



# INTERDISCIPLINARIA ARCHAEOLOGICA

## NATURAL SCIENCES IN ARCHAEOLOGY

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## Daily Food Consumption in a Rural Roman Villa: Excavations at Lički Ribnik, Croatia

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### ARTICLE INFO

#### Article history:

Received: 12<sup>th</sup> November 2018

Accepted: 6<sup>th</sup> May 2019

DOI: <http://dx.doi.org/10.24916/iansa.2019.1.4>

#### Key words:

Dalmatia

Lika

archaeobotany

zooarchaeology

Roman pottery

food

diet

### ABSTRACT

Large volumes of work exist on Roman villas; however, what the inhabitants ate on a daily basis at these sites is frequently overlooked. Here we present archaeobotanical, zooarchaeological and pottery evidence to explore aspects of daily consumption patterns within the rural villa of Lički Ribnik, Croatia. The remains date from the second half of the 2<sup>nd</sup> to the first half of the 3<sup>rd</sup> century AD and provide the first evidence of villa consumption in the Lika region. The discovery of broomcorn millet (*Panicum miliaceum*) grains, domestic cattle (*Bos taurus*) and sheep (*Ovis aries*) bones suggest that they were consumed at the site. Different pottery types and fabrics also suggest a range of dishes were cooked, including the Roman dish *patina*. Although these conclusions are based on very limited data, the study shows the importance of looking at environmental evidence in conjunction with other archaeological material in order to explore local diet and economy in the Roman period.

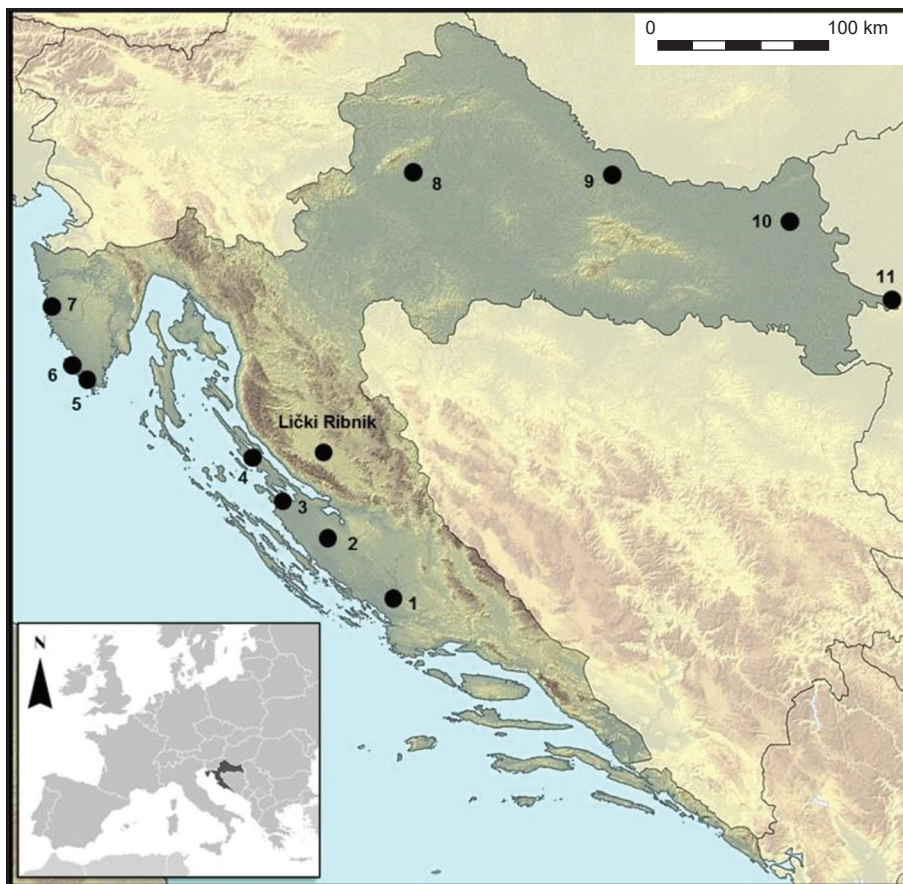
### 1. Introduction

The country villa occupied a privileged place in the ideology of the Roman elite, as shown by texts from Cato, Varro and Columella, who emphasised the moral superiority of farming. Landowning and agriculture were deeply rooted in Roman traditions, symbolising their ancestral past, and was considered an excellent and prestigious source of income for Roman senators (Kehoe, 1997; Rosenstein, 2008). Large volumes of work exist on Roman villas, aiming to classify and make sense of the numerous variety of villas excavated over the past two centuries (e.g. McKay, 1998; Percival, 1976; Smith, 1997). A villa can mean different things at different times, from the house of a farm, the house and adjoining buildings within an enclosure, and the entire estate including the buildings and the land, which all range in

size, architecture and function (Smith, 1997, p.11; Torrenato, 2001). The “villa system” is typically referred to as a villa with both a *pars urbana*, for residential purposes, and a *pars rustica*, which was dedicated to agricultural production (Marzano, 2007, p.125). The term ‘agriculture’ was also not limited to the cultivation of crops and animal husbandry, but to any activity connected to the land and its natural resources, including the production of bricks, pottery, lime, timber and metal (Marzano, 2015). As a result, villas are often considered to be located in areas with agricultural potential, usually near streams or rivers (e.g. Thomas, 1980, p.285; Oltean, Hanson, 2007). The villa would have therefore had its own complex socioeconomic system, interlinked with the wider Roman economy, where agriculture played a central role.

Much of the evidence to date on “villa systems” comes from onsite plans and architectural findings, literary sources, as well as pottery and other material culture. In contrast to this large body of data, few have explored the villa

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**Figure 1.** Location of Lički Ribnik and the other 12 sites with archaeobotanical remains dating to the Roman period. (1) Danilo, (2) Nadin-Gradina, (3) Port of Aenona/Zaton, (4) Caska, (5) Flacius Street, Pula (6) Veli Brijun, (7) Poreč, (8) Ščitarjevo, (9) Vitrovitica Kiškorijska – jug, (10) Osijek – Silos, and Osijek – Park kraljice Katarine Kosače (11) Illok.

food system through the analyses of archaeobotanical and zooarchaeological remains. Where examined, the evidence has contributed meaningfully to the reconstruction of Roman villa production, management and supply, the preparation and consumption of foods, as well as exploring aspects of group identity, social status and ritual/religious practices (e.g. Crabtree, 1990; King, 2001; Šoštarić, Küster, 2001; Olive, 2004; Padrós, Valenzuela Lamas, 2010; McCallum *et al.*, 2013; Árpád *et al.*, 2015).

In Dalmatia, over 200 *villae rusticae* have been recognised or excavated and around 350 in *Regio X Venetia et Histria* (Matijašić, 1998). However, few have provided evidence on diet and subsistence. Published deposits of archaeobotanical and zooarchaeological remains dating to the Roman period (1<sup>st</sup>–5<sup>th</sup> Century AD) in Croatia are still relatively rare. For example, only 12 sites have published archaeobotanical remains (see Reed, 2016 for summary; Essert *et al.*, 2018; Reed, Leleković, 2019; Reed *et al.*, 2019) and only three of these are from villa sites: the 3<sup>rd</sup>–4<sup>th</sup> century AD rural villa at Danilo, Dalmatia (Šoštarić, 2003), the 1<sup>st</sup>–5<sup>th</sup> century AD rural villa at Veli Brijun, Istria (Šoštarić, Küster, 2001), and the 2<sup>nd</sup>–4<sup>th</sup> century AD urban villa of Osijek-Silos (Reed *et al.*, 2019). Faunal data are even more underrepresented and only five Roman period sites being published in Croatia (Alväs-Marion, 2001; Brajković, Paunović, 2001; Campadelli, 2007; Miculinić, 2018; Šimić-Kanaet *et al.*, 2005; Šoštarić *et al.*, 2015). Of these, only two are from villa sites: the 1<sup>st</sup>–2<sup>nd</sup> century rural estate of Crikvenica – Igralište,

Vinodol area (Miculinić, 2018) and the maritime villa, *villae maritimae*, of Loron, Istria (Brajković, Paunović, 2001). This paper therefore presents the first evidence of Roman rural villa consumption in the Lika region of Dalmatia, examining the archaeobotanical, zooarchaeological and pottery remains excavated from Lički Ribnik, Croatia.

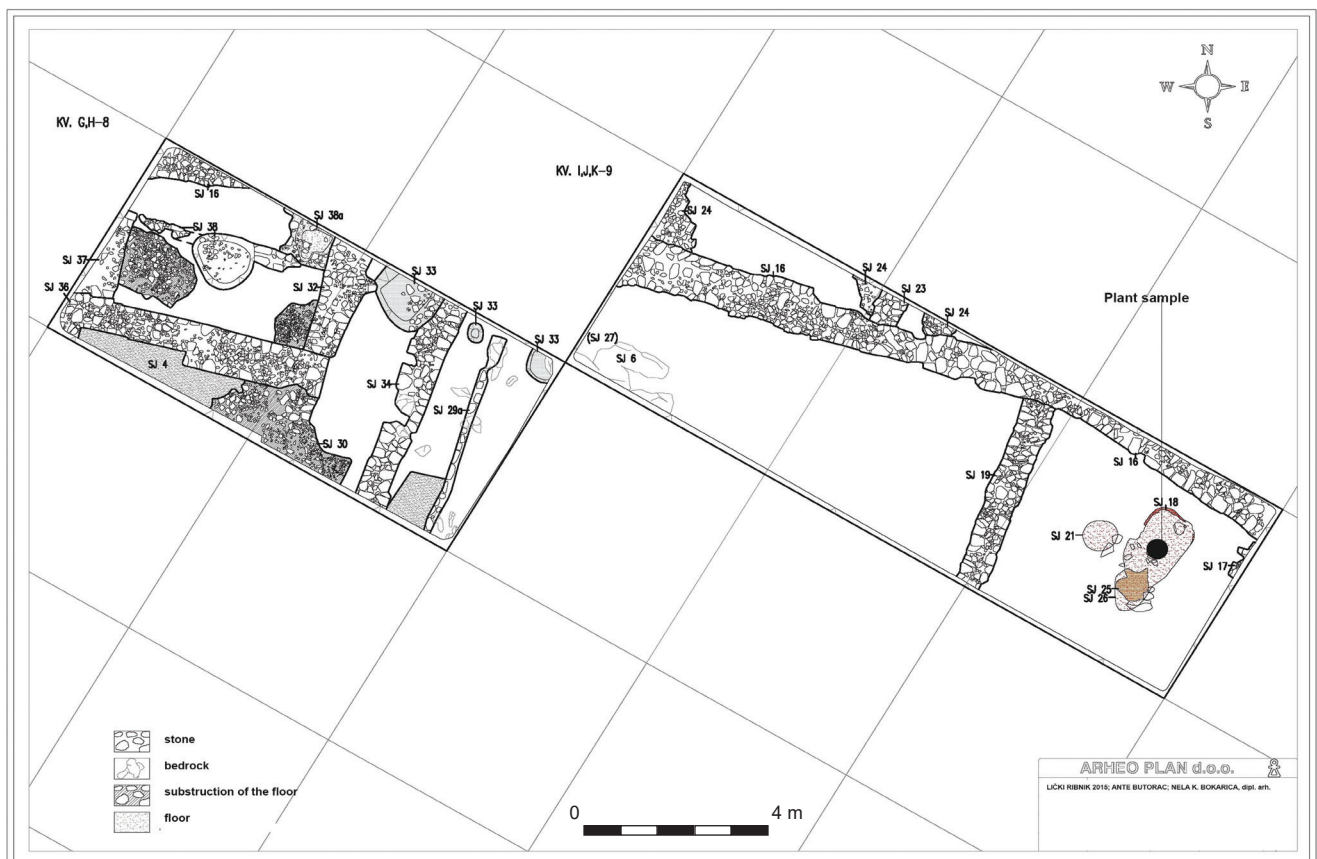
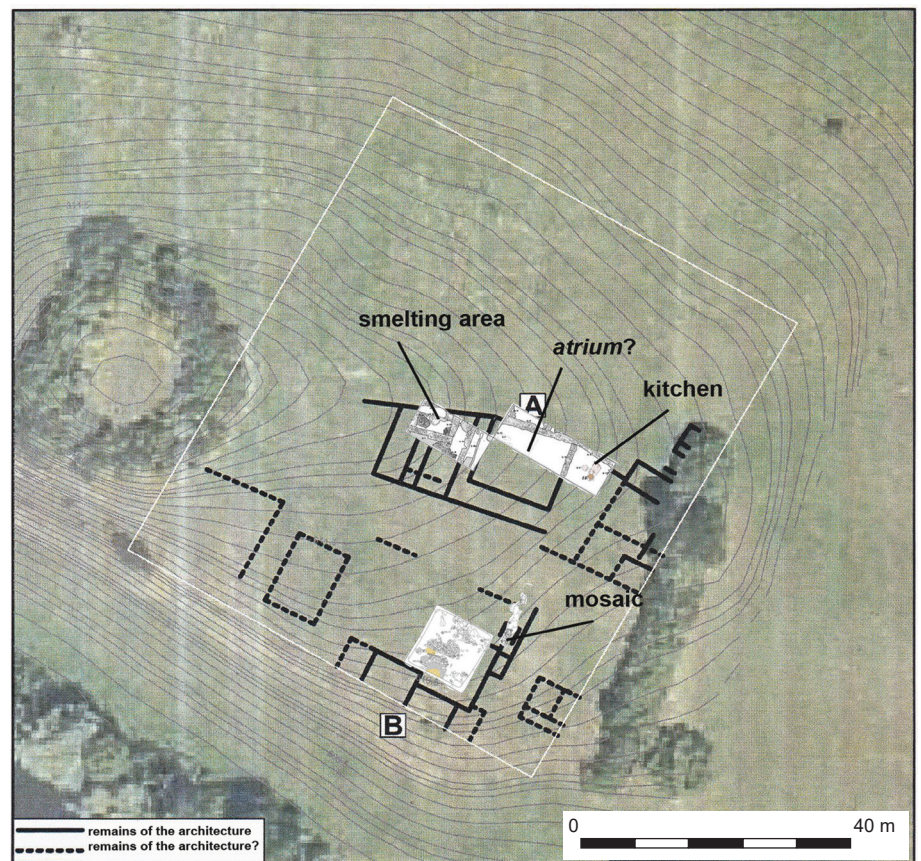
## 2. The villa at Lički Ribnik

Lički Ribnik is located in the meander of the river Lika, 6 km south of Gospić, in the Lika municipality (Figure 1). As a region, it can be characterized as a mountain plateau at altitudes between 450–700 m (Kokotović Kanazir *et al.*, 2016). The region has a humid continental climate, but experiences high diurnal ranges, especially in summer, and frost has been recorded in every month except for July, with strong blizzards in the winter. Today, grain yields of field crops in the mountainous Lika region are considerably lower than in lowland areas of Croatia, mainly due to the poor soils and climatic limitations (Kovačević, Buzašić, 2005). In addition, the region suffers from a comparatively short growing period, due to the occurrence of late spring and early autumn frosts.

Excavations began in 2012 after the discovery of *tesserae* from the Ribnik peninsula in the previous year. During the three-day trial excavation, architectural remains of a building were discovered along with fragments of a mosaic (Kolak,



**Figure 2.** Plan of the Roman Villa at Lički Ribnik.



**Figure 3.** Plan of the villa's northern building at Lički Ribnik highlighting the stove within the villa kitchen where the archaeobotanical sample was collected.

2013, p.163; 2015). The following year a geophysical survey revealed the remains of a large set of buildings (Mušić, 2014), 200 m<sup>2</sup> of which was revealed during excavations in 2014 and 2015 (Figure 2). The site represents a typical Roman *villa rustica* that operated as a farm or country-house with commercial (*pars rustica*) and household facilities (*pars urbana*) (e.g. Buchi, 1987, p.109; Matijašić, 1998, p.115–145; Suić, 2003, p.323). The excavations so far suggest that the site was inhabited from the 1<sup>st</sup> to 4<sup>th</sup> Centuries AD.

Within the northern part of the site (Zone A), the commercial part of the villa was identified from a forge or smelting area and a possible ‘kitchen’ area to the east. The kitchen contained two stoves, one that was rectangular and one that was smaller and circular in shape. Within the forge, a large amount of slag, or waste from iron smelting was found. The geophysical survey suggests that the forge and kitchen were separated by a large room, which likely represents an open-air atrium. Other finds include a loom weight and worn coins possibly dating to *Marcus Aurelius* (121–180 AD) or *Verus Lucius* (139–169 AD).

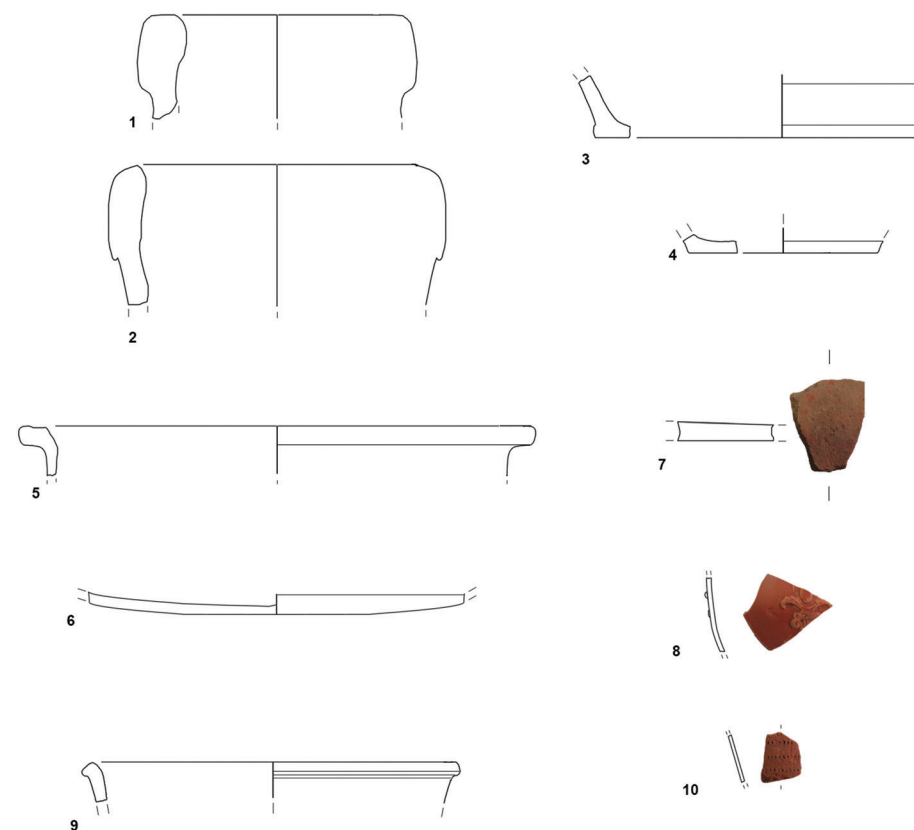
Within the southern part of the site (Zone B), the stratigraphy was particularly challenging, but it is suggested that this was the residential area of the villa. Fragments of a floor mosaic were discovered under a wall aligned north-south. The fragments (dimensions 90 (120 cm) × 50 cm) show polychromatic geometrical motifs made in *opus tessellatum*, with two borders of a black and white meander with an integrated swastika and a black, white and red braid.

The borders probably formed a frame around a field of black rhombus shapes on a white foundation that could surround a small rhomboid or square panel with a decoration inside. A similar decoration is found in Valbadon, Istria (Meder, 2003, p.49, T XV: 2). The pattern of a mainly black and white geometrical floor mosaic with a double braid can be dated to the 2<sup>nd</sup> Century AD (Meder, 2003, pp.19–20, 92–93), while the wall overlaying it likely dates to the 4<sup>th</sup> Century AD. Other finds included small copper coins of Theodosius I (383–388 AD) and *sestertius* of Gordian III (241–243 AD) and *tubuli*, indicating that the site had a hypocaust.

### 3. The remains recovered in the villa’s kitchen

An archaeobotanical sample was collected from the large stove in the kitchen (Zone A; Figure 3). The sample, which was floated using bucket flotation and a 300µm sieve, contained over 300 broomcorn millet (*Panicum miliaceum*) grains (Table 1), along with a possible pea and ten weed seeds, including large grasses, a corn cockle (*Agrostemma githago*) and two seeds from the buckwheat/knotgrass family (*Polygonum* sp. and *Rumex* sp.). Charcoal collected from the stove dated the layer to the second half of the 2<sup>nd</sup> and first half of the 3<sup>rd</sup> century AD.

The cultural layer above the stove contained 54 shards of Roman pottery that could be broadly grouped into kitchen ware, tableware and amphora (Figure 4). However, this was



**Figure 4.** Illustrations of the pottery recovered from Lički Ribnik. (1) amphora Dr 6b (2) amphora Dr 6b (3) bottom of pot (4) bottom of pot (5) rim of a bowl (6) bottom of a bowl (7) bottom of Pannonian plate (8) terra sigillata Consp. 27.1; 10 (9) Shard of Sarius cup (10) Shard of thin-walled pottery.



**Table 1.** Archaeobotanical remains from Lički Ribnik.

Sample Ku. K-9: SJ26 & SJ18, U-1	Number
Cereals	
<i>Panicum miliaceum</i> [grain]	279
cf. <i>Panicum miliaceum</i> [grain]	49
cf. <i>Triticum monococcum</i> [grain]	1
<i>Cerealía</i> [grain]	1
Pulses	
cf. <i>Pisum sativum</i>	1
Wild/Weedy species	
<i>Agrostemma githago</i>	1
<i>Gramineae</i> [large fragments]	7
cf. <i>Polygonum</i> sp.	1
<i>Rumex</i> sp.	1
<i>Paniceae</i>	2
Total	343
Indeterminate [fragments]	6

a thin layer above the feature and may have been disturbed by ploughing or other agricultural activities. The most frequent pottery was coarse ware, mostly associated with cooking, storage or preparation, and these items were represented by three pottery fabric types that are believed to have slightly different uses (Figure 5). Fabric group 1 is represented by pots that are preserved only by their bottoms (Figure 4: 3, 4) and Fabric group 2 by a rim shard and the bottom of two cooking bowls (casseroles) of Aegean origin or imitating the Aegean cooking ware (Figure 4: 5, 6). Forms similar to these finds can be dated to the 2<sup>nd</sup> to 3<sup>rd</sup> centuries AD (Parica, 2008, p.87; Taras, 2015). Fabric group 3 includes 16 shards of pots whose form could not be identified, but they may belong to the typical Roman ovoid pots. In addition, the bottom of a red slipped baking pan (or plate) was found, possibly Pannonian in origin, dating from the 2<sup>nd</sup> to 3<sup>rd</sup> centuries AD (Ožanić Roguljić, 2016, pp.49–51).

Fragments of tableware were also found and seemed to date to the earlier occupation of the site. In particular, a shard of a Sarius cup with a fragment of relief of a pillar with a capital holding another motif, maybe a bucranium, was recovered (Figure 4: 9). This kind of decoration is connected to the potter HILARUS, who dates from the early 1<sup>st</sup> century AD (Augustus to Tiberius), or was made in his style. Similar examples of this decoration can be seen in Osor, Northern Liburnia (Makjanić, 1982, p.52; Brusić, 1999, p.182, Figure 50; Mantovani, 2011, p.173, Figure 7: 7). Further finds included: one rim of North Italian sigillata (Padana) (Figure 4: 9) that could belong to the cylindrical cup Cons. Form 27.2 dated from 15–100 AD (Ettlinger *et al.*, 1990, p.100; Mazzeo Saracino, 1985, p.201), and one shard of thin-walled pottery with roulette decoration (Figure 4: 10) that shows elements of possible eastern Adriatic origin dating to the 1<sup>st</sup> century AD (Ožanić Roguljić, 2011, pp.31–38).



**Figure 5.** Coarse pottery fabric groups: 1) Clay: reddish brown; hard; white irregular non-dissolvable inclusions (quartz), and white irregular dissolvable (limestone), grog, small irregular voids; 2) Clay: dark reddish brown; hard, white irregular non-dissolvable inclusions (quartz), big irregular voids; 3) Clay: black- greyish; hard, white irregular non-dissolvable inclusions (quartz).

#### 4. The remains recovered in the villa's southern building

Animal bones were collected from two pits near the mosaic within the southern part of the site (Zone B; Figure 6). In total there were only eleven fragments. The identified taxa include two common domestic animals: sheep (*Ovis aries*) and cattle (*Bos taurus*).

Four skeletal fragments were recovered from one pit (SJ2). Three of them are assigned to a sheep (*Ovis aries*): small horn fragment, fused proximal end of a left humerus, and a complete right metacarpal. In addition to these fragments, an unfused proximal epiphysis of a sheep or goat (*Ovis/Capra*) right tibia was also found. The lack of diagnostic features prevents an accurate identification of this bone (see Zeder and Lapham, 2010, for summarised list of criteria), however, its presence with other positively identified sheep bones would suggest that this element belongs to the same taxon, bearing in mind that this does not exclude the presence of goats within the villa. These remains came from at least two different animals, one young (unfused tibia) and one adult. Except for some light weathering present on the surface, these fragments show very little bone modifications and exhibit no cut marks or any breakage patterns typical for butchery. However, three humeri and metacarpal fragments have traces of burning that are irregularly shaped and reddish-brown in colour. They are partially burnt on their proximal end (across

articulated surface) suggesting that the remainder of the bone was probably still covered with soft tissue (muscle and/or skin). Such patterns of bone modification are typical for intentional food preparation by roasting or boiling (Lyman, 1994, pp.385–386). The horn fragment is completely burnt (partially carbonised with dominant dark grey colour). As this fragment comes from a non-edible body part it is probably butchery waste and its burning accidental, *i.e.* unrelated to food preparation.

From another pit (SJ7) there are seven skeletal fragments, six originating from domestic cattle (*Bos taurus*): a fragment of a scapula blade, a left distal humerus (fused), two right distal humeri shafts, a left tibia shaft, and a small fragment of a right calcaneus. A small fragment of indeterminate flat bone of a large-sized animal was also discovered, which could have belonged to the aforementioned cattle scapula, but it lacks characteristic morphological features for a positive identification. These cattle remains belonged to three different individual animals of indeterminate age. Unlike the sheep remains, none of these bones had traces of burning. However, the presence of butchery marks is identified on all three humeri fragments and a calcaneus, as well as on the indeterminate flat bone fragment. There are two distinctive types: chop or hack marks, likely from a heavy knife or a cleaver (Seetah, 2004), and cut marks. The former have been recognised on humeri shafts at other



Figure 6. Plan of the villa's southern building at Lički Ribnik showing the location of the animal remains.



sites indicating that these bones were transversally chopped into segments, either for easier food preparation or to extract bone marrow (Maltby, 2007). Regular cut marks can be seen on articular ends and across shafts and most likely came from meat removal. In addition, one humerus fragment is gnawed on the distal end, probably by dogs, suggesting that at least some of these remains were to a certain degree exposed to outside factors before being deposited into the pit.

Two rims of Dressel 6b amphorae of Istrian origin (Figure 4: 1, 2) are found in this part of the site (SU 2, Kv M, N-7,8) belonging to the 2<sup>nd</sup> half of the 2<sup>nd</sup> or 1<sup>st</sup> half of the 3<sup>rd</sup> century AD.

## 5. Millet consumption at Lički Ribnik

Ancient sources suggest that before the establishment of the Roman province of Dalmatia, the Iapodians inhabited the Lika region and lived for the most part on spelt and millet (Strabo VII, 4, 10). Later during the late 2<sup>nd</sup> and early 3<sup>rd</sup> century, AD historian Cassius Dio, in mentioning Augustus's campaign against the Pannonians (the neighbouring province to Dalmatia) in 35 BC, states of these people 'they do not cultivate [that is, make] wine, except for a little bit which is bad, since they spend most of the time in a very harsh winter [climate], but rather eat and drink both barley and millet' (Dio Cassius 49.36, 2–4). Beer was not popular with the Romans and beer drinking was considered barbaric and a custom of the poor (Miličević Bradač, 1999–2000, pp.69–70). The absence of sprouting grains (either millet or barley), which indicate grain-based fermented beverages, makes it impossible to confirm whether brewing was conducted at the villa.

In Dalmatia, millet is rarely found in Roman contexts, although very few sites have been sampled. Of the villa sites, only eight grains of broomcorn millet were recovered from Veli Brijun, four from Osijek-Silos (Reed *et al.*, 2019), and no millet from Danilo (Šoštarić, Küster, 2001; Šoštarić, 2003). Small quantities of millet (*Panicum miliaceum*) have also been found at the Dalmatian hillfort of Nadin-Gradina (Nye, 1996), the port of Aenona (Glušćević *et al.*, 2006), the pannonian village at Vitrovitica Kiškorijska (Šoštarić *et al.*, 2015), and the graves at Ilok and Šćitarjevo (Šoštarić *et al.*, 2006) (Figure 1). Nonetheless, this does not mean that millet was regularly consumed in the region. From stable carbon and nitrogen isotope analyses of Iron Age, Roman, and Early Medieval human bone collagen recovered from sites just south of Lički Ribnik, there is little evidence of significant C4 foodstuff being eaten, whether directly consumed by humans or eating animals that were fed on millet, until the end of the Roman period (Lightfoot *et al.*, 2012).

Millet has been discovered at other villa sites across the empire, but similarly in small quantities. Finds in Hungary are sporadic with only Sopron-Beloianisz tér 6, a 4<sup>th</sup>–5<sup>th</sup> century AD building, yielding 1,000 broomcorn millet grains (Gyulai, 2010). Even in Italy very few millet finds are noted (Murphy, 2016, Figure 2). So its discovery at Lički Ribnik, within a kitchen stove, may indicate that the

grains were intended for human consumption. Ancient texts support this, suggesting that millet was consumed either for food or as medicine in Italy and was grown, according to Pliny (N.H. XVIII.xxiv-xxv), in Campania and on the banks of the Po. Columella (Col. II.ix.19) notes that bread made of millet "may be eaten without distaste before it cools. Panic, when ground and freed from bran, and millet as well, makes a porridge which, especially with milk, is not to be despised even in time of plenty." The 4<sup>th</sup> century AD medical writer Oribasius (I.15.1–3) writes that "on occasion bread is made from [millet], whenever there occurs a shortage of those grains useful for food", while "countryside people boil meal made from millet and then eat it after mixing in lard or olive-oil", "millet is better than panic in every respect: for it is more pleasant in taste, not so difficult to digest, constipates the stomach less, and is more nutritious". In these texts it is generally agreed that millet or *Milium* refers to broomcorn millet (*Panicum miliaceum*), while *panic* refers to foxtail millet (*Setaria italica*).

Many of the ancient agricultural writers refer to millet; however, it is important to note that these texts are generally biased towards elite audiences with large-scale agricultural farms located in fertile plains of the Po valley, Campania, and surrounding Rome (MacKinnon, 2004, p.16). What types of soil best suited millet cultivation is debated in the texts: Columella (II.ix.17) recommends light loose soil, Cato (VI.1) rich soil in areas where fog is prevalent, while Pliny (N.H. 18.xxv.101) suggests millet should receive very little water. Columella (II.ix.18) notes that "[Panic and millet] cannot be sown before spring, for they are fond of warm weather above all; but they are entrusted to the earth to best advantage in the latter part of March". Pliny (N.H. 18.10) too states that millet was sown both in the spring and summer. Today's millets, including broomcorn millet, offer a modest yield under marginal farming conditions, with poor soils, short growing seasons and with low to no input, making them an attractive crop option in mountain, hill and tribal agricultural areas (Padulosi *et al.*, 2009). The mountainous region surrounding Lički Ribnik would have likely suited millet cultivation, especially as it too is affected with poor soils and a relatively short growing season. Other advantages of millet cultivation mentioned by ancient authors include the small volume of sowing seed required (Col. II.ix.18), as well as the fact that it can be stored within the husks for longer periods than other grains (Col. II.ix.18; Pliny XVIII.x.60-xi). Strabo (5.i.12) also remarks that in the Po valley millet was a sure protector against famine when other crops failed. Other notes on millet cultivation include the necessity to manure and plant legumes to replenish the soil (Col.II.xiii.3), and the need to repeatedly weed (Col. II.ix.18).

## 6. Animal husbandry and meat consumption at Lički Ribnik

Focus on the relative proportions of the three main domestic species, cattle, sheep/goat, and pig, in zooarchaeological

assemblages from the Roman Empire has been comparatively high. King (1999) noted very generally that the inhabitants of Italy enjoyed a heavily pig-dominated diet, whereas assemblages from Roman Britain were generally dominated by cattle and sheep/goat, from Roman Germany by both pig and cattle, and in Roman Provence by sheep/goat. In Hungary, cattle are overwhelmingly dominant in faunal assemblages, especially from military sites, while caprines and pig vary across the region (Bartosiewicz, 1990–1991; Choyke, 2003, p.212). These variations are said to emphasise, along with environmental and economic considerations, the role of cultural choice in explaining to what degree cattle, pig and sheep were exploited in a region (King, 1999).

In Croatia, most of the zooarchaeological remains from Roman sites represent relatively low numbers of animals, which prevents any conclusions regarding any preference for certain species. For example, at Crikvenica – Igralište 467 bones identified to genus/species represented five cattle (2 adults and 3 juvenile), six sheep/goat (3 adults, 2 juvenile and 1 indet age), five pigs (4 juveniles and 1 adult) and one juvenile chicken, along with horse, dog, red deer, wild boar and badger (Miculinić, 2018, p.84). At Lički Ribnik only three cattle and two sheep (1 juvenile and 1 adult) are represented. Thus, these small assemblages are unlikely to be representative of the frequency of cattle, sheep/goat and pig in the region. However, today the inhabitants of the Lika region use the nearby mountains for grazing sheep during the summer months (Vukelić, 2002), and so sheep herding could have been practised as part of the Lički Ribnik villa system.

Most of the information we have about animal husbandry for the Roman period comes from the Roman agronomists Cato, Varro and Columella. They suggest that cattle were exploited for ploughing, caprines for wool and milk and pigs for meat and manure. In particular, Cato (RR 76–81), Varro RR (2.2 ff.) and Columella (VII. 2.1) mention the importance of sheep and goat milk, especially in relation to the making of cheese (Columella XII.13). In terms of meat processing, it is suggested that animals were generally slaughtered in winter; due to the lower temperatures allowing the meat to be better preserved (Palladius, *Op. agric.* 13:6). Once slaughtered, the animals would have been butchered, likely with a cleaver, a large butcher's knife used for intensive slicing and dismemberment (Dobney *et al.*, 2002; Seetah, 2012). These types of cut marks, from a heavy knife, were identified on the cattle bones recovered from Lički Ribnik. In addition, long bones (*i.e.* humerus and tibia) dominate the assemblage. These are typically identified as parts of the animal that are higher in meat. It is therefore likely that the majority of the remains recovered from the pits at Lički Ribnik represent butchered sections of meat. Once the animal was processed, the meat portions obtained were prepared to be preserved or to be cooked. A number of techniques may have been employed to preserve foodstuffs, for example, salt-curation, smoking, marinating and drying (Leguilloux, 2002). If cooked, the meat could have been grilled, roasted, boiled, stewed or fried (Varro R.R. 5.109). At Lički Ribnik, evidence of burning on some of the sheep bones and three

distal humeri of cattle may be indicative of cooking and consumption activities at the villa.

## 7. Food preparation in Dalmatia

Although over 200 villas have been identified and excavated in the Roman province of Dalmatia, only the villa at Danilo Šematorij provides evidence of an oven that is probably part of a kitchen (Pedišić, 2000, p.523). Even within urban settlements only one kitchen feature has been identified from Nadin (Nedinum), while possible kitchen waste was recently identified from Bribir (Varavaria) (Pers. comm. Martina Čelhar and Igor Borzić). Thus, the kitchen discovered at Lički Ribnik provides a unique glimpse of a Roman villa kitchen in the Dalmatia region. The size and function of a Roman “kitchen” varied from house to house depending on many factors such as social status and the size of the property (*e.g.* Foss, 1994, pp.71–73, p.173; Varro Vita Populi Romani, frg. 28 (Non. p. 55M); Varro RR 1.13.2). Small households may simply have a cooking area using a brazier to cook food or no cooking facilities at all, while large urban and rural villas would have the space for specific rooms for cooking and storage, although portable braziers are also mentioned (*e.g.* McKay, 1998, p.94; Packer, 1971). As at Lički Ribnik, kitchens at many of the larger properties were generally located far away from the dining area and near a water source (Foss, 1994, pp.172–173).

In Pompeii, kitchens had large masonry installations, with a stove leaning against the wall (Alfonso *et al.*, 2013, pp.71–92; Bonini, 2011; Bonini, Dal Porto, 2003). Yet at Lički Ribnik a round and a rectangular stove were discovered placed in the middle of the room (Figure 7). The rectangular stove, made from stone and daub, was likely raised on a structure several feet above the floor and cooking would have taken place on top, where pots were placed over the ashes of small fires (Jelinčić Vučković, 2015, p.70). The archaeobotanical samples discussed here were recovered from the rectangular stove. The round stove was likely a small clay oven of the ‘beehive type’ used to bake bread and bakery goods, but also other foods like meat, fish, cereals, legumes and vegetables could be roasted, dried or baked in it (Foss, 1994, pp.66–67; Apicius 5.3.2, 5.4.6, 6.5.6, 7.2.1, 7.4.1–2, 7.5.1, 7.9.1, 7.10, 7.13.2, 8.1.1, 8.1.3, 8.6.8–10, 8.7.1, 8.7.5, 8.7.7–9, 8.7.14, 8.8.1, 8.8.3, 8.8.12, 10.1.4.).

As well as the structures in the kitchen, the study of vessels associated with culinary practices can provide important information on how utensils may have been used to process, cook and serve food at the villa. Each meal would have required certain cooking wares adapted to the different heat intensities to which the food product had to be exposed. For example, Fabric 1 pots found at Lički Ribnik are believed to be used for cooking food for long periods, such as for stewing (Arthur, 2007, pp.18–19) and brewing. Fabric 2 bowls were suitable for cooking cereals and pulses, as well as meat like goat, mutton or lamb. Cooking in these open vessels enabled the liquid to evaporate, resulting in a dry or thick dish which



**Figure 7.** Picture of the two stoves within the villa's kitchen at Lički Ribnik.



could be accompanied by some sort of sauce (Arthur, 2007, p.18). The discovery of Dressel 6b amphoras may suggest the importation of olive oil to the villa, although its later smaller variants could also be used for wine, fruit or garum (Marion, Starac, 2001).

The discovery of a shard of a red slipped baking pan could suggest that the dish *patina* (a Roman dish including various ingredients mixed with eggs) or bread was also being made and eaten at the villa. Because of the design of the Italic pan, with its broad, shallow body, straight walls and flat bottom, food baked in it would have taken on a defined form, such as savoury or sweet pies, or quiches. In *De re culinaria* by Apicius the Roman taste for such preparations is seen, where these pans are specifically called for in 53 of the recipes. The most popular type of dish described by Apicius is the *patina*, to which an entire chapter with 37 recipes is devoted. It is important to note, however, that this cook book was likely directed towards an elite audience in Rome, but recipes probably filtered through society and may have been cooked at the villa site in Lika.

## 8. Conclusion

Archaeobotanical, zooarchaeological and pottery evidence was collected from the rural villa of Lički Ribnik, Croatia. The remains date from the second half of the 2<sup>nd</sup> to the first half of the 3<sup>rd</sup> century and provide the first evidence of villa consumption in the Lika region. The data is particularly limited and is not representative of the diet at the villa, but does provide a glimpse of some items that could have been consumed at the site. The discovery of broomcorn millet (*Panicum miliaceum*) within the large rectangular stove in the presumed villa kitchen suggests that millet was eaten at

the villa, although possibly as a minor crop. The discovery of broomcorn millet is also particularly important as millet is not regularly mentioned in ancient agrarian texts and is not often identified in archaeobotanical or isotopic studies across the Roman Empire. Evidence of cut marks on the cattle bones and burning on the sheep bones, found in the southern part of the villa, probably indicate evidence of butchery and cooking techniques at the site. The pottery fragments recovered indicate that a range of dishes could have been cooked at the villa, including the Roman dish *patina*. Unfortunately, further conclusions about who may have been eating these items or how they were consumed is not possible from the limited evidence presented here. Nevertheless, the study does show the importance of collecting and examining environmental evidence in conjunction with other archaeological material in order to understand local diet and economy at Roman period sites.

## Acknowledgements

This paper is part of the project “Life on the Roman Road” (LRR – UIP-05-2017-9768, Croatian science foundation). Many thanks to the two referees, who provided valuable comments on an earlier version of the manuscript.

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