

On Men and Pigs: Were Pigs Domesticated at Mesolithic Iron Gates of the Danube?

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Rezumat: Valorile biometrice obținute pe baza măsurătorilor dinților de suine din zona Porților de Fier din mezolitic sunt comparate, cu cele din neolitic și prezent. Rezultatele coroborate evidențiază ca suinele din zona Porțile de Fier sunt sălbatice și distincte de valorile metrice ale porcilor domestici neolitici și moderni.

Cuvinte cheie: Porțile de Fier, Mezolitic, tranziție Mezolitic-Neolitic, domesticire porc.

Key words: Iron Gates of the Danube, Mesolithic, Mesolithic-Neolithic transition, pig domestication.

This paper is a part of a more extensive study regarding the possibility of pig domestication at Mesolithic Iron Gates sites. The study is concerned only with the sites found on the Romanian shore of the Danube River.

During several trips to Romania during 1999 – 2005 we had the opportunity of taking various measurements of ancient as well as modern wild and domestic pig teeth from:

1. the Iron Gates of the Danube sites of Ali Beg, Răzvrata, Icoana, Ostrovul Banului, Schela Cladovei, Ostrovul Corbului and Ostrovul Mare, Veterani and Cuina Turcului (Mehedinți county) (Fig. 1);

2. Neolithic sites of Căscioarele, Măriuța, (Călărași county), Bordușani (Ialomița county), Chitila (Ilfov county), Insurăței (Brăila county), Luncavița (Tulcea county), Poduri (Bacău county), Hârșova (Constanța county) and Vitănești (Teleorman county) (Fig. 1);

3. contemporary wild and domestic pigs from Museum of Natural Sciences "Grigore Antipa" in Bucharest, Laboratory of Comparative Anatomy, Faculty of Veterinary Medicine – University of Bucharest;

4. villages of Dubova (Mehedinți county), Topoloveni (Argeș county), Vârteju (Olt county) and Frăsinet (Călărași county) (Fig. 1).

We will present here the results of pig dentition metric analysis. Most of the ancient data comes from site Icoana, which yielded a fairly large amount of faunal material.

Location of site Icoana

Excavated by Vasile Boroneanț (1970; 1973a; 1973b; 1980; 2000), Icoana is one of the very few sites at Iron Gates which offer a complete stratigraphy, for a very long, continuous occupation. Its close proximity to site Răzvrata gave birth to speculations regarding the relationship between the two, some authors (Al. Bolomey 1973) considering them twin sites. At the time, the lack of radiocarbon dates made impossible any further conclusions in this direction.

It is rather difficult to understand way, but there is one small problem in relation to the exact location of these two sites: on all Mesolithic Iron Gates sites map, the geographical position of Icoana has been reversed with Răzvrata. The later was actually located on the mouth of river Mraconia, right across site Hajducka Vodenica on the Serbian shore. Icoana was located about 700-800m downstream of Răzvrata.

It may be that there was some interaction between these three sites. Unfortunately, it appears that Hajducka Vodenica, compared to other sites on the Serbian shore, was less studied, although some progress has been made lately (D. Borić, M. Preston 2004).

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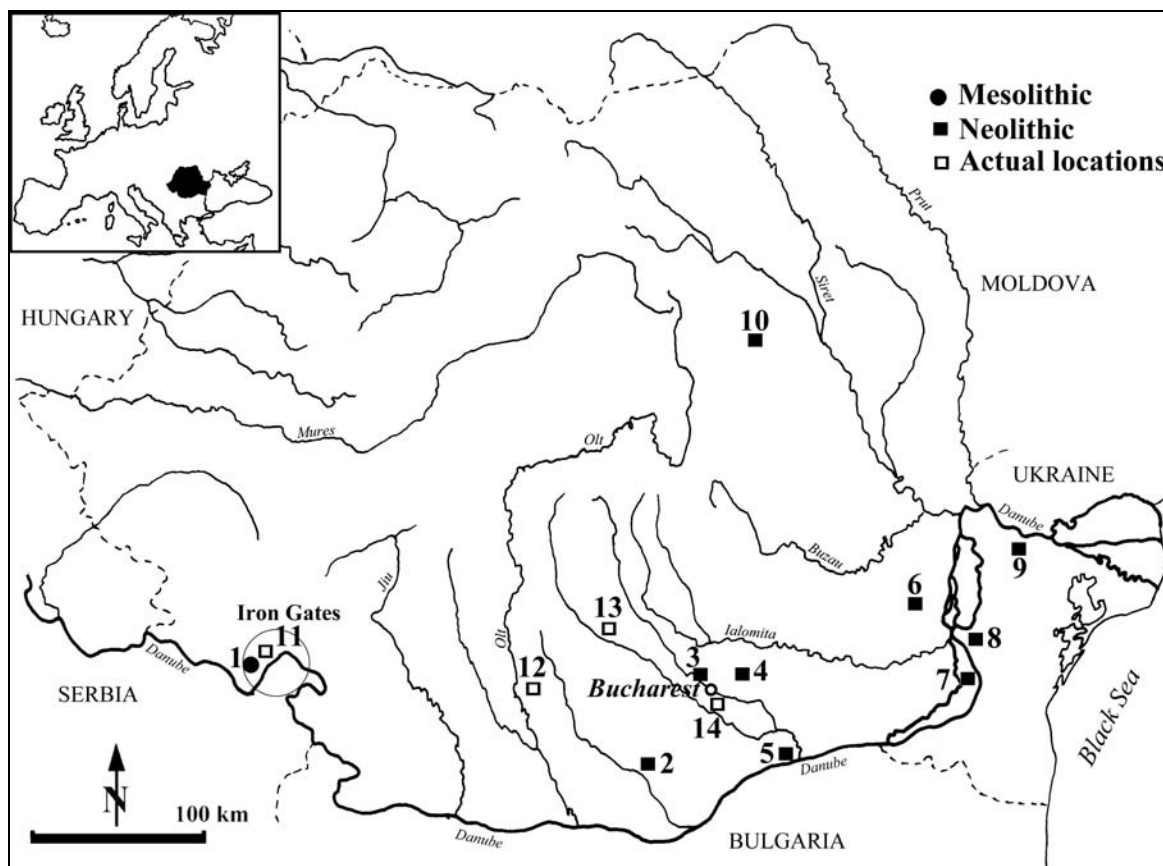


Fig. 1. Geographic distribution of the sites.

Distribuția geografică a siturilor.

1 – Iron Gates / Porțile de Fier (Icoana, Ostrovul Banului, Ostrovul Corbului, Schela Cladovei, Cuina Turcului, Răzvrata) ; 2 - Vitănești; 3 - Chitila; 4 - Măriuța; 5 - Căscioarele; 6 - Insurăței; 7 - Bordușani; 8 - Hârșova; 9 - Luncavița; 10 - Poduri; 11 - Dubova; 12 - Vârteju; 13 – Topoloveni; 14 - Frășinet.

Temporal frame

The general lack of radiocarbon dates for the Romanian sites became over the years a very serious problem. The situation was attenuated to a degree by some dates from Schela Cladovei (C. Bonsall, *et alii* 2000; C. Bonsall *et alii* 2002; G. T. Cook 2002). However, the understanding of the evolutionary trajectory over time for the rest of the sites remained simply impossible. Most unfortunate, the results for the majority of the samples we collected and sent for radiocarbon dating are still not available. Therefore, we are only able to present here six new dates for Icoana and one for Răzvrata (ran by University of Arizona, Tucson). The available radiocarbon dates place Icoana between about 8500 BC and 6500 BC (Fig. 2). According to these dates developments at Icoana occurred before the earliest presence of Starčevo-Criș Neolithic in the Danube Gorge. It also appears that it was contemporary to Răzvrata, at least for some periods of time.

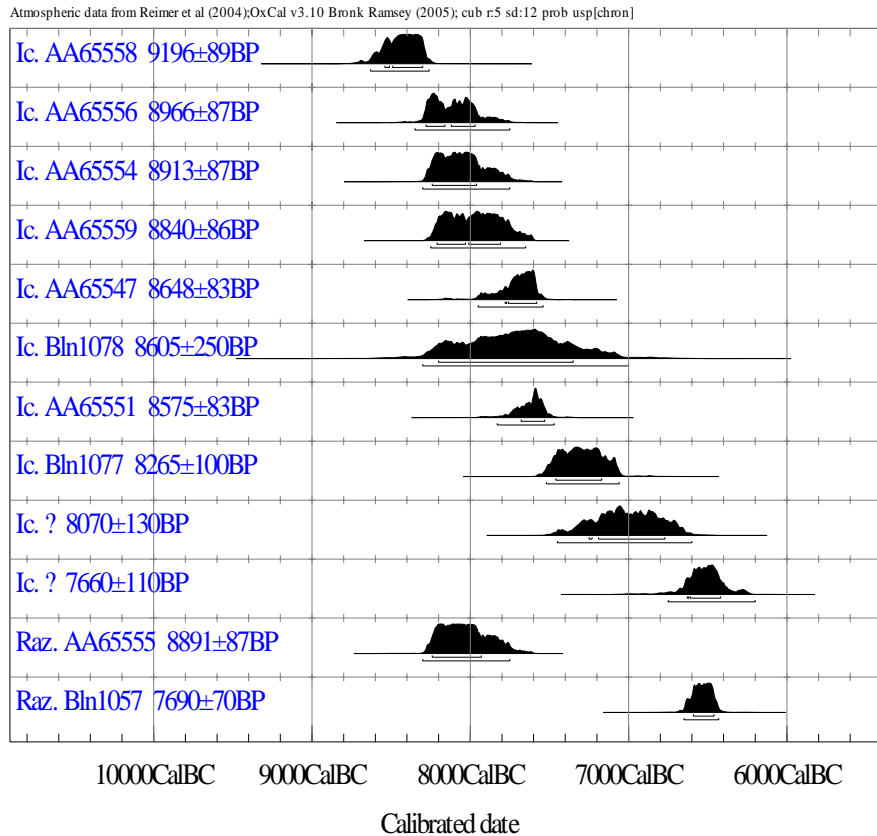


Fig. 2. Available radiocarbon dates for Icoana (Ic.) and Răzvrata (Raz.) (Al. Dinu 2006; A. Păunescu 2000).
Date radiocarbon de la Icoana (Ic.) și Răzvrata (Raz.) (Al. Dinu 2006; A. Păunescu 2000).

Materials and method

All measurements were taken according to standard methods (A. von den Driesch 1976), using metric system digital calipers calibrated for two decimals (Appendix 1 et Appendix 2).

Pig age according to tooth eruption and wear was established using the available publications on the subject (S. Bököny 1972; S. Hillson 1986; H. G. Matschke 1967; S. Payne 1982; V .B. Rolett, M.-Y. Chiu 1994; N. Șelaru 1995).

The teeth samples were obtained from (Fig. 1):

1. Iron Gates sites of Icoana, Ostrovul Banului, Ostrovul Corbului, Schela Cladovei and Cuina Turcului;
2. the Neolithic sites of Bordușani, Căscioarele, Chitila, Hârșova, Insurăței, Luncavița, Măriuța, Poduri and Vitănești;
3. wild contemporary pigs from the village of Dubova – Iron Gates, Museum “Grigore Antipa” in Bucharest, the Department of Comparative Anatomy - Faculty of Veterinary Medicine in Bucharest (Vet. Medicine);
4. contemporary domestic pigs from villages of Topoloveni, Vârteju, and Frășinet.

Random samples of pig teeth were sent for DNA analysis. These samples were obtained from Mesolithic pigs from Iron Gates sites of Icoana, Schela Cladovei and Ostrovul Corbului, modern wild pigs hunted in the vicinity of village Dubova, Iron Gates, less than 2 km away from site Icoana, and Neolithic sites of Căscioarele and Bordușani.

The results of the DNA analysis of the Mesolithic pig samples from Iron Gates placed them in the same group with the modern European wild pigs from the same region, but apart from Neolithic pig samples from Căscioarele and Bordușani, which clustered together with Neolithic domestic pigs from Asia Minor (G. Larson *et alii* in press). The very large pig teeth from Căscioarele (Fig. 3; Appendix 1), however, produced the same results as the wild modern pigs and the Mesolithic pigs from the Mesolithic Iron Gates sites.

Teeth metrics

I. Mandible

A. Sites: Icoana, Căscioarele, Bordușani.

In the section below we have compared pig teeth from Icoana, and the Neolithic sites of Căscioarele and Bordușani. We have measured both the maximum length and the maximum breadth for 1st, 2nd, and 3rd molars, considering that such measurement will provide a better reflection of the actual size of the teeth (Fig. 3).

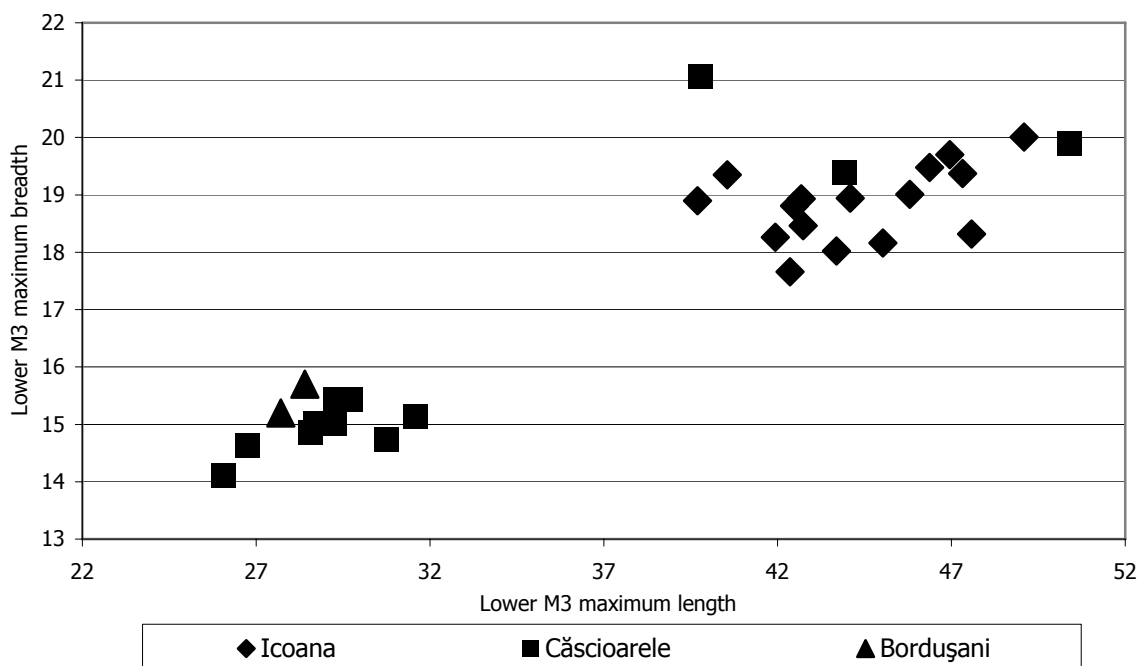


Fig. 3. Lower 3rd molar values for Icoana, Căscioarele, Bordușani.
 Valorile dimensiunilor molarului 3 inferior de la Icoana, Căscioarele, Bordușani.

A sharp border appears between the pig populations from Mesolithic Icoana and the two Neolithic sites of Căscioarele and Bordușani.

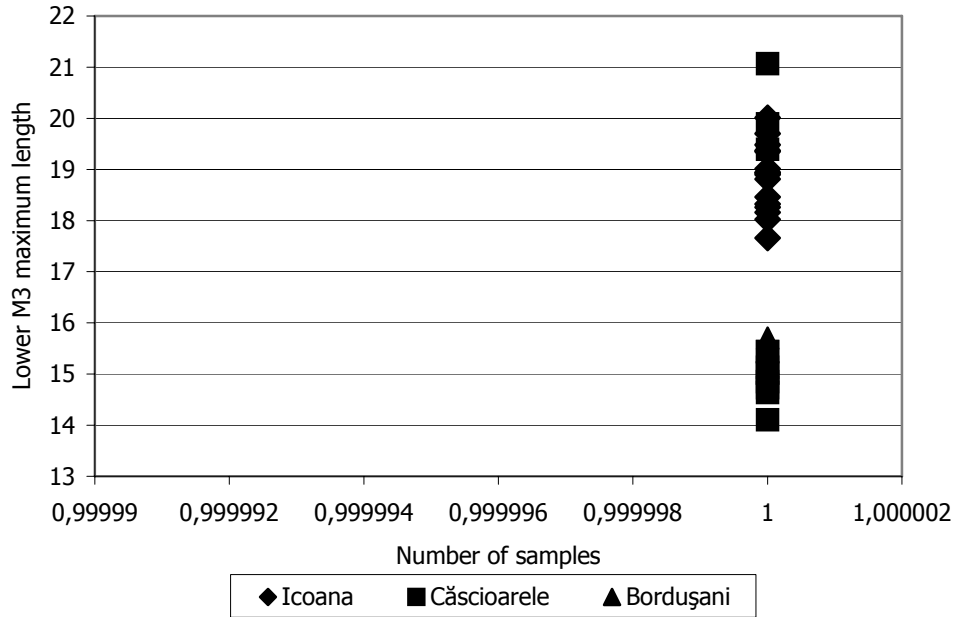


Fig. 4. Lower 3rd molar maximum length values for Icoana, Căscioarele, Bordușani. Valorile lungimii maxime a molarului 3 inferior de la Icoana, Căscioarele, Bordușani.

Even if only the maximum length of 3rd molar from Icoana, Căscioarele and Bordușani is plotted (Fig. 4), the same grouping is obtain, and the division between the clusters becomes even better visible.

For the lower 2nd molar the values between the samples from the three sites are clustering closer (Fig. 5), but the distinction remains clearly visible:

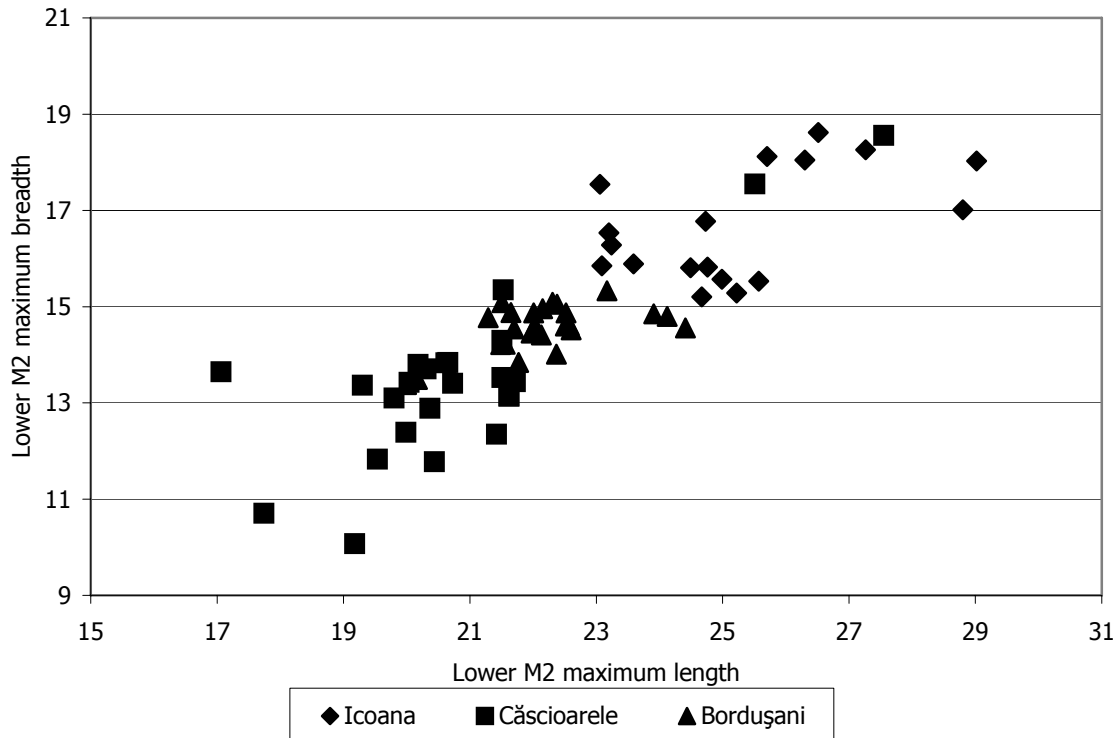


Fig. 5. Lower 2nd molar values for Icoana, Căscioarele, Bordușani. Valorile dimensiunilor molarului 2 inferior de la Icoana, Căscioarele, Bordușani.

The sample size for 1st molar (Fig. 6) is significantly larger, which makes the overall image perhaps a little too crowded, but the separation is still strong:

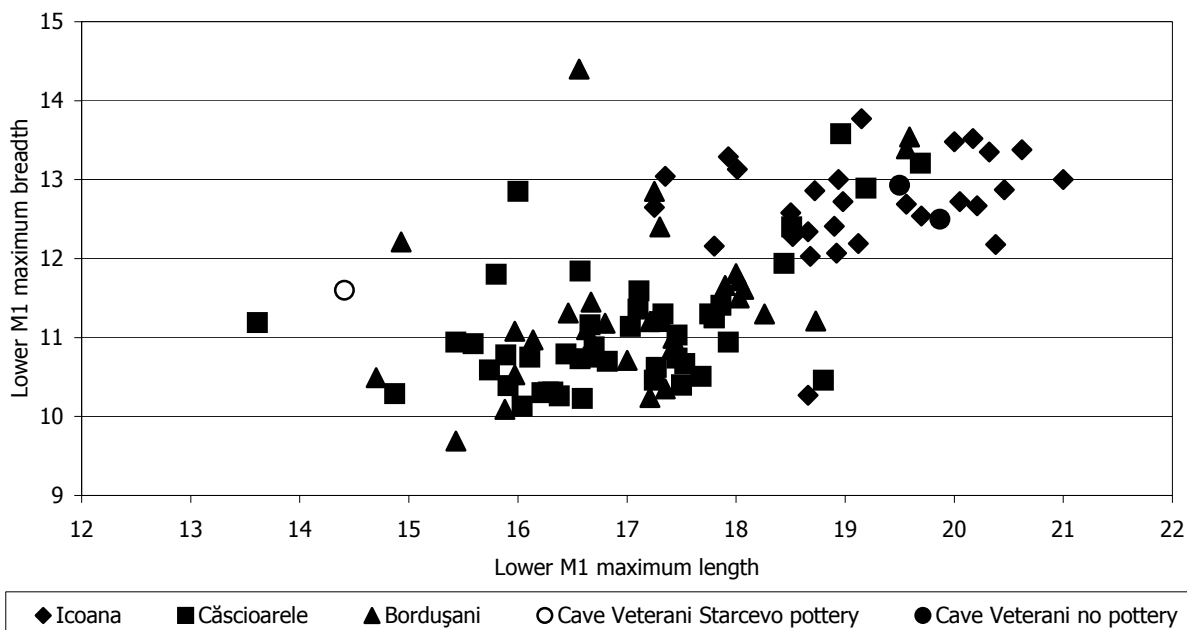


Fig. 6. Lower 1st molar values from Icoana, Căscioarele, Bordușani and the one Neolithic Starčevo sample from Cave Veterani.

Valorile dimensiunilor primului molar inferior de la Icoana, Căscioarele, Bordușani și ale singurului eșantion neolitic Starčevo de la peștera Veterani.

Again, the populations cluster distinctively. It is interesting to notice the only sample we could undoubtedly associate with Starčevo Neolithic at the Gates, from Cave Veterani. The sample groups with Căscioarele and Bordușani.

B. Site Icoana, modern wild pig, modern domestic pig.

If measurements from Icoana are compared to the ones of all modern wild pig (Fig. 7), the values cluster generally well together. In fact, a number of samples show that the pigs from Icoana had long lower 3rd molar than most of the modern ones.

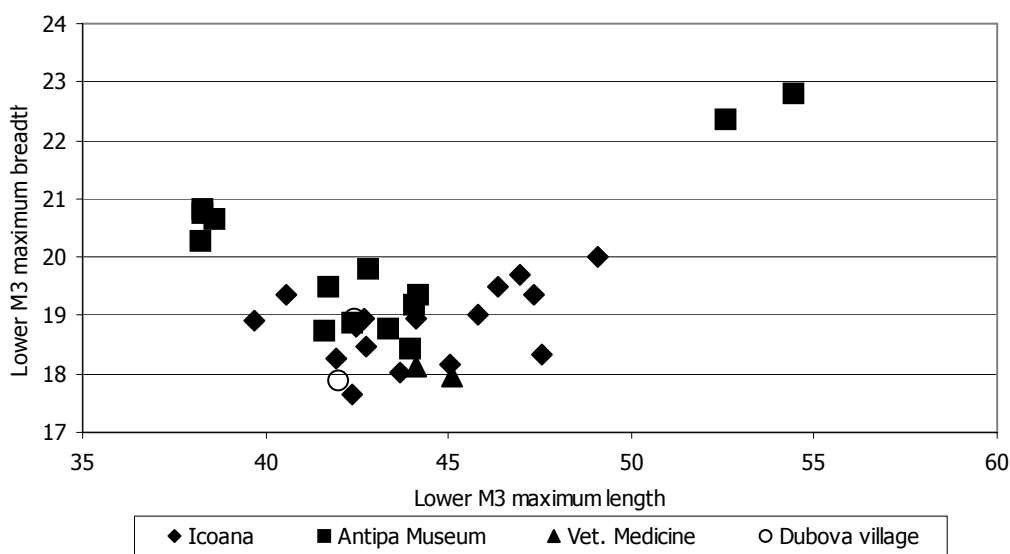


Fig. 7. Lower 3rd molar values for Icoana vs. modern wild. Valorile dimensiunilor molarului 3 inferior de la Icoana comparativ cu cele actuale de mistreț.

If Icoana measurements are compared to ones of modern domestic pig for lower 2nd molar (Fig. 8), there is no interference between the two populations. I did choose lower 2nd molar because the lower 3rd molar is not present in most modern domestic pig samples. Usually the pigs are killed at an younger age.

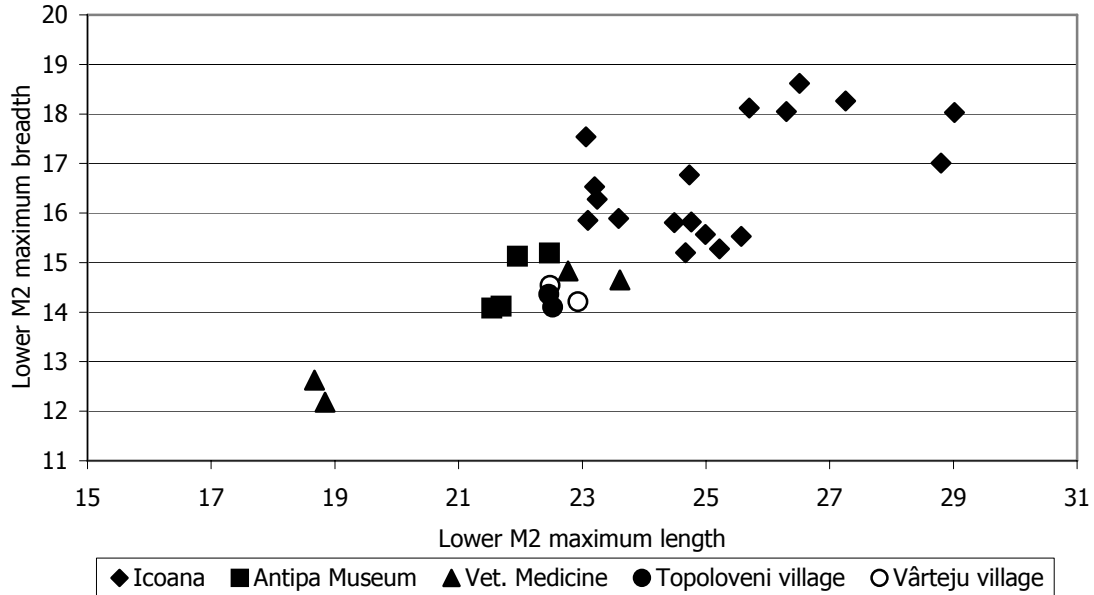


Fig. 8. Lower 2nd molar values for Icoana vs. modern domestic. Valorile dimensiunilor molarului 2 inferior de la Icoana comparativ cu cele actuale ale porcului domestic.

B. Sites Căscioarele and Bordușani vs. Mesolithic Iron Gates sites.

In order to verify the patterns presented above, the lower 3rd molar values from Neolithic Căscioarele and Bordușani were plotted against the values from Mesolithic Iron Gates sites of Icoana, cave Cuina Turcului, Ostrovul Banului, Ostrovul Corbului, and Schela Cladovei (Fig. 9).

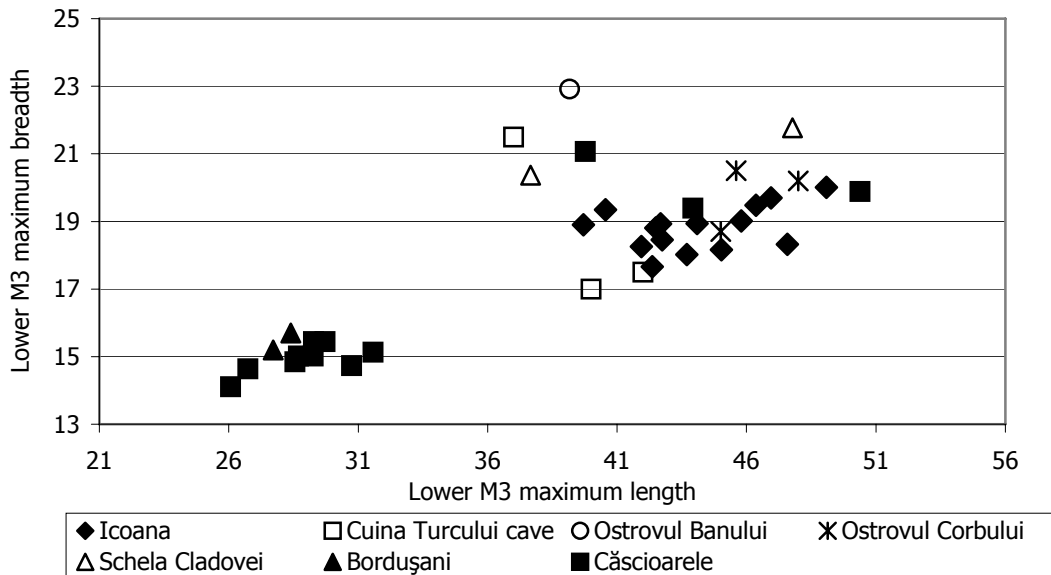


Fig. 9. Lower 3rd molar values from Bordușani and Căscioarele vs. Mesolithic Iron Gates sites. Valorile dimensiunilor molarului 3 inferior de la Bordușani și Căscioarele comparativ cu cele din siturile mezolitice de la Porțile de Fier.

The Epipaleolithic samples from Cuina Turcului cave were included due to the availability of data.

It can be distinctively seen that the values for Mesolithic Iron Gates pigs clearly cluster far from the Căscioarele batch and the two samples from Bordușani.

C. Site Icoana vs. Neolithic sites except Căscioarele and Bordușani.

In order to verify the consistency of Icoana sample compared to Căscioarele and Bordușani, the Mesolithic Iron Gates 3rd molar values have been plotted against the lower 3rd molar values from all Neolithic sites except Căscioarele and Bordușani (Fig. 10).

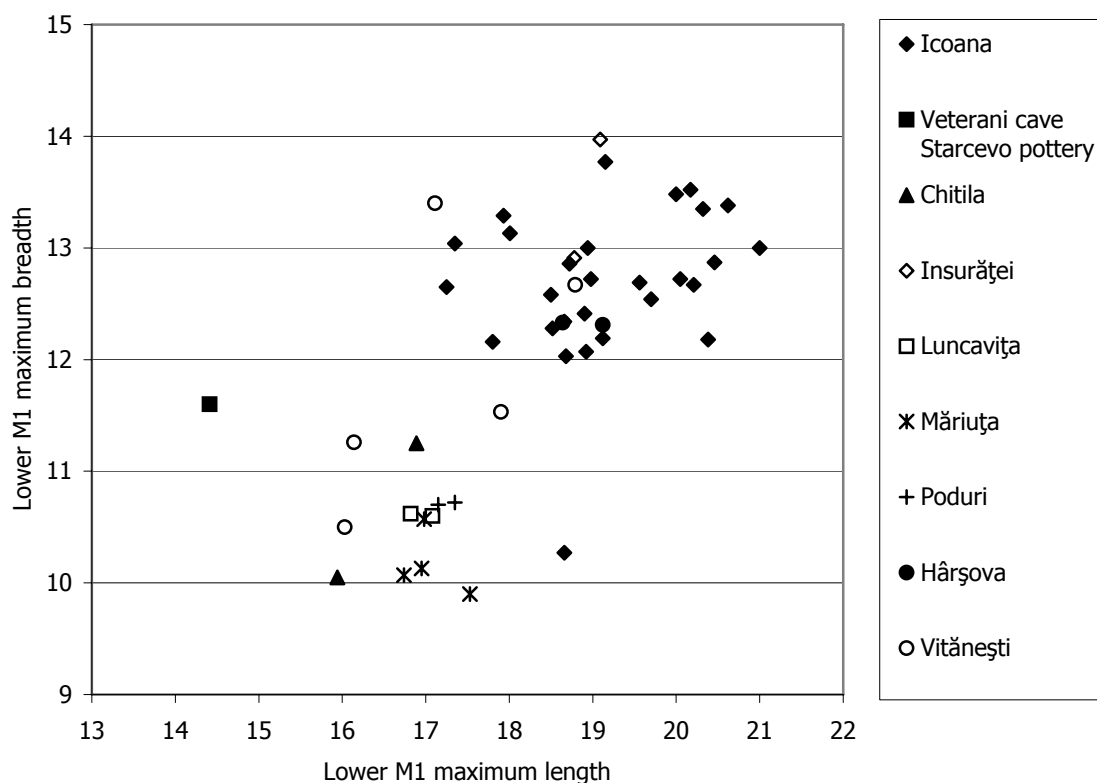


Fig. 10. Lower 1st molar values for Icoana vs. all Neolithic sites except Căscioarele and Bordușani. Valorile dimensiunilor primului molar inferior de la Icoana comparativ cu cele din siturile neolitice cu excepția celor de la Căscioarele și Bordușani.

The graph shows that some values from Neolithic Insurăței, Hârșova, and Vitânești fall within the range of Icoana sample. Most of the other values detach from the Icoana batch. It is also visible that there are actually not too many values from each site; one reason that determined us to chose for comparison mostly the sites of Căscioarele and Bordușani.

There are some problems with the sites of Insurăței, Hârșova, and Vitânești. First, as in the case of Cave Veterani Starčevo level, the sample is rather small; more values were obtained only for Vitânești. Furthermore, the faunal analysis performed for sites of Insurăței, Hârșova and Vitânești (A. Bălășescu 2003; A. Bălășescu, V. Radu 2004) shows an almost equal number of domestic and wild animals present in the archaeological record. Therefore, the chance of measuring at one particular time two samples coming from wild animals was very high. Perhaps the case of Vitânești is relevant in this direction, some samples falling within Icoana batch, and some within the domestic. Unfortunately no 3rd molar values were available except one (of the two individuals) for Insurăței.

Considering however the pattern showed by the samples from Vitânești, we are inclined to believe that the samples from Hârșova and Insurăței show exemplars of wild pig, and the batch from Vitânești shows a mixed wild and domestic population.

II. Maxilla

It is extremely interesting the pattern emerging from the plotting of Icoana maxilla teeth values. For upper 3rd molar there are very few samples, all of age over 24 months.

In Fig. 11, a break appears to exist in between the two clusters. While the age is constant and no apparent variation in size occurred over time, the only interpretation of this pattern would be to associate the two clusters with sex differentiation.

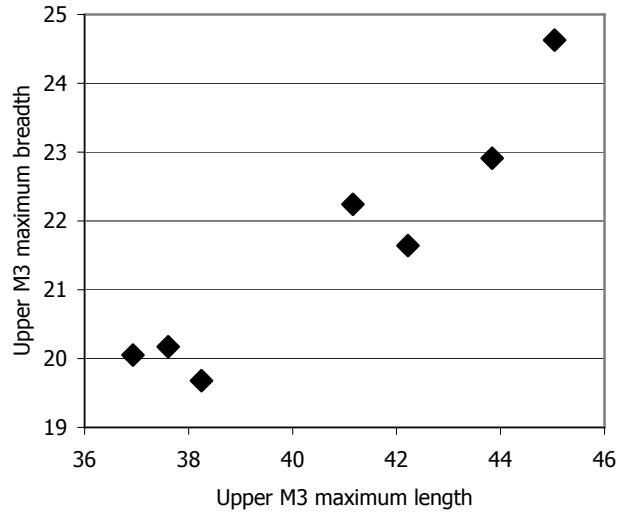


Fig. 11. Values for upper 3rd molar from Icoana, all layers, age over 24 months. Valori dimensiunilor molarului 3 superior de la Icoana, toate nivelurile, vârsta peste 24 de luni.

The pattern shown in Fig. 11 becomes even more puzzling for the values of upper 1st molar. In Fig. 12 this separation is shown by age groups, regardless the depth of the excavated layer. The question mark stands for unmarked teeth.

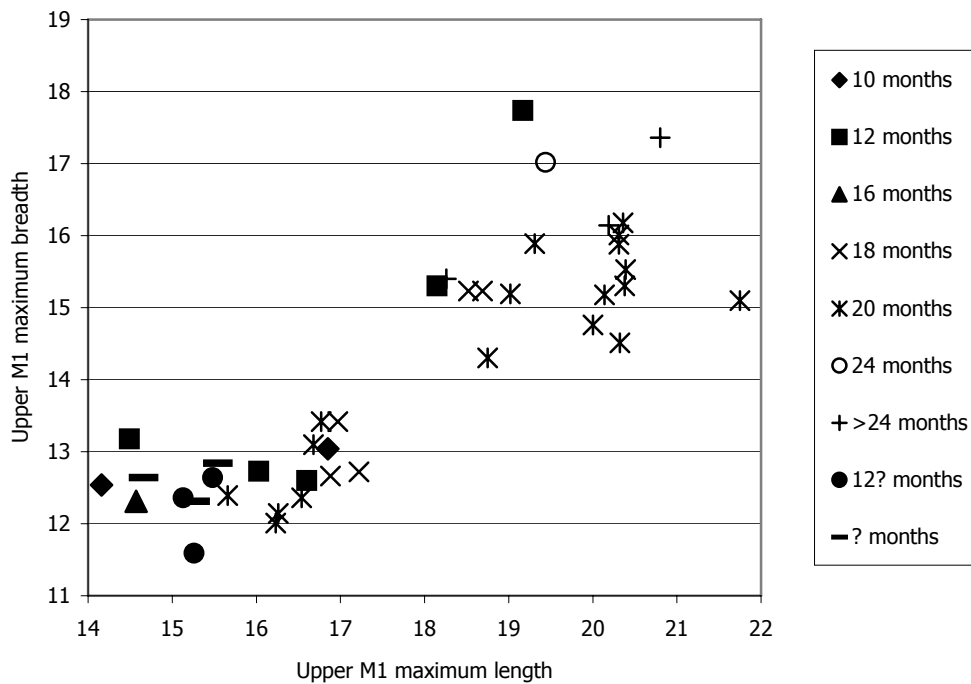


Figure 12. Values for upper 1st molar from Icoana, by age regardless excavated layer. Valori dimensiunilor primului molar superior de la Icoana, pe diferite vârste din nivelurile săpate.

The pattern shown in Fig. 12 also verifies if the values of all age groups are plotted by the depth of each excavated layer (Fig. 13). The question mark stands for unmarked teeth.

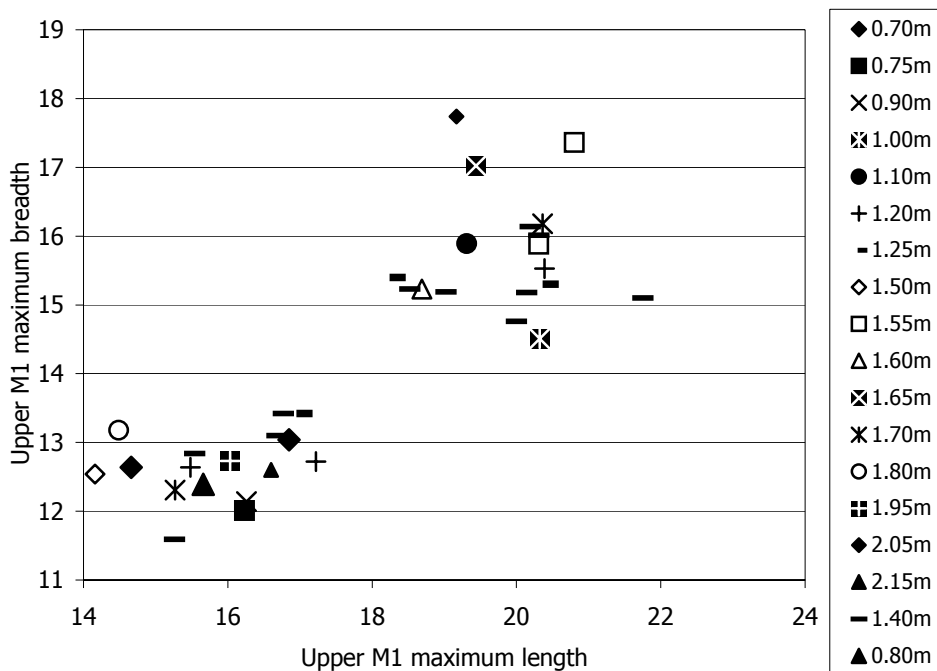


Fig. 13. Values for upper 1st molar from Icoana, by each excavated layer regardless age. Valorile dimensiunilor primului molar superior de la Icoana, pe adâncimi de săpătură și vârstă.

The only plausible interpretation of these graphs would be that the clustering of upper 1st and 3rd molars represents a partition by sex; the lower cluster showing values for female teeth, and the upper cluster for male teeth. It appears therefore that the inhabitants of site Icoana killed indiscriminately pigs of all sexes and ages, a pattern to be associated rather with hunting than with animal keeping.

The pattern offered by the length of the upper 3rd molar from Icoana is very close to the one obtained by plotting the values of the same tooth from Vlasac pigs (S. Bököny 1978) (Fig. 14).

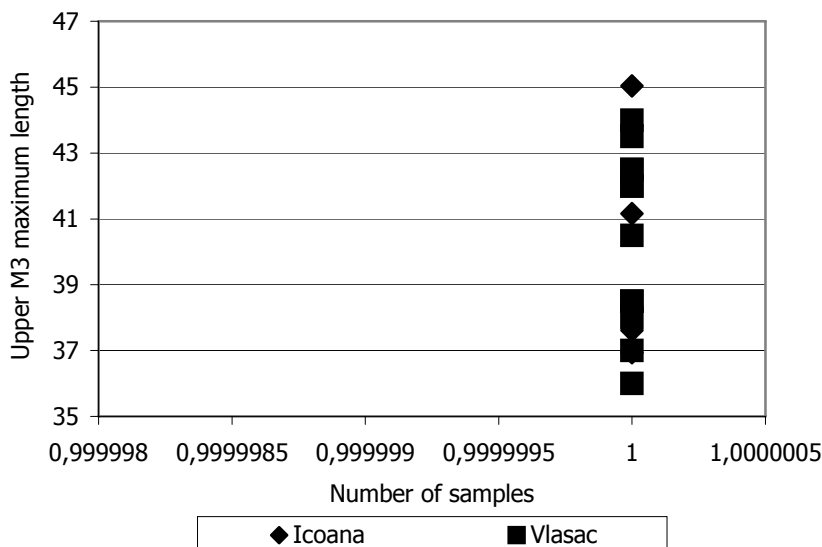


Fig. 14. Values for upper 3rd molar length from Vlasac (Bököny 1978) and Icoana. Valorile lungimii maxime a molarului 3 superior de la Vlasac (Bököny 1978) și Icoana.

As seen in Fig. 11, in Fig. 14 is also visible a possible demarcation between 1 males and females, yet, a clear break between the two may be debatable. The only way to verify the sex differentiation suggested by this pattern was to compare it with information from another site. The only site offering enough data was Căscioarele. We are presenting below the values for upper 3rd molar (Fig. 15).

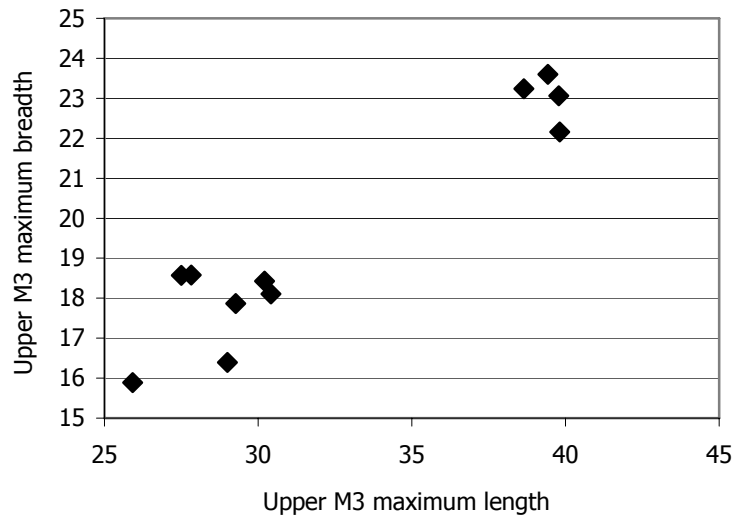


Fig. 15. Upper 3rd molar values for Căscioarele. All individuals over 24 months old.
 Valorile dimensiunilor molarului 3 superior de la Căscioarele. Toți indivizii au vârsta de peste 24 luni.

According to the age group, the clustering seen in Fig. 15 may be safely associated with sex groups. Three of the lower values were positively identify as females, according to the canines. However, compared to Icoana, this differentiation marks only one age group. Yet, we consider that this limitation does not contradict in any case the more likely hunting pattern of all ages and all sexes suggested by the plotting patterns obtained from the pig remains uncovered at Icoana.

Discussion and conclusion

The aim of this paper is to present arguments answering to questions related to the possibility of pig domestication at Iron Gates. However, this is a complex question that requires a much more in depth investigation. Nevertheless, the figures provided here may offer interesting clues regarding Mesolithic economic developments at some Danube Canyon sites.

According to the data presented above, the teeth sizes of Iron Gates Mesolithic pigs cluster separately from the Neolithic pigs of Căscioarele and Borduşani. The DNA analysis revealed that the Iron Gates pigs displayed the same characteristics as wild European pigs, while the samples from Căscioarele and Borduşani were associated with Neolithic Asia Minor pigs. It may be only assumed that because the batches from Căscioarele and Borduşani display values that almost superimpose, the two pig populations could have the same genetic affiliation. The same may also be true for the pig population from Măriuța. Moreover, it appears that at all excavated levels from site Icoana pigs were killed rather indiscriminately, regardless of age and sex, a practice rather associated with hunting than animals keeping.

There is also one detail totally overlooked by previous zooarchaeological studies of the Iron Gates sites (L. Bartosiewicz *et alii* 1995; 2001; Al. Bolomey 1973; S. Haimovici 1987), which may shed some light on these circumstances: the concentration of wild pig population in the region of Cazane (sites Icoana – Răzvrata) has been known to be by far the largest along the entire Danube Canyon, and one of the highest in Romania (GCCPF Grupul de Cercetări Complexe 1976). It is safe to assume that the same was true during the Mesolithic time. Therefore it

appears rather normal that due to the constantly high availability, wild pig to be present in the archaeological record of Icoana more than the other sites (Tab. 1).

Tab. 1. Wild pig and deer remains at Iron Gates sites (Bartosiewicz *et alii* 1995; 2001; S. Bököny 1970; 1978; Al. Bolomey 1973; A.T. Clason 1980; I. Radovanović 1996). S – Serbie, R – Roumanie.
Resturile de mistreț și cervide descoperite în siturile de la Porțile de Fier (Bartosiewicz, *et alii* 1995; 2001; S. Bököny 1970; 1978; Al. Bolomey 1973; A.T. Clason 1980; I. Radovanović 1996). S – Serbie, R – Roumanie.

Site	wild pig %	deer (<i>Cervus</i> + <i>Capreolus</i>) %
Vlasac (S)	12.16	60.09+2.18 = 62.27
Lepenski Vir I (S)	5.46	62.84+2.18 = 65.02
Lepenski Vir II (S)	3.94	73.02+0.65 = 73.67
Haiduka Vodenika I/II (S)	10.95	83.80+0.47 = 84.27
Padina (S)	5.6	78.00+3.8 = 81.8
Vlasac (S)	4.07	23.13+1.75 = 24.88
Lepenski Vir III (S)	3.42	36.39+1.52 = 37.91
Icoana (R)	53.35	38.58+6.20 = 44.78
Schela Cladovei (R)	3.9	9.88+2.5 = 12.38
Ostrovul Corbului (R)	2.42	65.50+11.90 = 77.40

Yet, in order to obtain a better image of what was going on at the site over time the fluctuation in time of the quantity of pig remains needs to be compared against the rest of the faunal remains, especially deer.

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Appendix 1. *Sus* mandible

Sample	Depth (m)	Side	Age	Sex	M1 L	B	M2 L	B	M3 L	B
Antipa D.404	Modern	R	>24	F	17.44	11.28	21.69	14.12	29.32	16.14
Antipa D.404	Modern	L	>24	F	17.5	11.46	22.47	15.19	29.68	16.28
Antipa D.63	Modern	R	20	F	17.84	13.88	21.54	14.08		
Antipa D.63	Modern	L	20	F	18	13.81	21.95	15.13		
Antipa W.403	Modern	R	>24	M	16.66	14.8	25.85	19.68	52.56	22.36
Antipa W.403	Modern	L	>24	M	17.56	13.86	25.46	15.53	54.44	22.82
Antipa W.405	Modern	L	>24	F	17.04	14.83	21.79	16.17	41.59	18.74
Antipa W.405	Modern	R	>24	F	16.81	13.68	21.83	15.62	42.36	18.89
Antipa W.631	Modern	R	>24	M	17.83	13.91	24.87	18.14	41.74	19.5
Antipa W.631	Modern	L	>24	M	17.57	13.96	24.72	18.09	42.78	19.79
Antipa W.631	Modern	L	>24	M	18.43	12.26	24.05	16.53	44.05	19.17
Antipa W.631	Modern	R	>24	M	18.14	12.32	24.11	16.66	44.19	19.37
Antipa W.631B	Modern	L	24	M	18.93	13.02	24.65	17.63		
Antipa W.631B	Modern	R	24	M	19.21	13.08	24.55	17.44		
Antipa W.631C	Modern	R	>24	M	19.56	13.87	28.31	18.51	38.27	20.84
Antipa W.631C	Modern	L	>24	M	19.78	13.18	27.74	18.37	38.3	20.77
Antipa W.631E	Modern	L	>24	M	20.24	13.81	25.87	18.03	38.2	20.27
Antipa W.631E	Modern	R	>24	M	20.24	13.61	26.11	18.09	38.62	20.66
Antipa W.843	Modern	R	>24	M	17.11	13.19	23.76	16.09	43.36	18.77
Antipa W.843	Modern	L	>24	M	17.28	13.86	24.12	13.46	43.96	18.44
Borduşani		L	8		19.56	13.39				
Borduşani		R	8		19.59	13.54				
Borduşani		L	14	M	14.93	12.21	23.17	15.33		
Borduşani		L	14		18.03	11.5				
Borduşani		R	14		18.26	11.3				
Borduşani		R	17	M	16.46	11.31	21.7	14.54		
Borduşani		L	17	M	16.63	11.1	22.6	14.52		
Borduşani		L	17	M	16.8	11.18	21.49	14.21		
Borduşani		R	17	M	17.21	10.24	21.77	13.84		
Borduşani		L	17	M	17.35	10.35	22.37	14.01		
Borduşani		R	17	M	17.41	10.85	22.15	14.96		
Borduşani		L	17	M	17.42	10.99	22.01	14.87		
Borduşani		L	17	M	18	11.81	21.51	15.08		
Borduşani		R	17	M	18.07	11.61	22.38	15.05		
Borduşani		R	17	M	18.73	11.21	22.51	14.6		
Borduşani		R	18	F	14.7	10.49	21.29	14.77		
Borduşani		L	18	F	15.97	11.08	21.56	14.22		
Borduşani		L	18	F	15.97	10.53	21.65	14.88		
Borduşani		R	18	F	16.14	10.97	21.97	14.45		
Borduşani		L	18	F	16.56	14.4	22.13	14.41		
Borduşani		R	18	F	16.67	11.45	22.03	14.6		
Borduşani		R	18	M	17.25	12.85	24.41	14.56		
Borduşani		L	18	M	17.3	12.4	22.57	14.61		
Borduşani		L	18	M	17.9	11.66	24.12	14.8		
Borduşani		R	18	M	18.03	11.72	23.91	14.85		
Borduşani		R	24	F	15.88	10.09	20.17	13.49	27.71	15.2
Borduşani		L	24	F	15.43	9.69	20	13.38	28.4	15.7
Borduşani		R	24	M	17	10.71	22.52	14.87		
Borduşani		L	24	M	17.21	11.2	22.31	15.09		

Căscioarele A		R	12		16.11	10.75				
Căscioarele A		L	14		15.43	10.94				
Căscioarele A		L	14		15.89	10.78				
Căscioarele A		R	14		15.91	10.39				
Căscioarele A		L	14		16.44	10.79				
Căscioarele A		R	14		16.59	10.23				
Căscioarele A		L	14		16.7	10.88				
Căscioarele A		L	14	F	17.03	11.14				
Căscioarele A		L	14	F	17.1	11.36				
Căscioarele A		L	14	M	17.11	11.59				
Căscioarele A		R	14		17.33	11.3				
Căscioarele A		R	14	M	17.68	10.51				
Căscioarele A		R	14	M	18.44	11.94				
Căscioarele A		L	14	F	19.69	13.21				
Căscioarele A		R	14	M			20.04	13.43		
Căscioarele A		R	14	F			20.37	12.89		
Căscioarele A		L	17		16.66	11.16	21.51	14.3		
Căscioarele A		R	17	M	17.46	11.03	21.72	13.44		
Căscioarele A		L	17	M			19.8	13.1		
Căscioarele A		L	17	F			21.51	13.53		
Căscioarele A		R	18				19.18	10.08		
Căscioarele A		R	18				19.99	12.39		
Căscioarele AB	1.55-1.80	R	7		16.38	10.26				
Căscioarele AB	1.55-1.80	L	7		17.76	11.3				
Căscioarele AB	1.55-1.80	R	7		17.86	11.41				
Căscioarele AB	1.05-1.30		8		17.27	10.62			29.72	15.44
Căscioarele AB	1.05-1.30	R	8		15.74	10.59				
Căscioarele AB	1.05-1.30	L	8		16.04	10.13				
Căscioarele AB	1.05-1.30	R	8		16.22	10.3				
Căscioarele AB	1.05-1.30	R	8		16.57	10.73				
Căscioarele AB	1.05-1.30	L	8		16.57	11.84				
Căscioarele AB	1.05-1.30	R	8		17.3	11.2				
Căscioarele AB	1.05-1.30	R	8	M	17.5	10.4				
Căscioarele AB	1.05-1.30	R	8		17.5	10.4				
Căscioarele AB	1.55-1.80	R	8		16.32	10.31				
Căscioarele AB	1.55-1.80	L	8		17.53	10.67				
Căscioarele AB	1.55-1.80	L	8		17.8	11.25	21.62	13.14		
Căscioarele AB	1.55-1.80	L	8		17.8	11.25	21.62	13.14		
Căscioarele AB	1.55-1.80	R	8		17.93	10.94				
Căscioarele AB	1.55-1.80	L	8		18.51	12.4				
Căscioarele AB	1.55-1.80	L	8		18.8	10.46				
Căscioarele AB	1.05-1.30	L	10				20.18	13.8		
Căscioarele AB	1.30-1.55	R	10	M	15.8	11.8	20.65	13.84		
Căscioarele AB	1.30-1.55	L	10	M	16	12.85				
Căscioarele AB	1.05-1.30	R	12		16.28	10.31				
Căscioarele AB	1.30-1.55	R	15				17.74	10.71		
Căscioarele AB	1.30-1.55	L	15		17.25	10.46	20.44	11.78		
Căscioarele AB	1.30-1.55	R	16				19.54	11.83		
Căscioarele AB	1.05-1.30	L	17		19.19	12.89				
Căscioarele AB	1.30-1.55	L	18		16.82	10.7	21.42	12.35		
Căscioarele AB	1.55-1.80	R	18	F			21.53	15.35		
Căscioarele AB	1.05-1.30	R	>24				20.73	13.41	26.07	14.11
Căscioarele AB	1.30-1.55	L	25						28.69	15.02

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Căscioarele AB	1.55-1.80	R	>24	F					28.56	14.85
Căscioarele AB	1.30-1.55	R	>24					20.62	13.83	30.74
Căscioarele AB	1.55-1.80	L	>24		14.87	10.29	19.3	13.37	31.57	15.13
Căscioarele AB	1.30-1.55		6							
Căscioarele AB	1.05-1.30	L	8							
Căscioarele AB	1.55-1.80	L	7							
Căscioarele AB	1.55-1.81	R	6							
Căscioarele AB	1.55-1.82	L	18							
Căscioarele AB	1.80-205	R	6							
Căscioarele AB	1.30-1.55	L	>24						39.78	21.07
Căscioarele AB	1.55-1.80	L	>24		18.96	13.58	27.55	18.56	50.39	19.89
Căscioarele AB	1.30-1.55	L	>25		15.59	10.92	20.31	13.71	26.74	14.64
Căscioarele AB	1.30-1.55	R	>36	F	13.61	11.19	17.06	13.65	29.26	15.02
Căscioarele AB	1.05-1.30	L	>36						29.27	15.44
Căscioarele AB	1.05-1.30	L	>25				25.51	17.55	43.93	19.39
Căscioarele AB	1.55-1.80	R			16.69	10.75				
Căscioarele AB	1.55-1.80	R			17.46	10.74				
Cave Climente II	1.2	L	>24						31.96	15.08
Cave Climente II	0.1		12		20.19	12.97				
Cave Climente II	0.16	R	12		21.67	13.43				
Cave Veterani	2.7	R	10		19.5	12.93				
Cave Veterani	2.35		10		19.87	12.5				
Cave Veterani	Up. Pale.						19.73	13.05		
Cave Veterani	Up. Pale.						19.89	12.48		
CaveVet.Starčevo					14.41	11.6				
Chitila GumA2		L	>24						41.63	24.98
Chitila GumA2		R	>24				23.74	21.35	45.18	23.86
Chitila GumA2		R			15.94	10.05				
Chitila GumA2			10		16.89	11.25				
Chitila GumA2		L	>24				25.37	17.23		
Cuina Turcului									37	21.5
Cuina Turcului									40	17
Cuina Turcului									42	17.5
Cuina Turcului					15	10.5	18	14		
Cuina Turcului							18.5	15		
Cuina Turcului							19	15.5		
Cuina Turcului							21.5	16		
Cuina Turcului							24	15		
Dubova I	Modern	R	18	M	19.67	12.61	26.08	17.56		
Dubova I	Modern	L	18	M	19.75	12.67	25.95	17.74		
Dubova II	Modern	R	>24	M	16.8	12.04	22.16	15.87	41.96	17.88
Dubova II	Modern	L	>24	M	17.13	12.03	21.85	15.17	42.4	18.96
Dubova1/2	Modern	R	>24	M	20	12.52				
Dubova1/2	Modern	L	>24	M	19.71	12.85				
Erbiceni									41.7	19.85
Erbiceni									43.26	23.06
Frăsinet	Modern	R	8	M	16.99	11.39	20.92	13.71		
Frăsinet	Modern	L	8	M	17.12	11.18	21.41	13.91		
Hârșova		R	17	M	19.12	12.31	24.79	17.1		
Hârșova		L	17	M	18.64	12.33	24.8	17.3		
Icoana	0.1	L	>36				28.8	17.01	47.58	18.32
Icoana	0.4		>24		20.17	13.52				

Icoana	0.4				20.05	12.72				
Icoana	0.5	R	>24						42.49	18.81
Icoana	0.5	L	9		18.66	10.27				
Icoana	0.6	R	18				24.67	15.2		
Icoana	0.7	L	>36						41.94	18.26
Icoana	0.7	R	>24						44.09	18.94
Icoana	0.7		>36						46.37	19.48
Icoana	0.7	R	10		18.92	12.07				
Icoana	0.7		>24				29.02	18.03		
Icoana	0.8	R	>36						43.69	18.02
Icoana	0.9		>24		17.93	13.29				
Icoana	1.1	R	>36						42.68	18.93
Icoana	1.1	L	14		18.66	12.34				
Icoana	1.1	L	>24		18.68	12.03	24.49	15.81		
Icoana	1.1		>24				23.59	15.89		
Icoana	1.1		>24				23.06	17.54		
Icoana	1.1		>24				23.2	16.53		
Icoana	1.1	L	>24				26.51	18.62		
Icoana	1.2	L	>24						39.7	18.9
Icoana	1.2	L	>36				26.3	18.05	49.09	20.01
Icoana	1.2	R	10		20.46	12.87				
Icoana	1.25	L	>36						47.32	19.37
Icoana	1.26		14		20.32	13.35				
Icoana	1.4	R	13		20	13.48				
Icoana	1.4	L	14		19.56	12.69				
Icoana	1.4		14		19.7	12.54				
Icoana	1.4		>24		17.8	12.16				
Icoana	1.4		>24				24.99	15.57		
Icoana	1.5		>24		18.01	13.13				
Icoana	1.55		>24		18.52	12.28				
Icoana	1.6	R	>36						40.55	19.35
Icoana	1.6	L	14		21	13				
Icoana	1.6	L	16							
Icoana	1.6		16							
Icoana	1.65		>24						42.36	17.66
Icoana	1.65	L	>24		18.9	12.41	24.76	15.82	45.03	18.16
Icoana	1.65	R	14	M	18.72	12.86				
Icoana	1.65		14		20.62	13.38				
Icoana	1.65		>24				23.09	15.85		
Icoana	1.65		>24				25.22	15.28		
Icoana	1.7	L	10		19.12	12.19				
Icoana	1.7	L	10		20.21	12.67				
Icoana	1.8		>24				24.73	16.77		
Icoana	1.8	L					23.24	16.28		
Icoana	1.9	L	26				25.7	18.12	46.95	19.7
Icoana	1.9	R	18				27.26	18.26		
Icoana	1.9	R	>24		17.35	13.04				
Icoana	1.95	L	>36						45.8	19.01
Icoana	2.1		>24		17.25	12.65				
Icoana	5.6	R	>24				25.57	15.53		
Icoana	?	R	>24						42.74	18.46
Icoana	?	L	14		18.5	12.58				
Icoana	?		14		18.94	13				

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Icoana	?		14		18.98	12.72				
Icoana	?		14		20.38	12.18				
Icoana	?		>24		19.15	13.77				
Insurăței		L	14		19.09	13.97				
Insurăței		R	>24		18.78	12.91	24.71	17.43	37.23	20.13
Luncav.Gum.A2		R	>24						40.7	19.81
Luncav.Gum.A2		R	>24						46.91	21.62
Luncav.Gum.A2		L	7		16.82	10.62				
Luncav.Gum.A2					17.08	10.6				
Luncav.Gum.A2		L	20				22.9	14.94		
Măriuța.Gum.II		L	10		16.59	10.07				
Măriuța.Gum.II		L	10		16.74	10.13				
Măriuța.Gum.II		R	10		16.95	10.57				
Măriuța.Gum.II		R	10		16.98	9.9				
Măriuța.Gum.II		R	17		17.15	10.67	20.92	12.69		
Măriuța.Gum.II		R	10		17.53	10.6				
Măriuța.Gum.II			17				20.66	13.34		
Măriuța.Gum.II		R	17				21.13	13.53		
Vet. Med.	Modern	L	24	F	14.73	10.56	18.84	12.18	29.8	14.28
Vet. Med.	Modern	R	24	F	14.97	10.26	18.67	12.63		
Vet. Med.	Modern	R	14	F	17.3	11.69	23.61	14.65		
Vet. Med.	Modern	L	8		17.46	12.13				
Vet. Med.	Modern	R	12	M	17.48	11.74				
Vet. Med.	Modern	L	14	F	17.51	11.71	22.77	14.83		
Vet. Med.	Modern	R	8		17.53	11.27				
Vet. Med. (wild)	Modern	L	>24	M	17.96	13.58	24.89	17.18	44.11	18.13
Vet. Med. (wild)	Modern	R	>24	M			25.35	16.44	45.1	17.97
Vet. Med. (wild)	Modern	L	12	M	17.7	11.8				
Ostrovul Banului	0.4		>24						39.17	22.92
Ostrovul Corbului	2.25			M					45	18.7
Ostrovul Corbului	2.15			M	17.5	13.3	24.3	18.2	45.6	20.5
Ostrovul Corbului	2.25			M					48	20.2
Ostrovul Corbului	2.25			M	18	13.5	22.5	18.2		
Ostrovul Corbului		L	8		19.24	10.7				
Poduri		R	8		17.15	10.7				
Poduri		L	8		17.35	10.72				
Schela Cladovei	0.70-0.80	R	24						37.66	20.37
Schela Cladovei	0.45-0.53	R							47.77	21.77
Topoloveni	Modern	R	12	F	18.25	12.2	22.52	14.1		
Topoloveni	Modern	L	12	F	18.4	12.37	22.46	14.36		
Vârteju	Modern	R	12	F	17.17	12.32	22.48	14.54		
Vârteju	Modern	L	12	F	16.95	10.88	22.93	14.21		
Vitânești Gum.A2		R			16.03	10.5	20.43	12.81		
Vitânești Gum.A2		R	12		16.14	11.26	21.59	13.64		
Vitânești Gum.A2			12		17.11	13.4				
Vitânești Gum.A2		R	12		17.9	11.53	21.8	13.68		
Vitânești Gum.A2					18.79	12.67				
Vitânești Gum.A2		R	14				21.37	13.48		

Appendix 2. Sus maxilla

Sample	Depth (-) m	Side	Age	Sex	M1 L	M1 B	M2 L	M2 B	M3 L	M3 B
Antipa D.63	Modern	F	20	R	17.84	13.88	23.54	18.04		
Antipa D.63	Modern	F	20	L	18	13.81	23.95	17.33		
Antipa W.631	Modern	M	>24	L	18.41	17.28	25.71	19.9	38.77	24.42
Antipa W.631	Modern	M	>24	R	18.57	17.43	24.77	21.02	39.11	24.22
Antipa W.631B	Modern	M	>24	R	18.92	13.24	25.53	17.01		
Antipa W.631B	Modern	M	>24	L	19.1	13.44	25.33	13.66		
Antipa W.631C	Modern	M	>24	R	21.47	16.72	28.54	20.86		
Antipa W.631C	Modern	M	>24	L	22.03	16.78	28.81	20.61		
Antipa W.631D	Modern	M	>24	L	18.91	15.96	24.74	20.28	41.9	24.3
Antipa W.631D	Modern	M	>24	R	19.37	15.82	24.84	20.14	42.25	24.17
Antipa W.631E	Modern	M	>24	L	22.34	17.23	26.98	20.54		
Antipa W.631E	Modern	M	>24	R	22.46	17.11	26.95	20.54		
Antipa W.843	Modern	M	>24	R	18.05	16.72	25.43	19.51	40.96	23.05
Antipa W.843	Modern	M	>24	L	18.18	16.31	25.63	19.72	41.63	23.12
Baile Herculane	Up. Pale.				16.61	12.78				
Căscioarele	1.30-1.55	L	>24	F	13.39	13.7	17.88	17.15	27.82	18.58
Căscioarele	?	L	12		13.48	10.97	16.59	13.15		
Căscioarele	?				15.03	13.58	20.93	16.55	30.21	18.43
Căscioarele	1.80-2.05	R	>24	F	15.47	12.75	19.7	15.06		
Căscioarele	1.05-1.30	R	>24	F	16.06	14.02	21.96	15.72	29	16.39
Căscioarele	1.05-1.30	L	>24		16.7	12.63	20.65	15.58		
Căscioarele	1.55-1.80	L	18		17.11	13.25	20.77	13.83		
Căscioarele	1.30-1.55	L	>24		17.15	14.01	20.88	16.62	30.42	18.11
Căscioarele	?		>24		18.94	16.11	25.53	20.63		
Căscioarele	1.05-1.30		>24		19.18	16.58	24.87	22.12		
Căscioarele	?	R	>24		19.21	16.13	25.57	20.06	39.81	22.16
Căscioarele	1.30-1.55	L	>24		19.62	16.38	56.33	20.93		
Căscioarele	1.05-1.30	R	>24		19.64	17.43	25.24	21.36		
Căscioarele	1.30-1.55	R			19.91	17.03	25.71	21.69		
Căscioarele	?	R	24		20.14	15.18	27.98	20.16		
Căscioarele	1.05-1.30	L	>24	F			19.92	15.14	25.92	15.89
Căscioarele	?						20.72	16.26	27.5	18.57
Căscioarele	1.30-1.55	L	>24				23.92	21.96	39.43	23.6
Căscioarele	1.80-2.05	L	>24				25.29	20.05	38.65	23.24
Căscioarele	1.05-1.30	L	>24						29.27	17.87
Căscioarele	?		>24						39.78	23.06
Cave Veterani	2.55				15.91	12.23	20.9	15.79		
Cave Veterani	2.55	R	16		16.4	11.98	19.9	15.35		
Cave Climete II	0.6	R	18		19.64	17.3	24.37	18.45		
Cave Climete II	0.1	L	>24		20.48	17.63	26.52	20.04		
Dubova 1	Modern	R	18	F	20.22	15.7	26.83	19.95		
Dubova 1	Modern	L	18	F	20.41	15.59	27.41	20.16		
Dubova 1/2	Modern	R	>24	M	21.03	15.25	21.13	15.2		
Dubova 2	Modern	L	>24		16.97	15.33	22.42	17.55	40.04	21.35
Dubova 2	Modern	R	>24		18.34	14.06	22.62	17.57	38.62	19.74
Frăsinet	Modern	R	18	M	16.56	12.96	20.78	16.37		
Frăsinet	Modern.	L	18	M	16.61	13.34	20.71	15.87		
Gârla Mare	0.65	L			16.42	14.84	21.23	15.51	30.41	17.29
Gum. A2	?	L			16.05	12.92				
Icoana	1.5	L	10		14.16	12.54	19.44	14.49		

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Icoana		1.8		12		14.49	13.18				
Icoana	?		L	16		14.57	12.31	1838	15		
Icoana		0.7				14.66	12.64				
Icoana	?			12?		15.13	12.36				
Icoana		1.4		12?		15.26	11.59				
Icoana		1.7				15.27	12.31				
Icoana		1.2		12?		15.48	12.64				
Icoana		1.4				15.54	12.84				
Icoana		0.8	R	20		15.66	12.39	20.01	15.68		
Icoana		1.95		12		16.03	12.73				
Icoana		0.75	R	20		16.23	12.01	19.19	14.26		
Icoana		0.9	R	20		16.26	12.14	20.25	14.7		
Icoana		1.9	L	20		16.54	12.36	21.62	15.75		
Icoana		2.15		12		16.6	12.6				
Icoana		1.4	R	20		16.68	13.1	21.33	15.6		
Icoana		1.4	L	20		16.77	13.42	21.31	19.01		
Icoana		0.7	R	10		16.85	13.04	20.45	15.86		
Icoana	?		R	18		16.88	12.66	20.57	15.66		
Icoana		1.25	L	18		16.97	13.42	20.71	15.23		
Icoana		1.2	R	18		17.22	12.72	21.5	15.94		
Icoana	?		R	12		18.15	15.3				
Icoana		1.25	L	>24		18.26	15.4	23.4	18.54	38.25	19.68
Icoana		1.4	L	18		18.52	15.23				
Icoana		1.6	R	18		18.69	15.23	23.95	18.95		
Icoana	?		L	20		18.75	14.3				
Icoana		1.4		20		19.02	15.19				
Icoana		2.05	R	12		19.17	17.74				
Icoana		1.1		20		19.31	15.89				
Icoana		1.65	R	24		19.44	17.02				
Icoana		1.4		20		20	14.76				
Icoana		1.4		20		20.14	15.18				
Icoana		1.4	R	>24		20.19	16.14				
Icoana		1.4	L	20		20.31	16.01				
Icoana		1.55		20		20.31	15.88				
Icoana		1		20		20.32	14.51				
Icoana		1.7		20		20.36	16.18				
Icoana		1.25		20		20.38	15.3				
Icoana		1.2		20		20.39	15.53				
Icoana		1.55	L	>24		20.8	17.36	20.08	17.36		
Icoana		1.4		20		21.75	15.1				
Icoana		1		>24				12.27	18.45		
Icoana		1.55	R	10				17.24	14.15		
Icoana		1.4	L	18				19.48	15.3		
Icoana		1.45		>24				20.8	19.97		
Icoana	?		L	>24				21.77	22.54		
Icoana		0.9	L	20				21.85	15.67		
Icoana		0.8		>24				23.05	19.29		
Icoana		1.7		>24				23.85	18.94		
Icoana		1.4	R	>24				24.23	18.91	36.93	20.05
Icoana		0.95		20				24.91	19.14		
Icoana		1.65	L	20				25.44	19.78		
Icoana		2.05	L	20				26.37	20.54		

Icoana	?	L	>24				26.52	20.93		
Icoana	?	L	20				26.67	19.1		
Icoana	1.05		>24				27.34	20.62		
Icoana	0.8	R	>24						43.84	22.91
Icoana	0.8	R	>24						45.04	24.63
Icoana	0.9	R	>24						41.16	22.24
Icoana	1.15	L	>24						37.61	20.17
Icoana	?	R	>24						42.22	21.64
Luncavița GumA2			8	L	16.82	10.62				
Luncavița GumA2			18	L	17.06	14.16	21.83	17.56		
Luncavița GumA2			8		17.08	10.6				
Luncavița GumA2			>24	R	17.49	18.36	24.25	21.29		
Luncavița GumA2			18	R	17.75	14.39	21.84	17.77		
Luncavița GumA2			24	L	17.86	14.64				
Luncavița GumA2			24	L	18.73	16.18	24.9	21.17		
Luncavița GumA2			20	R	19.85	16.46	25.15	20.46		
Luncavița GumA2				R			20.35	17.12		
Luncavița GumA2			24	R			27.29	21.22	38.26	21.44
Luncavița GumA2			>24	R			27.63	22.84	45.93	27.12
Luncavița GumA2			>24	R					40.7	19.81
Luncavița GumA2			>24	R					43.36	23.82
Luncavița GumA2			>24	R					46.91	21.62
Ostrovul Banului							26.53	21.1		
Ostrovul Banului	0.4		>24						39.17	22.92
Ostrovul Corbului		R	>24				24.91	20.97		
Ostrovul Mare 875	0.7		>24	L					46.53	25.16
Podoleni		R	>24	F	20.1	13.25	27.88	17.52		
Schela Cladovei	0.82-0.87				14.59	15.88	19.73	16.24	26.35	20.41
Schela Cladovei	0.92-0.97				16.32	12.34	20.35	15.32		
Schela Cladovei	0.92-0.97	L			16.82	12.61	20.37	14.61		
Schela Cladovei	1	L	>24		18.79	14.46				
Schela Cladovei	1	L	24		19.75	15.34	25.62	19.69		
Schela Cladovei	1	R	18		19.95	15.2	24.35	18.94		
Schela Cladovei	0.82-0.87	R			19.97	16.49	26.4	20.64		
Schela Cladovei	0.82-0.87	L					25.53	17.2		
Topoloveni	Modern	L	18	F	18.47	14.2	22.48	17.64		
Topoloveni	Modern	R	18	F	18.61	14.35	22.67	17.51		