



ARCHAEOLOGY OF **SALT**

APPROACHING AN INVISIBLE PAST

EDITED BY

ROBIN BRIGAND AND OLIVIER WELLER



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The salt from the Alghianu beck (Vrancea County, Romania): a multifaceted ethnoarchaeological approach

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Abstract. This study presents the first results of the ethnoarchaeological investigations in the microzone of the salt outcrops from Alghianu using original questionnaires, as part of a Romanian project (cf. ethnosalro.uaic.ro). Since animal (cattle, ovicaprid, swine, caballin) husbandry is the main occupation of the inhabitants of this microzone with a quasi-autarchic economy, this allowed us to study in detail the multiple aspects concerning the role played by rock-salt boulders particularly in animal feeding and human alimentation, as well as in food preservation. In this context, it became possible to elaborate spatial models of supplying of rock salt from Alghianu within local and pendulatory pastoralism.

Keywords. Romania, ethnoarchaeology, traditional economy, pastoralism.

Résumé. Cette étude présente les premiers résultats d'une étude ethnoarchéologique menée dans le département de Vrancea autour des affleurements de sel gemme d'Alghianu à partir des questionnaires établis pour le projet Ethnosalro. Dans le

cadre d'une économie qui tend à l'autarcie, l'élevage est l'occupation principale des habitants de ce petit secteur. Cette caractéristique nous autorise à étudier dans le détail la place tenue par les blocs de sel gemme en premier lieu dans l'alimentation animale et humaine, mais aussi pour la conservation de certaines denrées. Dans le contexte d'un pastoralisme local et pendulaire, il devient alors possible d'élaborer des modèles spatiaux qui éclairent les modalités de l'approvisionnement en sel.

Mots-clés. Roumanie, ethnoarchéologie, économie traditionnelle, pastoralisme.

With approximately 300 salt massifs and around 3000 salt springs (Romanescu 2014), with a remarkable density of archaeological sites, and, most noteworthy, with numerous resilient areas where traditional behaviours of salt supplying in the rural and sometimes even urban areas continue to this day, at an unexpected degree of intensity for a EU-member country, Romania (for the most part) meets the ideal conditions for undertaking ethnoarchaeological researches focused on investigating the role of salt in the evolution of prehistoric communities. This opportunity didn't pass unseized, so that a conjoint endeavour by Romanian and French specialists managed to win the first grant for ethnoarchaeological researches on the salt springs (Ethnosal 2007-2010) funded by the Romanian Government (Alexianu and Weller 2009). During the research carried out in the Carpathian piedmont and mountainous area from eastern Romania (Weller *et al.* 2010), particularly in the southern part of the study area, a series of traditional practices of salt exploitations were also encountered, which led to the necessity of a new research grant (EthnosalRo 2011-2015), extended to the entire area of Romania outside of the Carpathian range (Alexianu *et al.* 2012).

Methodological aspects

Immediately after the EthnosalRo project commenced, one of us (M.A.), on the basis of the experience acquired in developing questionnaires concerning the salt springs (produced through the collaboration between O.W., M.A. and L. Nuninger), elaborated new types of questionnaires (at the source, the sheepfolds and the consumer villages), this time concerning the salt cliffs/mountains (fig. 1).

The main themes addressed (with the afferent aspects presented selectively below) in the case of the questionnaire at the salt outcrop concern:

- The identification of the salt outcrops in the studied microzone, including micro-toponymic aspects;
- The harvesting of the salt (extraction periods and parameters, tools employed);
- Spatial analysis (the settlements and sheepfolds supplied, the time required for reaching the salt outcrop on foot or by various transportations means);
- Transportation (transportations means, packaging);
- Uses: human consumption (private, collective, commercial), animal feeding, preservation (cheese, meat and fat, vegetables), halotherapy, *etc.*;
- The ratio between the use of rock salt, natural brine from salt springs and artificial brine (obtained by dissolving rock salt into the water);
- The attraction exerted by the salt outcrop on wild animals, hunting;



Figure 1. Field images of the ethnoarchaeological campaigns conducted in the microzone of the Alghianu outcrop. Photos by F. A. Tencariu and (bottom-right) O. Weller.

- Frequency of salt supplying;
- Trade and barter;
- Behaviours/ethnoscience;
- Symbolism of salt.

The questionnaires for the consumer settlements and the sheepfolds contain other questions suitable for the respective situations. The questionnaires were not elaborated rigidly, but had a deliberate open character, as not once have we found that a less prohibitive approach to inquiries shed light on countless unknown, unforeseen and sometimes completely surprising aspects.

In Romania, the research on the primitive exploitation of the salt outcrops, from the ethnological or ethnoarchaeological standpoint, is very recent (Weller *et al.* 2010, 497-498; Ciobanu 2011; Brigand *et al.* 2015). Unlike previous works, the

present study is based for the most part on the questionnaires newly conceived in 2012. The problematics around the outcrop from Alghianu (rock salt and natural brine) has been tackled during three investigations conducted in 2010, one in 2012, and eight in 2014 (table 1).

Geographical and geological context

The rock-salt outcrops on the right bank of the Alghianu beck are part of a salt massive located at the intersection of the 45°52'28"N lat. parallel and the 26°44'20"E long. meridian. The terrain is hilly, with an average elevation of 500 m, specific to sub-mountainous depressions. The investigated area is found within the Alghianu geological and landscape reserve, which occupies an area of 10 ha in the centre of the Vrancea Depression. The area is drained by the Zmeul beck (Alghianu beck). On the sixth terrace of the Putna River repause the Burdigalian-Aquitanian salt deposits, with a holokarst microrelief of the karren type.

The salt outcrops from Alghianu belong to the Poiana salt massif, itself surrounded by the Tulnici, Nistoreşti and Năruja massifs. The massif is a klippe with an area of 1 km² and a thickness of 1 km. The thickness of the overlying layer is 0-1 m. The concentration of NaCl is 70-90% and the reserve is estimated at 769 Mt.

Halotponym

The studied outcrop has several variants of toponymic syntagmas: La sare la Pârâul Alghianului (lit. “at salt at the beck of the Alghianu”), La sare la Alghian/Alghean (lit. “at salt at (the) Alghian/Alghean”), La sare la Gura Algheanului (lit. “at salt at the mouth of the Alghean”).

Description of the salt and the saline water. Uses

Most of the informers specify that the salt collected from the outcrop is suitable for feeding domestic animals (ovicaprids, cattle, horses), as it contains dirt. Nonetheless, some consider that this salt too is suitable for human consumption. The elderly use even nowadays the salt from Alghianu for preparing food, just as in the past when its use was ubiquitous. There are areas of the outcrop where the salt is of a higher purity, which makes it fully qualified for human consumption. In any case, the local users are aware of the fact that the salt boulders from the Târgu Ocna salt mine or from the outcrop from Valea Sării are the best for human consumption. When the salt spring from Alghianu (“down at the brine”) is cleaned, the brine is of high quality and favoured by people for consumption.

Access, frequency of supplying from the outcrop

Supplying is currently done in the upper part of the outcrop, on the right side of the beck, since in 1986-1987 a small dam was built on Alghianu beck. Before the erection of this small dam, the access to the salt outcrops was done by travelling in wains (Rmn. *căruiță*) along the bed of the Alghianu.

The halite outcrop from Alghianu is most often visited during spring and fall. During summer, access is hindered by the fact travelling over unmowed lands is prohibited. Herders come in spring to collect salt for the mountain sheepfolds and in autumn to provision with salt for the use of animals (sheep, goats, cattle) during winter. Spring also witnesses supplying for the local cattle husbandry. According to denizen Gh. Stana, congestion occurs during fall and the Christmas Lent. Herdsman F. Anițoiu stated, during an investigation in a sheepfold, that he collects salt whenever he needs it, as his sheepfold is located at 1-1.5 km from the source, and for this reason only quantities under 20-30 kg are collected.

Extraction

Unearthing the portion of the outcrop that will be exploited is done using a spade or pick and a shovel. For detaching the boulders from the outcrop, the following tools are used in this order: pickaxes, axes, iron wedges/chisels/bolts, levers, and hammers/sledgehammers. The most basic *chaîne opératoire* is the following: the axe is used to cut a small ditch into the salt, deep enough to accommodate a wedge; the latter is blown with a hammer until salt “chunks” (Rmn. *grunz*) of various weights (from 1.5 kg upwards) are detached (I. Dumitru). This technique is used when the portion of the outcrop has a flat surface. Where the “salt is tender”, according to D. Vasile, for extracting the salt boulder, the method “in the wheel” is employed, which uses first the chisel and then the iron nails. Particularly the top part of the outcrop is exploited, as it cleaner, “more washed” (I. Țoiu).

Settlements and sheepfolds supplied with salt from Alghianu

All the villages and sheepfolds (Rmn. *stână* pl. *stâni*; in effect, a provisional complex of enclosures and structures found in remote areas, with specific characteristics, see Nandris 1985 for a detailed discussion) around the Vrâncioaia commune fall into this group. Respondents mentioned localities part of the Vrâncioaia commune and outside of it: Bârsești, Bodești, Hăulișca, Muncei, Năruja, Negriilești, Nistorești, Păulești, Ploștina, Poiana, Prisaca, Spinești, Tulnici, Valea Sării, and Vrâncioaia (fig. 2, top). Because no other outcrop in the area can be exploited, the attractivity of the outcrop from Alghianu increased accordingly. Thus, the respondend mentioned that only after the “mine” from Valea Sării was covered after heavy rains, did the inhabitants from Valea Sării, Prisaca and Năruja started to come to Alghianu. Respondents provided particular information for the sheepfolds within the boundaries of the Bârsești, Negriilești, Păulești and Spinești localities. A respondend stated that, generally, all the settlements and sheepfolds within a 15 km radius around the Alghianu outcrop are supplied from here.

In order to understand more thoroughly the role of salt in animal husbandry, it is necessary to turn to the ethnological research into this issue. In the specialised literature, there have been acknowledged “four structural morphological and functional types of pastoralism: sedentary, local (agricultural), pendulating, and transhumant” (Dunăre 1972, 158). Currently, only the first three types can be found in the studied area.

Sedentary pastoralism consists of “raising cattle around the peasant homestead within the confines of the village... This domestic manner of husbandry did not involve gathering animals into herds, nor the daily movement for pasturing. However, for watering the cattle are droved outside, usually to a well or running water, if one is found nearby. The cattle are fed in above mentioned pens or around them, inside the farmyard” (Dunăre 1972, 173).

Local or agricultural pastoralism takes place “during the entire warm season inside the village domain, in the land boundaries of each village. For this type of pastoralism, the movement of herds doesn’t go beyond the land boundaries. Similarly, no human collective (herdsmen) leaves during the respective time period the native village” (Dunăre 1972, 174). This type of pastoralism has three subtypes: local (agricultural) pastoralism without shed and sheepfold; local (agricultural) pastoralism with shed and race, but without a sheepfold; local (agricultural pastoralism) with shed, race and sheepfold (Dunăre 1972, 175).

Pendulating pastoralism presents two forms, namely the simple-pendulating pastoralism and the double-pendulating pastoralism. The *simple-pendulating pastoralism* is “characterised by the fact that the sheep flocks, often also the pig as well as the cattle and horse herds, move *each summer* between the village and the mountain for pasturing, always wintering in home village of the owners. In this case, the pastoral calendar is rather simple: the herds spend the *spring* on the fields of the respective village, pass the *summer* in the mountains, the *fall* on the stubble fields, and the *winter* in the village, through the care of each village” (Dunăre 1972, 190). The *double-pendulating pastoralism* differs foremost in that “wintering takes place in the area of the forest or sub-forest meadows, that is in between the village and the summer pastures” (Dunăre 1972, 192).

The calendar of the sheep pastoralism in the area is the following: from December to the 10th-15th of April, the sheep are kept home. From the middle/late April until after Saint Demetrius Day (26th of October), the animals are turned to the sheepfolds. Between the end of October and the first snow, people graze them by their own (C.S. Lepădatu).

Transportation

The transportation of the salt extracted from Alghianu consists of the stage in which goods are transported from the outcrop to the wain, and the stage in which they are transported using a wain or a horse to the final destination (settlement or sheepfold).

Usually, roles are assigned by turns: “one digs, the other picks up, carry up the hill, taking turns”. In the first stage, the rock-salt boulders weighing 5-10 kg or more are packed into hemp or raffia sacks and carried on the back up to the wain. The distance from where the wain is left and the outcrop is c. 60 m. If the horses are strong, one can drag the sacks with salt or the salt chunks on a tree branch (Rmn. târn; a large, flat tree branch, regularly used to carry hay, or in this case the salt boulders) to the top of the hill (fig. 1, bottom left). The larger chunks are put as such into the hutch of the wain, while the smaller ones and the broken salt are placed into sacks.

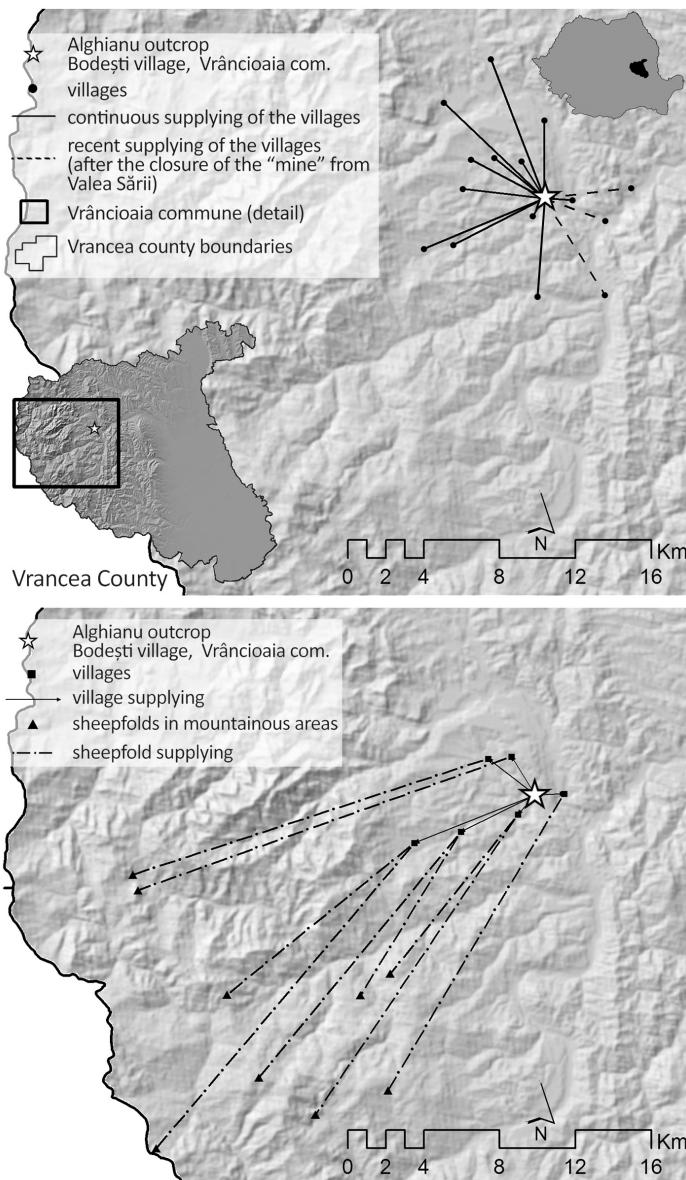


Figure 2. Supplying with salt boulders strictly for the needs of the inhabitants and the animals from private homesteads (top), and of the villages as well as sheepfolds from isolated areas (bottom).

The transport of the salt to the consumer settlement is usually done with the wain. Conversely, transport from the consumer settlement to the consumer sheepfold is done either with the horse, either with the wain, according to the difficulty of reaching the sheepfold. In some case, for example when the sheepfold has around 500 animals and the salt has been depleted, the sheepfold is supplied two or three times more directly from the source (fig. 4, interrupted line), with the salt transported in sacks placed on the horses' saddles so that the weights "even out" (D.Vasile).

Long-distance trade and barter

I.Dumitru (55 y.o.) from Poiana, Vrâncioaia commune, stated that in the past (towards the middle of the 20th century), locals exchanged salt from Alghianu with maize, though he was unable to provide names of settlements. P.Tufănoiu recalled how in the past the impoverished denizens from Bodești carried salt to the great markets in Focșani (*c.* 60 km away) and Odobești using wains, 200-300 kg with each transport, in exchange for money and especially for wheat or maize. C.S.Lepădatu expounded how his godfather Roșca extracted salt for the villagers of Bârsești in exchange for a bushel of maize, and in exchange for wood for the mountain forest rangers who used the salt as fodder for wild animals. I. Danță mentioned that his son Fane Danță, transported salt to sheepfolds, to Negriilești and Bârsești, where the salt was needed but the location of the outcrop was not known.

Collecting, quantities used

The salt is not collected by standard quantities, but according to the necessities of the homestead or the number of animals. The variety of answers which we report are illustrative in this sense: thus, I.Ochean carries with the wain 50-100 kg at once, a quantity of salt extracted by two men in one-two hours; F.Anițoiu habitually transports a wain fully load with 500-600 kg of salt, the maximum weight the animals can pull after an extraction work of half a day. C.S.Lepădatu loads the wain with approximately 200 kg of salt extracted by two-three men who put an effort for at least three hours. Gh.Stana specified that the extraction of 7-8 chunks (approx. 100 kg) takes around half a day, and the entire activity, from the moment he departs his home until he returns, takes a day. For F.Murgu, a toil of half a day produces *c.* 200 kg. V.Chetreanu mentions that he sometimes extracted between 100 kg and 200 kg, and between 300 kg and 400 kg on other occasions; this took from half to an entire day of work. An informant at a very advanced age, D.Vasile, recalled how he left early in the morning (around 4, 5 or 6 a.m.) from the village of Poiana with the wain drawn by two horses, accompanied by a companion, travelling for half an hour to the Alghianu outcrop, where the extraction took them two hours, if they had good tools, since at that place “the salt is tender, that is, it's not too hard and can break well”. T.Caba specifies that the salt was not allotted (divided) to the two workers evenly, even though both put the same amount of work into extracting it, but according to the number of animals each possessed.

Storage

In the village homesteads, part of the salt boulders are put directly into the cattle's rack, part is kept away from moisture in a dry place inside the shed. D.Vasile develops on this: “I purposely had at the shed a bole, a trunk with branches in the ground, and you put (salt chunks) inside and the cows come to it to lick salt”. Other informants mention storage in a dry place in the shack. In sheepfolds, the salt boulders were partially put in the pen for the sheep (directly on the ground

or fixed on a piece of a branch with three offshoots), and partially somewhere in the sheepfold protected from the rain. A respondent mentions the storage in the sheepfold in a dry place inside an improvised light shack.

Pounding for pig fodder

The salt boulders were once pounded with a stone (hone, Rmn. *cute*), and a specific quantity of salt was added to the pig's fodder (swill). This method is now dated, and nowadays the salt is pounded with a rock or with the axe's blade. For use in swill, the salt was pounded directly at the outcrop, but also home. Some denizens put into the swill brine collected from the Alghianu spring.

Pounding for human consumption

The salt chunks were washed carefully, pounded/grinded with a smasher (Rmn. *chilug*) inside a wooden mortar (Rmn. *piuă*, var. *chiuă*), passed through a strainer, washed again and then it was ready for use. Others passed it through a sieve, cleared with water. Another method for crushing the salt was to place it inside a rag, pound it and then passed through a sieve (the kind used for sieving flour); the finest salt was used for salads, maize porridge (Rmn. *mămăligă*) and eggs. The crushed salt was also used as such, without any further processing, as a responded amusingly recalled: "it was also used dirty like this, and I haven't died (from it)!". The same point is implied by the statement of another villager (I.Dumitru): "When you come (home) from scything, you don't have any pretence", or in other words, "if the salt is not white, that is not a problem".

Uses of natural brine

The brine extracted from the Alghianu salt spring is used for preparing pickles and preserving meat and cheese. It is also used directly in human alimentation, as done for instance by F.C.Dănilă, as the brine is clear, himself cleaning the spring. Low-quality fodder is sprinkled with saline water in order to stimulate the appetite of the animals.

Uses of artificial brine

The brine obtained by dissolving salt into water has two main uses: preservation and therapeutics. Salt is dissolved in the water until the obtained brine is sufficiently concentrated to hold a raw egg on its surface. Meat absorbs as much salt as it needs, so any amount of salt can be put to produce the brine. The brine obtained by dissolving rock salt is used for pickling in barrels. For cabbage, the salt chunk with was placed directly into the wooden barrel, even if it had inclusions of dirt. For therapeutic use, artificial brine is obtained by dissolving salt in hot water. Combined with various herbs, the brine is used for feet baths. Another use of artificial brine is also adjuvant to the pigs' fodder.

Human halotherapy

M.Anițoiu mentions in general terms that hot water with salt dissolved in it and combined with various herbs is used for feet baths. A more detailed description of the procedure is provided by P.Tufănoiu: “the salt is dissolved, put into hot water, and the feet are bathed for rheumatism or the flu”. For backaches, salt is ground, heated in a tray on the stove, put into gauze cloth and placed on the painful spot for half an hour (P.Tufănoiu). Others heat the salt boulder, cover it with cloth, and place it over the aching area (F.C.Dănilă). Salt inhaling is also attested: “salt boulders are placed in boiling-hot water and inhalings are done”. Likewise, salt is placed on wounds. For stomach aches, D.Vasile grandmother drinks a small cup brandy mixed with a spoon of fire ash (Rmn. *spârlă*) and with “a little, but little salt”.

Animal halotherapy

The vermifugal quality of salt is well known among husbanders. For instance, to the question why is salt given to animals, T.Caba mentioned among others that salt is given to calves so that they do not become infested with roundworms.

Quantities of salt necessary for various animals

The answers to this question have specific characters, according to the perception of each responder. Accordingly, some considerations on the equivalent in kilograms of the salt chunks should be taken with caution.

I. Ochean estimates that 10-15 kg/year of salt is required for a cow, and 20-30 kg/year for 15 sheep. F.Anițoiu estimates that 100 goats need 1000 kg/year, and a cow 20-30 kg/year. For P.Tufănoiu, three cows need approximately 60 kg/year. C.S.Lepădatu states that at the sheepfold 50 sheep need four large chunks, or c. 100 kg for a winter, and a cow needs around 30 kg/year. Both F.Danțis and his father I.Danțis consider that a cow requires approximately 30 kg of salt each year. The same individuals, herders in a sheepfold, state that a wain of 200 kg of salt is needed for the summer for approximately 300 sheep. The winter is passed only with their sheep, around 70, which consume more salt than during the summer, also c. 200 kg. For F.Murgu, a wain with 200 kg of salt is enough for more than a year of consumption by four cows and ten sheep. Apparently in opposite view with the respondents above, V. Chetoreanu states that a chunk of 5 kg is enough for a cow during the winter.

Sometimes the estimations rely on the number of necessary salt chunks, and no information on the weight is provided. Thus, T.Caba states that in the sheepfolds, from spring till fall, 300-400 sheep need 20 salt boulders, and that for the winter, during which the sheep are kept home at their owners, 50 sheep require three or four salt boulders.

What type of salt chunks do animals prefer

All the informants mentioned that animals prefer to lick the darker salt. F.Anițoiu (herder) thinks this is due to the presence of supplemental elements than in white salt. P.Tufănoiu considers that the salt for animals should be grainier and softer than the hard white one, which could break the teeth of the animals which desire (that is, which haven't licked for a long time) salt and sometimes bite from the boulder. The same informer states that when the animal has not licked salt for a long time, the salt boulder is not left inside the animal's rack for more than half an hour, because it is bad if the animal over-consumes salt. For C.S.Lepădatu, sheep prefer to lick the darker salt, which is less the "steely" (that is, hard) than the bought white one, and melts better in the mouth. He is also of the opinion that the darker salt is more adding (that is, nourishing) for animal as well as human food than the commercial one. Herder I.Danțiș likewise considers that the salt bought from the Tulnici market is harder, and not so good, since animals chew it with their teeth. Gh.Stana too considers that the salt from Alghianu is better than the commercial one, "even like this with dirt, it's not like the guts will turn black". Currently, only the impoverished and destitute use it, to avoid buying commercial salt. The majority of people avoid it however, since it is dirty.

Salt for fodder

"Some people sprinkled (salt) on the greener hay so it doesn't spoil, the animals it better too", state I.Ocean and P.Tufănoiu. Even if the animals lick the salt, the fodder is sprinkled with brine and salt, particularly "when the fodder is a little green or even spoiled" (F.Anițoiu). Brine is also sprinkled on the maize combs for preserving them (P.Tufănoiu).

Crystallised salt in human food and preservation

Crystallised salt is used for salting various foods and preparing various dishes (maize porridge, sour soups, etc.). For preserving cheese for instance, 50 g of fine salt are put to 10 kg of cheese, which is then kneaded, placed into firkins, covered with a fir cap and fastened with fir twigs, "so not even a fly can enter" (D.Vasile).

Animal attraction

F.Anițoiu stated that the area around the Alghianu outcrop attracts boars and roe deer. D.Vasile stated that even nowadays roe and red deer come to Alghianu for salt, and that "in the past there were also magpies, falcons, ravens, (they) pecked salt, but now they disappeared, there are not so many birds".

Social chain

F.Anițoiu stated that he also travelled alone for collecting small quantities, but it is not recommended because the activity is dangerous. Generally, the people going to the outcrop belong to a family. For example, I.Țoiu went goes with his son, sometimes with his brother and with his wife (M. Țoiu) who waits at the wain.

P.Tufănoiu stated that a wain has at least two persons, and that two or three wains go at the same time to the outcrop. I. Dumitru stated that the outcrop is visited by a wain with three of four persons, but that has also witnessed groups of two or three families from the village travelling in wains to Alghianu. Women seldom go to the outcrop, as they are unable to dig out and carry up the hill the heavy boulders. F.C.Dănilă stated that herders “sometimes come with people from the village to help them”.

The most destitute extract salt by request, which they then sell or trade for food products. The salt requirements of some individuals can also be met through donations: “the one who takes out more salt also give it to his friends, if they ask”.

Superstitions

For the first time during the investigations conducted until the summer of 2014, there have been recorded superstitious beliefs concerning salt, particularly that used for animals. Thus, I.Danță claimed that “if (somebody) steals salt from the animals, you (will) have troubles, they fall sick, the wild animals (will) eat them. If somebody wants to do you harm, they take a piece of salt from the animal, out of revenge or envy”. In other words, F.Murgu believes that “if (somebody) takes the salt from the animal it causes harm”. In the same vein, Gh.Stana considers that stealing salt from animals is a bad omen — it happened to him that “salt was stolen from the sheep and until he realised, four of his most beautiful lambs died”. Also for the first time ever, we have recorded interdictions concerning the borrowing of salt during certain days of the week. For example, C.S.Lepădatu, I. and F.Danță are aware that “some people believe it is not good to give salt from the house on a Wednesday or Friday, (because) you will have trouble, (your) lamb, cow will die”. According to a very common superstition, “when the milk boils over, salt is put (on the stove), so that the tit of the cow or sheep will not break, (so that) milk (source) doesn’t dry” (P.Tufănoiu). Elder D.Vasile clarifies: “well it is not allowed (to let the milk spill over the stove) because the animal tit sores, the tit breaks, you must be careful that (the milk) doesn’t boil over, and to sprinkle a little salt and say ‘away from my cow the sore (Rmn. *spuză*)’”.

Interdictions

The salt started by an animal is not given to another animal of the homestead. When the animal has not licked salt for a long time, the salt boulder is not left inside the animal’s rack for more than half an hour, because the animal licks to much salt. When a cow is gestating, for a period of two or three months at the beginning of the gestation period, it should not lick salt, nor after delivery should salt be left all the time in the rack.

Symbolism

The investigations carried out in the Alghianu area confirm a series of known symbolical uses of salt. Thus, C.S.Lepădatu stated that “during bathing it is put salt, wheat, maize and others so that the baby will be wealthy”. M.Anăoiu recalls

that salt was once put into the tub of the newborn. D. Vasile stated that “when the mother-in-law bathes the baby, a little salt, flowers, rice are put into the water, so that the baby will strengthen, be hard”. Furthermore, during the wedding when the gifts were collected, salt was involved in this ritual. For example, F. Murgu says that “in weddings, (during) the toast, bread and salt are placed on a plate”. Gh. Stana goes into further detail: “(during) the wedding bread and salt, (and) rice on a plate when the gifts are collected”.

Salt in weather forecasting

During New Year's Eve night, an onion is cut into twelve layers corresponding to the twelve months of the year, and the same quantity of salt is sprinkled into each. If the salt moistens in certain layers, it means that the respective months will be rainy, and if the salt stays dry, it means that the respective months will be dry too.

Behaviours/Ethnoscience

The first knowledge concerning the location of the outcrop are received as early as three or four years of age, occasioned by the children accompanying their fathers to the place of exploitation.

There exists a genuine set of precepts concerning the satisfaction of the salt requirements of domestic animals. Thus, cattle, ovicaprids and caballines are given exclusively salt boulders for licking, and are not allowed to water from the salt springs because herders found that ingurgitating salt water in larger quantities, particularly during the extremely hot periods of the summer, induces disorders (firstly the abrupt increase of the blood pressure) that can even lead to death. The scientific explanation is that in the case of licking the ingurgitation of salt is done gradually, and the existence of sensors of the sympathetic nervous system warns the brain of the quantity of salt necessary for the organism has been reached. In the case of the saline water, this self-regulating mechanism is overridden, and salt is consumed well above the limits from which the ingestion of salt becomes toxic. With respect to the pigs' fodder, the quantity of salt is controlled by the husbander by adding limited quantities of either raw salt, either brine from salt springs.

In what concerns the role of salt for cattle fodder, the husbanders know that it stimulates the animal's appetite and strength. At the same time, even though the quantity produced remains unchanged, the milk has superior organoleptic qualities when the cow is fed with salt.

Results and conclusions

The elaboration of the questionnaires as all-encompassing as possible, the numerous and sometimes surprising information obtained from ethnological investigations, the complexity of the phenomena and processes revealed by the systematic approach of certain specific parameters have fully demonstrated the saliency of this multifaceted ethnoarchaeological approach.

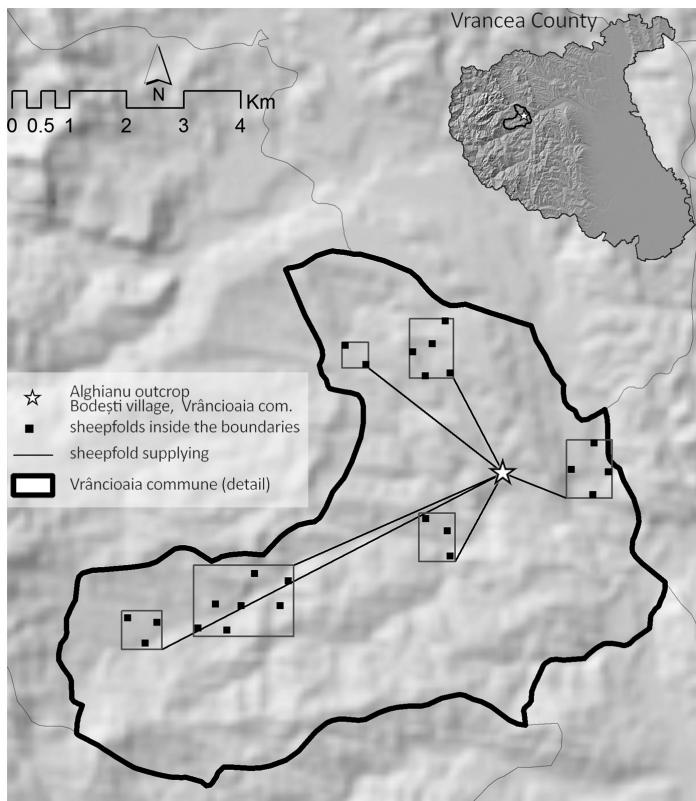


Figure 3. Supplying with salt boulders for the needs of the inhabitants and the animals from private homesteads and sheepfolds located within the boundaries of the settlements.

The investigations of this salt outcrop as part of the EthnosalRo project has allowed us to elaborate a complex epistemic grid, the validity of which shall be tested for other salt outcrops from the Carpathian piedmont areas of Romania.

With respect to the exploitation of salt from Alghianu, it should obviously be ascribed to a phase preceding the actual mining exploitation, respectively the quarrying of rock salt (Harding 2013, 34, 61). Even if it constitutes quarrying, this type of exploitation of the rock salt during prehistoric times required, as evinced from our investigations, particularly hard tools (at least axes, chisels and hammers fashioned from stone or metal). From another point of view, this type of exploitation of rock salt involves a number of activities (extracting, transporting and crushing the salt) much more labour-intensive than those of the exploitation of the salt springs.

The existence in the area of the Alghianu outcrop of rural communities with quasi-autarchic economies centred on animal husbandry (cattle, ovicaprids, swine) allowed us to highlight the role held by salt in animal feeding. In this context, it was possible to develop new models of salt supplying of the settlements and sheepfolds from this area witnessing intensive animal husbandry:

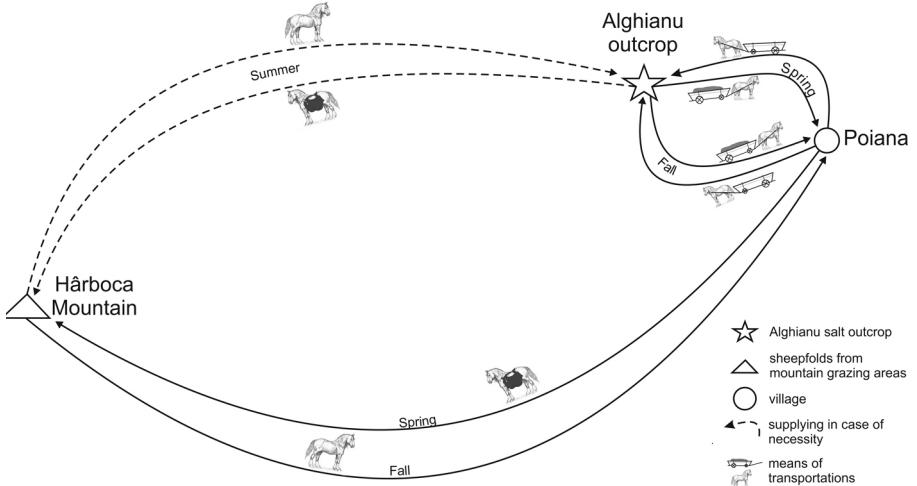


Figure 4. Schema of direct supplying with salt boulders of the Poiana village; from here, a portion of the salt is transported to the sheepfold using a horse (continuous line). When the sheepfold's initial salt reserves are depleted, direct supplying from the outcrop occurs (interrupted line).

- (1) Supplying with salt boulders strictly for the needs of the inhabitants and the animals from private homesteads (for human and animal consumption, for preserving foods and fodder) (fig. 2, top);
- (2) Supplying with salt boulders of the settlements in the sense of point 1, to which is added the supplying of sheepfolds located within the boundaries of the settlements (fig. 3);
- (3) Supplying with salt boulders of the settlements in the sense of point 1, to which is added the supplying of isolated sheepfolds located in mountainous areas (fig. 2, bottom and fig. 4, the continuous line);
- (4) Direct supplying with salt boulders of the sheepfolds located in mountainous areas (when they have exhausted the initial salt reserves), as well as of the sheepfolds found near the salt outcrop (fig. 4, the interrupted line).

Notwithstanding the results of the twelve investigations carried out in the area of the Alghianu outcrop, in the user settlements and sheepfolds, further ethnological investigation must be carried out here for the following two reasons: (a) the necessity to elucidate a series of unforeseen aspects (*e.g.* the typology of the sheepfolds from the area, the changing supply relationships between the settlements and the sheepfolds); and (b) the necessity to fully comprehend a series of predicted aspects of an unforeseen complexity. In other words, the research carried out so far concerning this outcrop have yet to meet the exigencies of a saturated model (Alexianu 2013).

No	Year	Name of informant	Age/Sex	Residence
1.	2010	Ion ȚOIU	53/M	Poiana, Vrâncioaia, Vrancea county
2.	2010	Milica ȚOIU	48/F	Poiana, Vrâncioaia, Vrancea county
3.	2010	Ion DUMITRU	55/M	Poiana, Vrâncioaia, Vrancea county
4.	2010	Titi CABĂ	48/M	Poiana, Vrâncioaia, Vrancea county
5.	2012	Dumitru VASILE	85/M	Poiana, Vrâncioaia, Vrancea county
6.	2014	Ion OCHEAN	82/M	Vrâncioaia, Vrâncioaia, Vrancea county
7.	2014	Fănică ANIȚOIU	54/M	Sheepfold on the Scapătului Hill, Bodești, etc.
8.	2014	Magdalena ANIȚOIU	79/F	Sheepfold on the Scapătului Hill, Bodești, etc.
9.	2014	Pavel TUFĀNOIU	67/M	Bodești, Vrâncioaia, Vrancea county
10.	2014	Constantin S. LEPĂDATU	72/M	Bodești, Vrâncioaia, Vrancea county
11.	2014	Fane DANȚIȘ	36/M	Sheepfold on the Crucii Hill, Bodești, etc.
12.	2014	Ion DANȚIȘ	66/M	Sheepfold on the Crucii Hill, Bodești, etc.
13.	2014	Gheorghită STANA	73/M	Muncei, Vrâncioaia, Vrancea county
14.	2014	Fănică MURGU	54/M	Spineți, Vrâncioaia, Vrancea county
15.	2014	Fănică Costică DĂNILĂ	80/M	Bodești, Vrâncioaia, Vrancea county
16.	2014	Vasile CHETREANU	76/M	Bodești, Vrâncioaia, Vrancea county

Table 1. List of the responders to the ethnologic inquiries during the three series of investigations (2010, 2012 and 2014).

The most comprehensive conclusion is that the survival in a number of micro-areas from Romania of these genuine behaviours/practices of surface exploitation of the salt outcrops constitutes a quite exceptional opportunity, an inescapable point of reference for understanding the workings of similar processes from prehistory. Unique in Europe, these resilient behaviours, threatened to the point of extinction by the inherent globalisation, must be studied intensively and urgently in order to record as much as possible of this precious intangible heritage.

Acknowledgement

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