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STUDIA ARCHAEOLOGICA

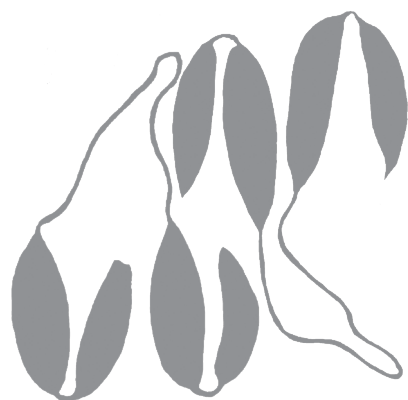
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# Animal management in the Latène settlement (2<sup>nd</sup> century BC – 1<sup>st</sup> century AD) at Săvârşin, Arad County\*

Georgeta El Susi

**Abstract:** 89 fragments from the Coţofeni levels and 890 from the Dacian levels make up the fauna sample from Săvârşin. Except for 106 remains collected from the southern terrace (T3/ S13), situated 19 m below, the majority of bones originated from the plateau. Only 575 fragments of the total were assigned to mammals, one to a freshwater fish and 314 are not specified. Domestic segment includes 498 fragments (86.61%) compared to 77 fragments (13.39%) from wild species. Cattle dominate as number of fragments (40.7%), followed by pig with 31.3%, small ruminants with 11.65%, and horse with 2.96%. The hunting is lesser practiced, accounting for 13.39%. The interspecies ratios are maintained as minimum number of individuals (NMI), cattle accounting for 35.4%, followed by pig with 31% and ovicaprids with 16%. The disparity in percentages between taxa reflects a different distribution of their remains by body parts. In comparison to cattle, more maxillary remains were retained in pigs, resulting in a large number of individuals. Sheep and goat account for about 16% of the total individuals, while horse just 3.54%. Game represents 15%, with an emphasis on red deer exploitation. The taxon records 11.65% as NISP, and 8.85% as NMI. While the forested habitat was favourable for them, roe deer, wild boar, and bear had a minor contribution to the diet. Cattle and sheep were mostly slaughtered in their adult and mature stages, suggesting their bred for milk, hides, wool, labour (cattle), and secondary for meat. Goats were relatively numerous within the small ruminant herds, being largely kept for meat. The rugged terrain was conducive to their growth. The pig was exploited for meat round-year. Horse meat was rarely eaten. Hunting covered a small part of the flesh requirements and was done occasionally.

**Keywords:** Săvârşin; Latène site; animal breeding; hunting; age profiles.

The Săvârşin locality is situated in the lower Mureş gorge, to the north of the river and about 90 kilometers east of Arad. The site occupies a volcanic promontory known as *Cetăţuia*, which rises to a height of 246 meters. It is about 500 meters from the current Mureş course, at the southern end of the Highiş – Drocea Mountains. Archaeological excavations carried out intermittently between 1979 and 2001 campaigns revealing remnants of the Coţofeni culture<sup>1</sup> and Latène epoch. A settlement and its associated necropolis from the 4<sup>th</sup>–3<sup>rd</sup> centuries BC, as well as one from the 2<sup>nd</sup> century BC–1<sup>st</sup> century AD were assigned to the Dacian era<sup>2</sup>. The fauna sample in question collected during 2007–2009's campaigns, and it contains 89 fragments from the Coţofeni levels and 890 from the Dacian levels. Most of the sample was picked up from the plateau, except for 106 remains from the southern terrace (T3/ S13), located 19 m below (Table 1, Fig. 1). Of 890 bones, one belongs to a freshwater fish and the rest to mammals. 156 fragments are broken ribs and 158 flakes from long bones. Just 575 bones were correctly identified, with 498 remains (86.61%) from domestic species and 77 (13.39%) from wilds. There were no dog bones. The specimens were presumably thrown away or buried elsewhere after death, although there are signs of gnawing on some non-fused bones. The hen's remains were not found, despite the fact that it is a typical taxon of Latène sites. The limited sample size, precarious fossilization conditions<sup>3</sup>, and other factors may all explain its absence. Several cut-marks were found on two vertical mandibular segments, under the condyle or on the apophysis, to detach them from the skull. A badger ulna had three cuts on the proximal end to take out the fur, and a horse shoulder

\* This work was supported by a grant of the Romanian Ministry of Education and Research, CNCS – UEFISCDI, project number PN-III-P4-ID-PCE-2020-0566, within PNCDI III.

<sup>1</sup> Sava 2015, 163–199.

<sup>2</sup> Hügel *et al.* 2007, 310–311.

<sup>3</sup> Humic acids corroded the bones, many of them were calcined.

blade emphasised two cuts on the protuberance to separate the scapulo-humeral joint. As well they suggested the horse using in consumption.

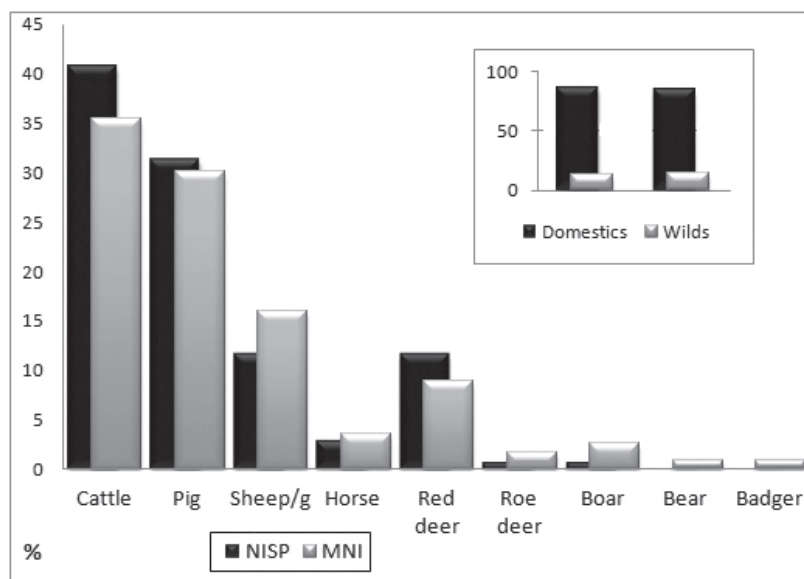


Fig. 1. Distribution of species in Săvârșin.

### Spatial distribution of the bones

201 fragments (22.6%) came from complexes (garbage pits, pit-houses) and 689 from the layer, different depths. An agglomeration of vessel fragments, stones and bones, named cx. 9 was uncovered in S 11/ northern sector, at 1.10 m depth<sup>4</sup>. Four ribs and an ischium were assigned to a more than 12-month-old pig. Three ribs and a right mandible were determined from a 14–15 month old red deer, hunted in the summer (Table 3).

In S12/ C3B, a circular pit (Ø – 0.20 m) dug in native rock and dated between the 1<sup>st</sup> century BC and 1<sup>st</sup> AD was investigated. It is an intentional deposition of heavily incinerated animal bones<sup>5</sup>. Based on 29 bones, three pigs aged 5–6 months, 16–18 months, and 3–3.5 years were presumed. When the slaughter times of the first two individuals are compared, it seems that they were killed in the summer, being born in the early spring and not in the fall<sup>6</sup>. The skeleton of the young specimen contained a part of the neurocranium, mandible, humerus, radius, metacarpus, the 3<sup>rd</sup> metatarsal, all on the right side, and two vertebrae. The 16–18 month old animal had two radii, a right humerus, a metatarsus, a left calcaneus, two ribs, and a vertebra. Only the pair of femurs from the adult animal was preserved, along with 11 fragments from the above individuals with no definite attribution. A distal femur epiphysis from a sheep aged 18–26 months was identified<sup>7</sup>. All four known animals' bones are calcined and gray-whitish in color.

In S12/ C2–4A, -0.50 m, an impressive complex (cx. 20) with a step to the south was investigated; its filling consisted of a gray-brown sediment with several pieces of Dacian vessels and animal bones, as well as a few metal objects. Unfortunately, the house's southern section was destroyed<sup>8</sup>. It was either a pit-house or a garbage dump. Its filling yielded about 39 mammal remains, 31 of which were identified. The material had a whitish pigmentation and was heavily corroded due to fossilization in a humic acid-rich layer. As a result, 16 bones were collected from three cattle, slaughtered at different ages: 3–4 years, below 3 years, and more than 4 years. The six pig bones come from two specimens killed between 2–2.5 and 3–3.5. A goat was identified by a horn splinter, and an adult red deer by eight bones. Except for the feet, the bones represent almost all the body parts. The animals were most likely butchered elsewhere, with the distal extremities thrown away and the fleshy parts reaching the dwelling.

<sup>4</sup> Hügel *et al.* 2008, 273.

<sup>5</sup> Hügel *et al.* 2009, 192.

<sup>6</sup> Ervynck 1997, 67–79.

<sup>7</sup> *Apud Udrescu et al.* 1999, tab. 5, 60.

<sup>8</sup> Hügel *et al.* 2008, 273



Another pit-house on the plateau, in S14/ -1.13 m, yielded eight remains. Two ribs and a jaw from a slaughtered/ dead horse, aged 4–4.5 years, a humerus from a young sheep, a crack from a bovine horn, and three bones from a sub-adult pig (a rib, a femur and the 3rd metacarpus distally not fused) are among the items on display.

Just eight bones were found in S18, a surface dwelling dated between the 2<sup>nd</sup> and 1<sup>st</sup> centuries BC (noted by cx. 33)<sup>9</sup>. They belong to a wild boar aged between 18 and 30 months, an adult red deer, a young pig, and two cattle (one sub-adult and another 6.5–9 years old). Despite the fact that, the sample is small and anatomically diverse, it suggests however five individuals. As in the other instances, the dwelling's content is obviously reduced. The remains may have been moved away in antiquity with the sanitation of the living space, or they may have been destroyed with the leveling for the construction of cell phone antennas (some parts of the site were affected by those works). The layer provides the majority of the bones.

Excavations in S13, on the southern terrace revealed an anthropic arrangement, including the remains of a house with a hearth and two agglomerations of materials, both dating from the 1<sup>st</sup> century BC to the 1<sup>st</sup> century AD<sup>10</sup>. The structure yielded 108 mammalian bones, 35 of which were completely determined, as well as 73 rib and crack fragments from described specimens. The items have a blackish pigmentation, many of them corroded by humic acids, indicating that the region was strongly forested in the past. The 17 pig bones originated from four specimens killed at different ages: under six months, about 10 to 12 months, 18 to 24 months, and over 2.5 years. The 11 bovine remains originated in two animals, one killed before 5–6 months and the other between 6.5 and 9 years. Three bones come from a 4–5 year-old sheep, and three more from a 12 to 16-month-old goat. A metapodial splinter was assigned to a red deer. The abundance of ribs can be seen in the anatomical body parts distribution, the other body elements being distributed in equal proportions.

### Slaughter profiles

40 cattle were identified based on teeth, slaughtered in the following order: two before one year (5%), seven between 1–2 years (17.5%), 12 between 2–4 years (30%), three aged 4–6.5 years (7.5%), 12 aged 6.5–9 years (30%), and four over 9 years (10%). As a result, adult-mature specimens account for 47.5% of the total, with sub-adults accounting for 30% and young only 22.5%. It is a type of exploitation focused primarily on by-products and, to a lesser extent on beef. Therefore, a 30% rate of immature specimens, mostly males (based on metric data), used for meat is conclusive. The killing of calves was limited (Fig. 2). For pig exploitation, the following slaughter data were collected. Three specimens were killed before six months (8.82%), six to one year (17.65%), 15 between 1–2 years (44.11%), five between 2–3 years (14.71%), and five to four years (14.71%). Juveniles account for just 26.47%, compared to 58.82% sub-adults and 14.71% adults<sup>11</sup>. Animals who surpassed a certain body weight, in our case between 1–3 years, were culled in large numbers (Fig. 2).

In the case of small ruminants, five of the 18 individuals are sheep, seven are goats, and six are not specified. Two sheep were slaughtered when they

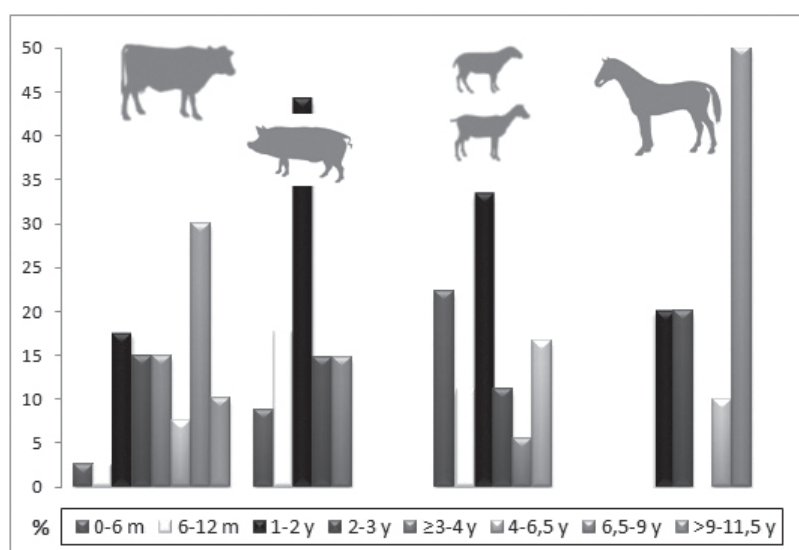


Fig. 2. Cattle, pig, sheep-goat, and horse age profiles in Sāvârşin.

<sup>9</sup> Hùgel *et al.* 2010, 170.

<sup>10</sup> Hùgel *et al.* 2009, 193.

<sup>11</sup> Forest 1997, 951–958.

were 1–2 years old, one between 3–4 years, and two between 4–6 years. Young animals are missing. For goats, two individuals were slaughtered under 6 months, two between 1–2 years, two between 2–3 years and one between 4–6 years. In total, 22.22% of the 18 small ruminants were slaughtered before the age of six months, 11.11% before one year, 33.33% between 1–2 years, 16.67% between 2–4 years, and the same between 4–6 years. As a result, 55.55% is the proportion of infant and juvenile groups, 28% of sub-adults and only 16.45% of adults. Goat appears to have been kept mainly for meat, while sheep mainly for milk and wool. In the case of the horse, two sub-adults, one adult, and one mature have been identified. The presence of bones from fleshy body parts does not rule out the accidental ingestion.

A badger, bear, two roe deers, three wild boars, and ten red deers were found among the hunted mammals. The bear fragment is most definitely a 4<sup>th</sup> metacarpus from a fur. Two of the wild boar specimens are immature, while the third is an adult female. Four of the ten red deer specimens are between 1–3 years (40%), and one was between 2–3 years old.

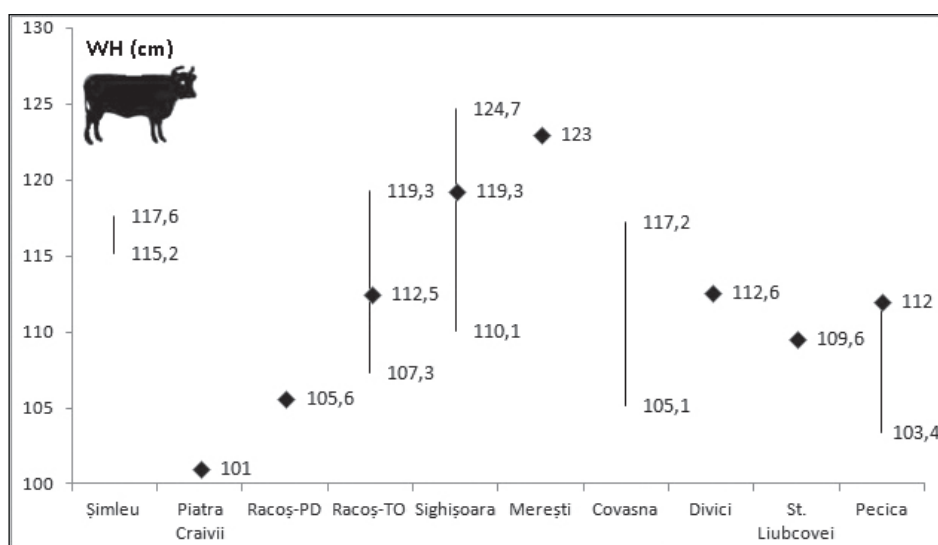


Fig. 3. The cattle size in several Latène settlements from Banat and Transylvania.

### Metric evaluations

The highly broken and corroded material did not allow for many morpho-dimensional evaluations, so the metric data are limited. Three cattle *brachyceros* horns were discovered, two from an adult cow and one from a young male. They are small in size. The few measurements, with the exception of the bulls, show specimens with a slender skeleton. The distal flaring of the metacarpals observed in both the Săvârșin and Ziridava samples is a result of traction use. Despite the lack of whole bones to estimate waist size, we find that females with a height of around 103 cm and males with a height of 108–112 cm were found in the Dacian site of Pecica (Ziridava oppidum)<sup>12</sup>. On a series of Latène sites in Transylvania and Banat, a wide range of cattle sizes was established, ranging from 101 to 125 cm (Fig. 3). The measurements indicate small and slender specimens. Cows range from 101 to 114.5 cm (M = 109.4; n = 10), bulls from 105.1 to 124.7 cm (M = 114.9; n = 8) and castrates from 117 to 123 cm (M = 119; n = 3). Overall, a waist variation of 101–124.7 cm was estimated, with an average of 113 cm (n = 21). The highlands were most likely habitat to a small cattle type. The majority of these specimens were found in mountainous areas, at Piatra Craivii (101 cm)<sup>13</sup>, Covasna (105 cm)<sup>14</sup>, Racoș- Piatra Detunată (105.6 cm)<sup>15</sup> and Racoș- Tipia Ormenișului (107.3 cm)<sup>16</sup>. Castration is quite rare in the Dacian sites, bones from gelds being identified at

<sup>12</sup> Haimovici 1969, 405; the Matolcsi index was used to recalculate the height at the withers.

<sup>13</sup> El Susi 2010–2011, 127.

<sup>14</sup> Bindea 2008, 137

<sup>15</sup> El Susi 2010, 97.

<sup>16</sup> El Susi 2006, 272.

Şimleu- Cetate<sup>17</sup>, Mereşti<sup>18</sup> and Covasna<sup>19</sup>. The pigs' measurements suggest slender specimens that vary biometrically from Pecica's material<sup>20</sup>. Height at the withers is 67.74–73 cm on three metapodials. The values do not suggest too many mixes with the wild boar. In the Dacian sites from Transylvania and Banat<sup>21</sup>, the size of the pig varies between wide limits, the average exceeding, usually 70 cm. Piatra Craivii (M = 69.5 cm)<sup>22</sup>, Racoş- Piatra Detunată and Racoş- Tipia Ormenişului (M = 71.6 cm)<sup>23</sup>, Mereşti (70 cm)<sup>24</sup>, Covasna (72.6 cm)<sup>25</sup> all have values close to the average (Fig. 4). The metric data of the pig and the wild boar are frequently confused, and their distinction is difficult to establish.

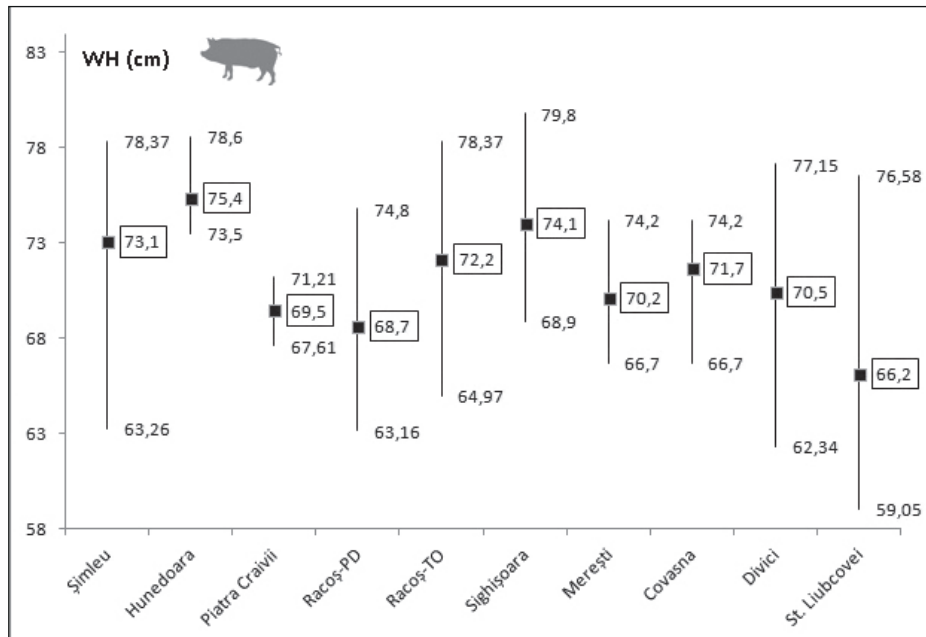


Fig. 4. The pig size in several Latène settlements from Banat and Transylvania.

There are horned and non-horned females in the sheep population and goats with *prisca* type horns at Săvârşin. The few measures indicate goats a little more robust than sheep. There are no data on the height at withers of sheep from Săvârşin. On the materials of sheep from Transylvania and Banat, a range of 51.4–68.1 cm was found, with an average of 60.7 cm (n = 33) (Fig. 5). They are significantly more robust and taller than specimens found in the Iron Age sites in Western Central Europe and the Pannonian Plain<sup>26</sup>. Their low parameters also indicate a lack of interest in improving the local genetic base, either by breeder selection or improved feeding conditions. In comparison to sheep, goat measurements suggest certain robustness. Their height ranges between 59.8 and 67.7 cm in the Latène sites from Transylvania and Banat, with an average of 63.3 cm (n = 6)<sup>27</sup>. A horse metacarpus with GL/ LL of 206/198 mm and a diaphysis index of 15.53 comes from S12/ C5A, -1–1.10 m. The piece is from a short specimen with a waist of 126.8 cm (based on lateral length) and an overall length of 125.7 cm. According to the diaphysis index, the specimen's extremities were medium thick. This form of small horse with thick extremities most likely served several purposes due to its suitability for the rough terrain in the region. Similar individuals were identified at Pecica (128.5; 134.1 cm)<sup>28</sup>

<sup>17</sup> El Susi 2009, 96.

<sup>18</sup> Bindea 2008, 140.

<sup>19</sup> Bindea 2004, 286

<sup>20</sup> Haimovici 1969, 405.

<sup>21</sup> Those shown in fig. 3.

<sup>22</sup> El Susi 2010–2011, 127.

<sup>23</sup> El Susi 2010, 97.

<sup>24</sup> Bindea 2008, 161.

<sup>25</sup> Bindea 2008, 161.

<sup>26</sup> Audoin Rouzeau 1991, 68.

<sup>27</sup> Personal data.

<sup>28</sup> Haimovici 1969, 406.

and Şimleu-Cetate (130.7 cm)<sup>29</sup>. There were also horses slightly more robust and taller; for example, another metacarpus with a distal breadth of 47.5 mm originates in such a specimen. The few measurements of the red deer suggest medium-sized specimens; for example, the distal width of the radius ranges from 45 to 58 mm, with an average of 50 mm (n = 4), and the breadth of the humeral trochlea from 51.5 to 62 mm (mean=51.5 mm; n = 3). One specimen appears to be a little more robust, based on its 62 mm humeral trochlea and a calcaneus with a maximum length of 129 mm.

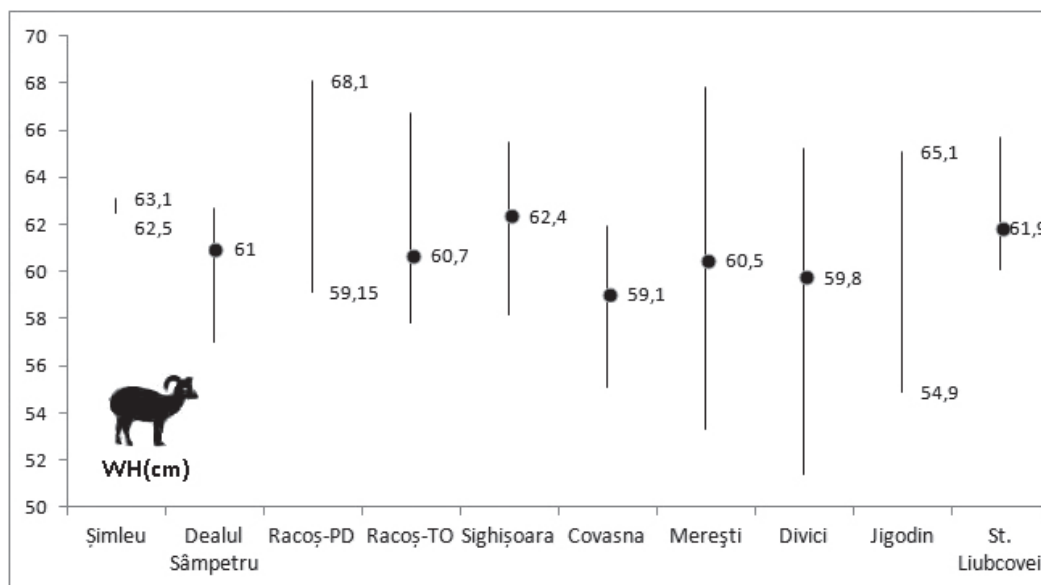


Fig. 5. The sheep size in several Latène settlements from Banat and Transylvania.

### Percentage evaluations

At Săvârşin, cattle dominate the number of fragments (NISP) with 40.7%, followed by pig with 31.3%, small ruminants with 11.65%, and horse with 2.96%. The game is insignificant, accounting for 13.39% of the total. The interspecies ratios are maintained as minimum number of individuals (NMI), cattle accounting for 35.4%, followed by pig with 31%. The disparity in percentages between the two taxa reflects the different distribution of their remains by body regions. In comparison to cattle, more maxillary remains were retained in pig, resulting in a large number of individuals. Sheep and goat account for about 16% of the presumed individuals, while horse just 3.54%. Game represents 15%, with an emphasis on red deer exploitation. The taxon records 11.65% as NISP, and 8.85% as NMI. While the forested habitat was favourable for them, roe deer, wild boar, and bear had a minor contribution to the diet. Cattle and sheep were mostly slaughtered in their adult and mature periods, suggesting their breeding for milk, hides, wool, labour (cattle), and secondary for meat. Goats were relatively numerous within the small ruminant herds, being largely kept for meat. The rugged terrain was conducive to their growth. The pig was the species exploited for meat. Horse meat was rarely eaten. Hunting covered a small part of the flesh requirements and was done occasionally.

Pecica, on the other hand, has a distinct distribution of mammals. Despite its lowland position (the Mureş valley), the game makes up 36.12% of the total. Pig is the most common taxon, accounting for 26%, followed by cattle (19.41%), horse (9.16%), and sheep (9.43%)<sup>30</sup>. În case of Săvârşin, suitable analogies relating to animal economies were found among the settlements located in hilly or submountainous areas (Fig. 6). Accordingly, pig was the main source of meat in the sites from Hunedoara-Dealul Sâmpetru<sup>31</sup>, Racoş-Piatra Detunată<sup>32</sup>, Racoş-Tipia Ormenişului<sup>33</sup> and Piatra Craivii<sup>34</sup>, being quoted

<sup>29</sup> El Susi 2009, 97.

<sup>30</sup> Haimovici 1969, 407.

<sup>31</sup> El Susi 2007, 217–229.

<sup>32</sup> El Susi 2010, 93.

<sup>33</sup> El Susi 2006, 266.

<sup>34</sup> El Susi 2011, 124

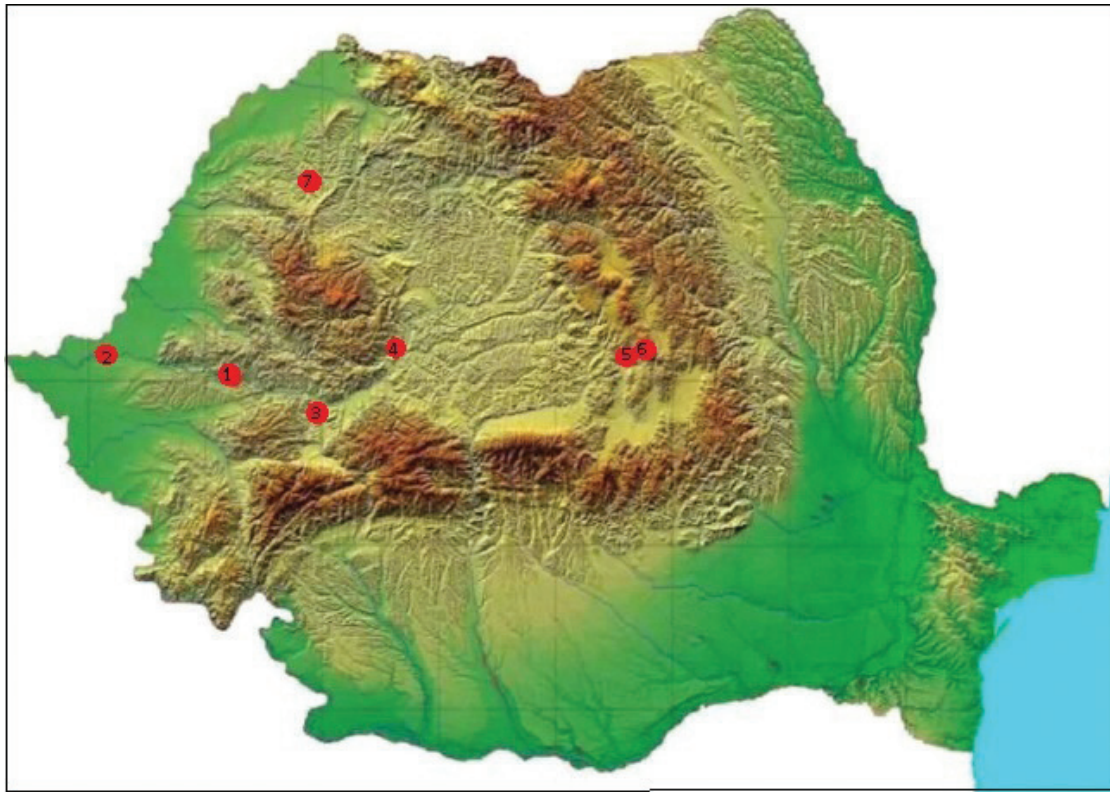


Fig. 6. Mapping of some Latène sites used for comparison: 1- Săvârşin; 2- Pecica; 3- Hunedoara-Sâmpetru; 4- Piatra Craivii-Terasa Bănuşului; 5- Racoş- Piatra Detunată; 6- Racoş-Tipia Ormenişului; 7- Şimleu-Observator.

with 32–43%. The environment would have been favourable for sustaining numerous pig stocks. Cattle record high percentages of 31–35%, mainly used for dairy products, traction, and secondary as a flesh provider. Only at Şimleu-Observator cattle prevail with 34.8%, the pig ranks the second with 25.2%. In the mentioned sites the percentage of ovicaprids largely vary. At Şimleu-Observator, their proportion is higher than that of cattle (26.8%)<sup>35</sup>; in other sites they reach 17% to 21% (Table 2). In terms of hunting, it reaches a peak in Pecica (36.12%), only 15.83% in Hunedoara-Dealul Sâmpetru, and less than 10% in the others. Even though, the settlements are located in the uplands (e.g. Piatra Craivii, Racoş), the hunting was occasionally practiced. It was done to collect furs, hides, antlers, and pastime. Other food sources, such as poultry farming, fishing, and molluscs catching are poorly known. Only one fish bone in Săvârşin and three in Pecica were reported. One chicken bone was found in Pecica and two in Şimleu.

So, Săvârşin belongs to a group of settlements whose economies are based on cattle farming for utilitarian purposes, pig for meat supply all year-round, and small ruminants for meat and by-products. Hunting is reduced, with a focus on red deer exploitation and, on rare occasions, on wild boar, roe deer, and bear. The horse was occasionally included in the diet, in addition to beef, mutton, pork and venison.

Table 1. The distribution of species in different contexts as fragments (NISP) and individuals (MNI)

Feature	Cx 9/S11	Cx 19/S12	Cx 20/S12	S12/stratum				S14
Depth (m)	1.1	0.5	0.5	0.4-0.6	0.65-0.8	0.8-1.1	1.15-1.3	0.3-0.7
<i>Bos taurus</i>			16	12	10	45	21	8
<i>Sus domesticus</i>	4	29	6	1	2	18	10	1
Ovis/Capra		1	1	2		10	7	
<i>Equus caballus</i>				1		9		1
Domestics	4	30	23	16	12	82	38	10
<i>Cervus elaphus</i>	4		8			11		1

<sup>35</sup> El Susi 2009, 99.

<b>Feature</b>	<b>Cx 9/S11</b>	<b>Cx 19/S12</b>	<b>Cx 20/S12</b>	<b>S12/stratum</b>				<b>S14</b>
Capreolus c.						1		
Sus scrofa								
Ursus arctos								
Meles meles								
Wilds	4		8			12		1
Determined	8	30	31	16	12	94	38	11
Ribs						15		
Flakes			8		2	31	13	18
Total mammals	8	30	39	16	14	140	51	29
Pisces								
Total sample	8	30	39	16	14	140	51	29

continue

<b>Feature</b>	<b>S14/stratum</b>		<b>S15/stratum</b>			<b>S19</b>	<b>Cx. 33/S18</b>	<b>S14</b>
<b>Depth (m)</b>	<b>0.85-1.05</b>	<b>1.15-1.35</b>	<b>0.4</b>	<b>0.8-1.0</b>	<b>1.05-1.35</b>	<b>0.6-1.3</b>	<b>Pit-house</b>	<b>Pit-house</b>
Bos taurus	17	39	5	5	27	12	5	1
Sus domesticus	14	30	1	12	29	2	1	3
Ovis/Capra	3	9	1	3	22	1		1
Equus caballus		2			1			3
Domestics	34	80	7	20	79	15	6	8
Cervus elaphus	3	21	3	1	13		1	
Capreolus c.		2			1			
Sus scrofa		1		1	1		1	
Ursus arctos	1							
Meles meles					1			
Wilds	4	24	3	2	16		2	
Determined	38	104	10	22	95	15	8	8
Ribs	1	4	9	11	72			
Flakes	11	21		6	19			
Total mammals	50	129	19	39	186	15	8	8
Pisces					1			
Total sample	50	129	19	39	187	15	8	8

continue

<b>Feature</b>	<b>S13/Pit- house</b>	<b>NISP</b>	<b>%</b>	<b>MNI</b>	<b>%</b>
Bos taurus	11	234	40.7	40	35.4
Sus domesticus	17	180	31.3	34	30.09
Ovis/Capra	6	67	11.65	18	15.93
Equus caballus		17	2.96	4	3.54
Domestics	34	498	86.61	96	84.96
Cervus elaphus	1	67	11.65	10	8.85
Capreolus c.		4	0.7	2	1.78
Sus scrofa		4	0.7	3	2.65
Ursus arctos		1	0.17	1	0.88
Meles meles		1	0.17	1	0.88
Wilds	1	77	13.39	17	15.04
Determined	35	575	100	113	100
Ribs	44	156			
Flakes	29	158			
Total mammals	108	889			
Pisces		1			
Total sample	108	890			

Table 2: The percentages of species in Latène sites from Transylvania

Species	1	2	3	4	5	6	7
Sus domesticus	31.3	25.88	37.2	43.22	32.6	38	25.2
Bos taurus	40.7	19.41	19.79	30.95	32.5	31.7	34.8
Ovis/Capra	11.65	9.43	16.89	21.06	20	18.6	26.8
Equus caballus	2.96	9.16	9.5		6.9	4	2.8
Canis familiaris			0.79		0.5	1	1.2
Game	13.39	36.12	15.83	5.1	7.5	6.7	9.2

1- Săvârşin; 2- Pecica; 3- Hunedoara-Sâmpetru; 4- Piatra Craivii-Terasa Bănuşului; 5- Racoş-Piatra Detunată; 6- Racoş-Tipia Ormenişului; 7- Şimleu-Observator.

Table 3: Anatomical distribution of bones in complexes at Săvârşin

	Cx 9/S11		Cx 19/S12		Cx 20/S12			Pit-house/S13		
	Pig	Red deer	Pig	Ovic.	Cattle	Pig	Ovic	Red deer	Cattle	Pig
Neurocraniu			1		1		1			2
Viscerocr.									1	
Dentes sup.									1	
Mandibula		1	1		2	1		1	1	4
Dentes inf.									1	
Atlas										
Axis					1					
Vertebrae			4					1		
Sacrum								1		
Costae	3	3	7		1			1		
Scapula									2	2
Humerus			4		1			1		1
Radius			2		4	1		2		2
Ulna										1
Carpalia										
Metacarpus			1						1	3
Pelvis	1				1	1		1	1	1
Femur			3	1		2				
Patella										
Tibia			3		1	1			1	
Fibula										
Talus					1					
Calcaneus			1		1					1
Metatarsus			1							
Tarsalia										
Phalanx 1					2				1	
Phalanx 2										
Phalanx 3									1	
Metapodalia			1							
Total	4	4	29	1	16	6	1	8	11	17

continue

	Pit-house/S13		S14/Pit house			Cx. 33/S18				
	Ovic.	Red deer	Cattle	Pig	Ovic.	Horse	Cattle	Pig	Red deer	Boar
Neurocraniu			1				1			
Viscerocr.	2					1	1			
Dentes sup.										
Mandibula							1			

	Pit-house/S13		S14/Pit house				Cx. 33/S18			
	Ovic.	Red deer	Cattle	Pig	Ovic.	Horse	Cattle	Pig	Red deer	Boar
Dentes inf.										
Atlas										
Axis										
Vertebrae	1									
Sacrum										
Costae				1		2				
Scapula										
Humerus					1					1
Radius										
Ulna										
Carpalia										
Metacarpus	1			1			1			
Pelvis							1		1	
Femur				1						
Patella										
Tibia	1							1		
Fibula										
Talus										
Calcaneus										
Metatarsus	1									
Tarsalia										
Phalanx 1										
Phalanx 2										
Phalanx 3										
Metapodalia		1								
Total	6	1	1	3	1	3	5	1	1	1

## Metric data/ Horn cores

Feature	OC	BA	BB	BC	Taxon
S12/C5A		49	41,5	146	Cattle
Cx.33		52	45	157	Cattle
S12/C2A		61.5	46.5	171	Cattle
S12/C5A	210	39.5	25	100	Goat

## Maxilla Mandibula

Feature	M1-M3	M3	Taxon	Feature	P2-M3	M1-M3	M3	Taxon
S19/C-D		36	Cattle	S14/CA-D			36	Cattle
S12/C6A-B		28	Cattle	S18/CA-B			37.5	Cattle
S15/CB		30.5	Pig	S15/CA-B		84	36	Cattle
S12/C6A-BC	63	31.5	Pig	S12/C-D			36	Cattle
S12/C10-12	70	37	Pig	S14/B-C	102	68	33	Pig
S14/CA-B	47.5	21	Sheep	S15/CA-B			34.5	Pig
S14/CA-B	47	20.5	Sheep	S15/CA			29.5	Pig
S12/C5A		18	Goat	S12/C2A			36	Horse
S15/CA-B	75		Red deer					



Scapula Calcaneus

Feature	SLC	GLP	LG	Taxon	Feature	GL	Taxon
S12/C6A-B		51.5		Cattle	S12/CA-B	28.5	Goat
S12/C5A	40.5	55.5	44	Cattle	S14/CA-D	129	Red deer
S12/C5A	18	60.5	25	Sheep	Femur		
S14/CA-D		88.8	52	Horse	Feature	Bd	Taxon
S14/C-D	34		40	Red deer	Cx. 19	24.5	Sheep

Humerus Pelvis

Feature	Bt	Bd	Dd	Taxon	Feature	LA	Taxon
S12/C5A	70			Cattle	Cx. 33	69	Cattle
S12/CA-B		39.5		Pig	S14/C2D	28.5	Pig
S15/CA	26	34		Pig	S15/CB	30	Pig
S14/C-D	27.5	34.5	36	Pig	S15/CA	31	Pig
Cx. 19	27.5	35	35	Pig	S12/C5A	61	Horse
S13/C1	28	36.5	35	Pig	S18/CA-B	50	Red deer
S12/C6A-B	29.5	37	37.5	Pig	S15/CA	25	Roe deer
S15/CA	29	37	39	Pig			
Cx. 33	39	52	52	Boar			
Cx. 20			55.5	Red deer			
S12/C5A	51.5	58	60.5	Red deer			
S15/CD	52	61	59.5	Red deer			
S14/CA-B	62			Red deer			

Radius

Feature	BFp	Bp	Dp	Bd	Dd	Taxon
S15/CA-B		27.5	18.5			Pig
Cx. 19		25.5	17			Pig
S14/CB-C		25.5	17.5			Pig
Cx. 20		26	17			Pig
S13/C1		27	18.5			Pig
S15/CB	29.5	30.5	16			Goat
S15/CA	29.5	30.5	16.5			Goat
S15/CB	31.5	32.5	17.5			Goat
S15/CA	49	51.5	27.5			Red deer
S14	52.5	58	29.5			Red deer
Cx. 20				45	32	Red deer
S12/C5A				52	38	Red deer
S12/C5A				53	41	Red deer
S15/CA				50	37	Red deer

Metacarpus

Feature	Gl/Ll	Bp	Dp/SD	Bd	Dd	Taxon
S15/CB				56.5	29.5	Cattle
S18/CA-B				61	31	Cattle
S12/C10-12				64		Cattle
S14				66.5	35	Cattle
S13/C1	69/Mc. 4					Pig
S12/C5A	206/198	44.5	31/32	44		Horse
S15/CA				47.5		Horse

## Metatarsus

Feature	Bp	Dp	Bd	Dd	Taxon
S15/CA	40	37			Cattle
S15/CB	42.5	42			Cattle
S19/C-D	46				Cattle
S14				29.5	Cattle
S14			49	26.5	Cattle
S15/CA			56.5	32.5	Cattle
S12/C2A			59.5	30	Cattle
S14/CB-C	Mt3/ 73				Pig
S12/C5A	Mt 4/ 83				Pig
S14/B-C		21.5			Sheep
S15/CA-B	20.5	20.5			Sheep
S13/C1/			23.5	16	Goat

## Talus

Feature	GB	LmT	GH	Bfd	Taxon
S14/CA-B	54.5	56.5	56	46.5	Horse
S14/CA-B		54.5	58.5	40	Red deer

## Tibia

Feature	Bd	Dd	Taxon
S12/CA-B		41	Cattle
S12/C6A-B	51.5		Cattle
Cx. 20	52		Cattle
S15/CA	53.5	41.5	Cattle
S15/CA-B	58	42	Cattle
S12/C6A-B	60	43.5	Cattle
S15/CA	63	45	Cattle
S12/C2-4A	26.5	23.5	Pig
S14/C-D	24	22.5	Pig
S15/CA	29.5	25	Pig
S19/C-D	25.5	18.5	Sheep/g
S13/C1	25	19	Sheep/g

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# Abbreviations

AEM	Archäologisch-epigraphische Mitteilungen aus Österreich-Ungarn, Vienna.
AM	Arheologia Moldovei, Iași.
AMN	Acta Musei Napocensis, Cluj-Napoca.
AMP	Acta Musei Porolissensis, Zalău.
AMV	Acta Musei Varnaensis, Varna.
Angustia	Angustia. Revista Muzeului Național al Carpaților Răsăriteni, Sf. Gheorghe.
Anuarul MJIAP (S.N.)	Anuarul Muzeului de Istorie și Arheologie Prahova, Serie Nouă, Ploiești.
Antiquity	Antiquity. A review of world archaeology, Durham.
Archaeological Journal	Archaeological Journal. New Series. Chișinău.
ArchÉrt	Archaeologiai Értesítő, Budapest.
ArchPol	Archaeologia Polona, Warsaw.
ArchRozhledy	Archeologické Rozhledy, Praha.
ASM	Archaeologica Slovaca Monographiae, Bratislava.
BAR (Int. S.)	British Archaeological Reports (International Series), Oxford.
Biharea	Biharea. Culegere de studii și materiale de etnografie și artă, Oradea.
BMG	Bibliotheca Musei Giurgiuvensis, Giurgiu.
BMJT	Buletinul Muzeului Județean Teleorman. Seria Arheologie, Alexandria.
BMM	Bibliotheca Musei Marisiensis, Târgu Mureș.
Budapest Régiségei	Budapest Régiségei Régészeti és Történeti Évkönyv. Budapest.
CA București	Cercetări arheologice în București, București.
CCA	Cronica Cercetărilor Arheologice, București.
CIL	Corpus Inscriptionum Latinarum, Berlin.
CsSzME	A Csíki Székely Múzeum Évkönyve. Csíkszereda.
Dacia (N.S.)	Dacia. Revue d'archéologie et d'histoire ancienne. Nouvelle serie. București.
Dolgozatok	Dolgozatok a Magyar Királyi Ferencz József Tudományegyetem Archaeológiai Intézetéből. Szeged.
EphNap	Ephemeris Napocensis, Cluj-Napoca.
Erdély	Erdély. Turistai, fürdőügyi és néprajzi folyóirat, Cluj-Napoca.
FontArchPrag	Fontes Archaeologici Pragenses, Prague.
Földtközl.	Földtani közlöny, Budapest.
HOMÉ	A Herman Ottó Múzeum Évkönyve, Miskolc.
ILD	C. C. Petolescu, <i>Inscripții latine din Dacia</i> , Bucharest 2005.
JAHA	Journal of Ancient History and Archaeology, Cluj-Napoca.
Jahrb. RGZM	Jahrbuch des Römisch Germanischen Zentralmuseums zu Mainz, Mainz.
JAMÉ	Jósa András Múzeum Évkönyve, Nyiregyháza.
Karpatika	Karpatika, Uzhorod.
LMI	List of Historic Monuments, updated 2015.
Marisia	Marisia. Studies and Materials. Archeology. Târgu-Mureș.
MCA (S.N.)	Materiale și Cercetări Arheologice Serie Nouă. București
MemAntiq	Memoria Antiquitatis, Piatra Neamț.
NNA	Nordisk Numismatisk Årsskrift, Stockholm.
PAS	Prähistorische Archäologie in Südosteuropa, Rahden/Westf.
PAT	Patrimonium Archaeologicum Transylvanicum, Cluj-Napoca.
Paléo	PALEO – Revue d'archéologie préhistorique, Les Eyzies-de-Tayac-Sireuil.
Pallas	Pallas. Revue d'études antiques, Toulouse.

PNAS	Proceedings of the National Academy of Sciences of the United States of America, Washington.
PZ	Prähistorische Zeitschrift. Berlin.
RAN	National Archaeological Repertory.
RM	Revista Muzeelor, București.
Sargetia	Sargetia. Acta Musei Devensis, Deva.
SatuMareSC	Satu Mare Studii și Comunicări, Satu Mare.
SCIV(A)	Studii și Cercetări de Istorie Veche și Arheologie, București.
SCȘMI	Studii și Comunicări Științifice ale Muzeelor de Istorie, București.
SIB	Studii de Istorie a Banatului, Timișoara.
SlovArch	Slovenská archeológia, Nitra.
SP	Studii de Preistorie, București.
St.Cerc.Antropol.	Studii și Cercetări de Antropologie, București.
StudUBB-G	Studia Universitatis Babeș-Bolyai. Seria Geologia, Cluj-Napoca.
ZborníkSlovNMA	Zborník Slovenského Národného Múzea. Archeológia, Bratislava.
ZSA	Ziridava. Studia Archaeologica, Arad.
ИАИ	Известия на Археологическия Институт при БАН, София.