhabitants, they most likely did not play as large of a role in the daily life of the people. The main source of day-to-day meat would have come from caprines with cattle and pigs reserved for larger gatherings where a large quantity of meat could be adequately consumed.

The abundance of caprine remains during this period was a substantial difference to the more evenly distributed use of livestock in the Florescent Period. While caprine use decreased in this later period, the preference for pig and cattle increased. This could be attributed to many things including the increase in feasting activities required to consume large animals.[12] The increase in feasting itself supports heightened higher-status activity, and the increase in large animals suggests more individuals were able to afford the high costs associated with consuming pigs and cattle more often.

However, the change in proportions of livestock is most likely a reflection of the enormous rise in the exploitation of horse (**Figure 9**). Between Layer Ea7 and Layer F, only a single horse element was recovered. This follows the overall trend of an absence of horse during the Initial Period in which only a total of three horse remains were found making up less than half a percent of the livestock. This is contrasted by the Florescent Period, during which horse outnumbered cattle. This nearly non-existence of horse during the Initial Period demonstrates that horse breeding and trading had not yet begun and the prestige and wealth that came along with it was not yet present. Trade, at Pecica, initially revolved around metallurgy and the production of high value composite ornaments, which probably resulted in some status distinctions during the Initial Period but not to the extent of those during the apex of horse trading. Once horse trading was established, disparities in social and economic classes likely became more pronounced since Pecica was the only local large-scale horse breeder. These discrepancies were not present earlier when metallurgy was the main trade craft due to the ubiquity of metallurgy in the region.

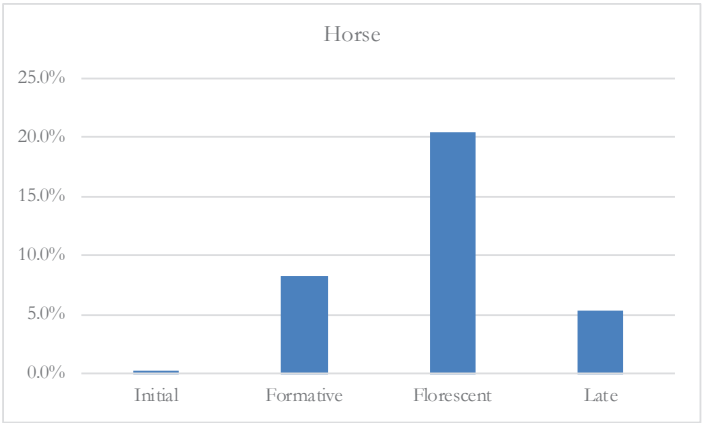

Figure 9. %NISP of horse across the four periods at the site.

Along with trade, horses were used as symbols of status and prestige. Once horse trading became a higher-status activity, the consumption of horse meat was able to emerge as a display of power and a marker of inclusion in this prestigious trade market. Not only were horse remains more common on the tell during this period because more horses were actually present, but also because they were deliberately being killed for power displays and their bones were being deposited, sometimes ceremoniously.[8]

Due to the large disparity between the two periods, it is evident that the significance of horses emerged somewhere in between. In addition, the virtual absence of horse during the Initial Period points to the emergence of this trade beginning during the Formative Period. Most importantly, this disparity shows that the magnitude of higher-status activity seen during the Florescent Period was not also present in the Initial Period. While there may have been some higher-status activity and the associated social

hierarchy present as evidenced by the production of high value composite ornaments present in mortuary contexts, it was on a much smaller scale.[5] It most likely would have manifest itself in the form of small feasts of pig and cattle as found in the study by Zahradka.[26] Based on species exploitation alone, there appears to be a shift between the Initial and Florescent periods.

5.2 Mortality and Aging

The aging data also suggest an intensification of social stratification after the Initial Period. Status differences are exhibited in the increased culling of younger animals. Younger animals are typically viewed as a more prestigious meat source due to the tenderness of their meat and the ability to eliminate an individual from the herd before it reaches reproductive age. Only higher-status individuals would be capable of butchering these young animals because of the costs involved with losing a reproductive member of the herd as well as losing the secondary products that could be exploited from an individual the longer they live. The increase in the killing of younger animals in general signals the preference for the younger, more costly meat associated with consumption by higher-status individuals.

Caprines display a switch in cull patterns toward younger animals and those who have reached maximum weight. The dental ages show a reliance on caprines for secondary products during the Initial Period with the maintenance of animals well beyond the age of prime meat production. The trend of raising individuals to adulthood changed in the Florescent Period where there was an emphasis on younger animals and prime age animals. Previous research found two distinct culls, one as the animals approached peak body size (16-24 months) and one, much earlier, of animals less than six months old.[12] Not many individuals survived beyond two years where caprines reach peak weight because it is at this point where diminishing returns are experienced, meaning the continued cost of keeping the animal outweighs the value of the animal.

Pigs also experienced a shift toward younger culling following the Initial Period. Fewer animals reach maximum body weight seen in the decrease in the subadult category from 76.1% during the Initial Period to 45% during the Florescent. Unlike caprines, pigs do not provide secondary products other than eating the trash of the settlement. This does not mean that the culling of juvenile pigs had no consequences. The culling of younger animals shows the disregard for body size. Prior analysis has shown most pigs in the Florescent Period were killed before reaching 18 months old and many before six months.[12] Pigs reach maturity between one and three years of age but are able to continue gaining weight throughout their lives. By slaughtering them before they reached maturity, higher-status individuals sacrificed the maximum meat potential as well as encouraged the mother to have a second farrow, increasing the production of juvenile pigs. It is this sacrifice and preference for juveniles that makes the use of young animals a symbol of wealth and power.

Cattle exhibit a similar change in culling patterns. The Initial Period was completely absent of juveniles with almost two-thirds of the individuals in the adult category. This indicates that secondary products were a priority as well as the use of cattle for meat. If meat maximization was the primary goal, the subadult category would contain the most individuals since it is at this point that the animal is most valuable. However, the majority of individuals fell into the adult category meaning they were kept beyond their peak, presumably to be used as traction and dairy animals. The Florescent Period shows a marked difference from this pattern with nearly a quarter of individuals falling in the juvenile range. Additionally, the percentage of adults declines and subadults increases slightly. This most likely indicated a shift to cattle as a meat source with less value placed on the secondary products. The increase in juveniles is important with cattle since their potential meat contribution is substantial. By culling individuals before they reach maximum weight, an enormous sacrifice was made in the potential food for the settlement.

5.3 Body Part Representation

In the presence of higher-status individuals, it is expected that a large portion of the assemblage would be higher quality meat since higher-status individuals prefer this type of meat. Even though both the Initial and Florescent periods show a large proportion of higher quality elements, there was still a considerable amount of lower quality elements present. If the higher-status individuals in the Florescent Period were receiving provisions from outlying settlements, it is expected that the percentage of higher quality elements would be higher due to the most valuable parts of the animal being sent to the tell while the lower quality parts were left in the outlying village. This would not be the case, though, if they were provisioning with whole animals.

It seems that all of the butchering was being done on tell and thus results in the presence of a relatively large amount of lower quality elements. Therefore, the remains may not be just the result of consumption but butchering as well resulting from provisioning of whole animals. As a result, the data show that the Initial Period shows similar trends as the Florescent Period indicating the presence of higher-status individuals. However, during the Florescent Period, people living off-tell only had low quality meat parts from high value animals like cattle and pigs.

5.4 Interpretation

As a result of the differences seen in the data between the periods, it appears that the presence of higher-status individuals and concurrent social stratification during the Initial Period was in the infant stages. Since culling patterns shifted to younger animals after the Initial Period, not during it, and horse remains were lacking compared to later periods, it can be inferred that the presence of higher-status individuals grew after this period. Over time, this system grew and developed into the structure that is represented in the Florescent Period. Due to the Formative Period filling the void between the Initial and Florescent periods, it can be assumed that this period experienced the transition toward the marked social and economic disparity of the Florescent Period. It can be expected that this period would exhibit portions of data representing characteristics from each period. For example, an increase in horse remains and slight increase in the use of juveniles can be expected from this period as well as a shift toward a larger percentage of high quality meat.

6. CONCLUSIONS

The social inequality at Pecica may have begun in the Initial Period, but it intensified and expanded over time until it reached its pinnacle during the Florescent Period, when trade and craft production were at their peak. Overall, the data from layers Ea7 and F continue to demonstrate that Pecica experienced a growth of higher-status activity as time progressed and the site grew. Despite the presence of some social inequality during the Initial Period, it does not match the magnitude of what was to come in the Florescent Period. As such, it appears that inequality intensified over time, likely during the Formative Period due to its position between the Initial and Florescent periods.

This research shows how faunal remains are useful indicators of social stratification and organization in addition to the traditional use of metal or other human-made artifacts, as well as clarifies the emergence of Pecica as a regional center. It expands the knowledge of Pecica's history by examining the beginnings of the site, which has not received much attention yet. While there are drawbacks in the data in the form of small sample sizes and carnivore gnawing on the remains, they are informative nonetheless due to the similarity to other data collected from the same period. To improve in the future, larger sample sizes would allow for more detailed analysis and would continue to refine the picture of the social organization at Pecica. Further research into the higher-status activity already present during the Initial Period is also important for the information it would provide on how higher-status activity was displayed. This could then be compared to the displays of power in the Florescent to further define the difference in social stratification between the two periods.

While this research focuses solely on Pecica, it is also useful in examining other sites in the Carpathian Basin during the Bronze Age and the Bronze Age as a whole. It provides an insight into how higher-status individuals are represented in the archaeological record and how their presence changes over time in Mureș cultures. Comparing Pecica to other Mureș sites, it is possible to examine the relationships and connections that existed between the sites as well as understand the role Pecica played in the regional hierarchy.

This research also demonstrates a case study of how power and wealth developed and emerged in the Bronze Age. It looks at the transition towards social hierarchy and the emergence of inequality to better comprehend how large, stratified societies form. Through this study, it is possible to understand how humans acquired power in the form of livestock and trade goods and consolidated that power through displays of wealth such as feasting. Not only does this allow a better understanding of higher-status individuals, it also gives insight into the changes that took place in the everyday lives of the common people as a result of shifting power.

By examining Pecica, the importance of trade centers and the accumulation of people at sites can be studied for their effect on power dynamics and the development of hierarchical societies. Through the use of faunal remains to study social change, it is possible to better understand how past societies developed and came to leave a lasting impression in history. As a whole, Pecica provides an excellent case study for understanding site, regional, and interregional dynamics as well as examining the development of power and higher-status individuals in Bronze Age society.

ACKNOWLEDGEMENTS

The author thanks everyone who helped him in the process of writing this thesis. He especially thanks Dr. Amy Nicodemus for giving him this research opportunity by providing the faunal remains as well as offering her advice and expertise along the way. He also thanks Dr. Timothy McAndrews, Dr. Katherine Grillo, Eleanor Waters, and Gemma Zahradka for providing invaluable feedback on his research and helping him develop his ideas. Finally, he thanks the Mississippi Valley Archaeological Center for providing the laboratory space and the reference collection necessary for his research.

REFERENCES

1. O'Shea, John M., and Nicodemus, Amy. (Forthcoming) "…the nearest run thing…" The Genesis and Collapse of a Bronze Age Polity in the Maros Valley of Southeastern Europe, in *Coming Together: comparative Approaches to Population Aggregation and Early Urbanization* (Gyucha, Attilla, Ed.), State University of New York Press, Albany, NY.
2. Earle, T.K., and Kristiansen, K. (2010) *Organizing Bronze Age Societies*, Cambridge University Press, New York.
3. Kristiansen, Kristian, and Larson, Thomas. (2005) *The Rise of Bronze Age Society: Travels, Transmissions, and Transformations*, Cambridge University Press, New York.
4. Nicodemus, Amy, and O'Shea, John M. (2015) From Relative to Absolute: The Radiometric Dating of Mureș Culture Ceramics at Pecica-Șanțul Mare. Paper presented at the ArheoVest Symposium Interdisciplinarity in Archaeology and History, Timisora.
5. O'Shea, John M. (1996) *Villagers of the Maros: A Portrait of an Early Bronze Age Society*, Plenum Press, New York.
6. O'Shea, John M., Barker, Alex W., Sherwood, Sarah, and Szentmiklosi, Alexandru. (2005) New Archaeological Investigations at Pecica Şanţul Mare, *Analele Banatului, S.N. Archeologie-Istorie* 13, 81—109.
7. O'Shea, John, Barker, Alex W., Nicodemus, Amy, Sherwood, Sarah, and Szentmiklosi, Alexandru. (2006) Archaeological Investigations at Pecica "Şanţul Mare": The 2006 Campaign, *Analele Banatului, S.N. Archeologie-Istorie* 14, 211—228.
8. O'Shea, John, Barker, Alex, Motta, Laura, and Szentmiklosi, Alexandru. (2011) Archaeological Investigations at Pecica "Şanţul Mare" 2006-2009, *Analele Banatulu, S.N. Archeologie-Istorie* 19, 67—78.
9. Nicodemus, Amy. (2011) The Bornze Age and Dacian Fauna from New Excavations at Pecica "Şanţul Mare", *Analele Banatulu, S.N. Archeologie-Istorie* 19, 79—84.
10. Nicodemus, Amy, Motta, Laura, and O'Shea, John M. (2015) Archaeological Investigations at Pecica "Şanţul Mare" 2013—2014, *Ziridava Studia Archaeologica* 29, 105—118.
11. Nicodemus, Amy. (2014) Bronze Age Economies of the Carpathian Basin: Trade, Craft Production, and Agro-Pastoral Intensification. Unpublished Ph.D. dissertation, Department of Anthropology, University of Michigan, Ann Arbor.
12. Nicodemus, Amy. (Forthcoming a) Food, Status, and Power: Animal Production and Consumption Practices during the Carpathian Basin Bronze Age, in *Social Dimensions of Food in the Prehistory of the Eastern Balkins and Neighbouring Areas* (Ivanova, M., Stockhammer, P., Athanassov, B., Petrova, V., Takorova, D., Ed.), Oxbow Books, Oxford.
13. Crabtree, Pam J. (1990) Zooarchaeology and Complex Societies: Some Uses of Faunal Analysis for the Study of Trade, Social Status, and Ethnicity, *Archaeological Method and Theory* 2, 155—205.
14. Nicodemus, Amy. (Forthcoming b) Landscape, Animal Production, and Politicacl Economy: A View from the Maros, in *Landscapes of Complexity in Bronze Age Central Europe* (Earle, T., Kiss, K., Knlesár, G., and Szerverényi, V., Ed.), Oxbow Books, Oxford.
15. Zeder, Melinda A. (1991) *Feeding Cities: Specialized Animal Economy in the Ancient Near East,* Smithsonian Institution Press, Washington, D.C.
16. Schmid, Elisabeth. (1972) *Atlas of Animal Bones: For Prehistorians, Archaeologists, and Quaternary Geologists*, Elsevier Publishing Company, New York.
17. Boessneck, J. (1969) Osteological Differences Between Sheep (*Ovis aries Linné*) and Goat (*Capra hircus Linné*) in *Science in Archaeology* (Brothwell, Don R., and Higgs, Eric S., Ed.), 331—358, Thames and Hudson, London.
18. Zeder, Melinda A., and Lapham, Heather A. (2010) Accessing the Reliability of Criteria Used to Identify Postcranial Bones in Sheep, *Ovis*, and Goats, *Capra*, *JAS* 37, 2887—2905.
19. Zeder, Milinda A. and Pilaar, Suzanne E. (2010) Accessing the Reliability of Criteria Used to Identify Mandibles and Mandibular Teeth in Sheep, *Ovis*, and Goats, *Capra*, *JAS* 37, 225—242.
20. Grant, Annie. (1982) The Use of Tooth Wear as a Guide to the Age Domestic Ungulates, in *Ageing and Sexing Animal Bones from Archaeological Sites* (Wilson, Bob, Grigson, Caroline, and Payne, Sebastian, Ed.), 91—108, British Archaeological Reports, Oxford.
21. Von den Driesch, Angela. (1976) *A Guide to the Measurement of Animal Bones from Archaeological Sites*, Peabody Museum Press, Cambridge, MA.
22. Reitz, Elizabeth J., and Wing, Elizabeth S. (1999) *Zooarchaeology*, Cambridge University Press, New York.
23. deFrance, Susan D. (2009) Zooarchaeology in Complex Societies: Political Economy, Status, and Ideology, *J Archaeol Res* 17, 105—168.
24. Binford, Lewis. (1978) *Nunamiut Ethnoarchaeology*, Academic Press, New York.
25. Davis, Simon J.M. (1987) *The Archaeology of Animals*, Yale University Press, New Haven.
26. Zahradka, Gemma. (2017) Faunal Remains from Structure 15 at the Bronze Age Site of Pecica, Romania. Unpublished B.S. thesis, Department of Archaeology and Anthropology, University of Wisconsin, La Crosse.

ABOUT THE STUDENT AUTHOR

Brett Meyer recently graduated from the University of Wisconsin-La Crosse in 2017 with a Bachelor of Science in Archaeological Studies with a minor in Anthropology. He is currently taking two years off to gain experience before returning to complete his Ph.D. in Anthropology. He is originally from Chilton, Wisconsin but currently resides in La Crosse, Wisconsin, where he is a research intern and faunal analyst at the Mississippi Valley Archaeology Center.

PRESS SUMMARY

The regional center of the Mureş culture, Pecica "*Şanţul Mare,*" displayed an abundance of higher-status activity during the Florescent Period (1820-1680 B.C.) Recent research into this Bronze Age tell settlement aim to examine if this activity was present during the Initial Period (1950-1900 B.C.), the earliest period at the site, or if it expanded during the transition between these periods. This research compared faunal remains from the two periods to examine changing inequality over time, as well as cull patterns, species utilization, and body part representation to infer the social organization present during these periods. The results give insight into not only the Mureş culture but can also be used to examine the development of social stratification in the Bronze Age as a whole.