

ACADEMIA ROMÂNĂ – FILIALA IAȘI  
INSTITUTUL DE ARHEOLOGIE  
MUZEUL BUCOVINEI

# ARHEOLOGIA MOLDOVEI

## XLII



EDITURA ACADEMIEI ROMÂNE

EDITURA „KARL A. ROMSTORFER”



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# RECENT ADDENDA TO THE MAPPING AND ETHNOARCHAEOLOGICAL RESEARCH OF THE BRINE SPRINGS FROM BISTRIȚA-NĂȘĂUD COUNTY

BY

FELIX-ADRIAN TENCARIU\*, ANDREI ASĂNDULESEI\*\*

**Abstract:**

*The archaeological evidence confirmed that the brine of the salt springs from the Subcarpathian area was used to obtain salt, through the evaporation-crystallization processes, as far back as the Early Neolithic. This region is nowadays unique in Europe, for its traditional and non-industrial ways of salt water exploitation, still intensively applied. This inestimable scientific resource has been, in the last decade, the subject of an extensive ethnoarchaeological research conducted by a Romanian/French team, with impressive results. The paper deals with some results of the ethnographic inquiries, focusing on the traditional ways in which the brine is used in its original state, mainly for preserving different types of food, but also for daily cooking and in preparing feed for animals. The paper also explores the possible implications for the prehistoric archaeology, using the premises of the ancient exploitation of the brine and the (most probable) need to conserve aliments like meat, cheese, etc. (with few options available). Therefore, techniques similar to those known today, are highly likely/probable of having been used in prehistoric times, though much more difficult to establish than brine recrystallization.*

**Keywords:** Ethnoarchaeology, brine springs, Subcarpathian area, Bistrița-Năsăud county, food preservation.

## INTRODUCTION

The Subcarpathian area of Romania has been characterized by a high density of salt water springs and salt mountains/cliffs. This region is nowadays unique in Europe, for its traditional, non-industrial ways of salt water exploitation, still intensively applied. This situation presents an ideal framework, in order to achieve a complex ethnoarchaeological research.

The archaeological research in the sub-Carpathian regions of Romania, corroborated with historical, ethnographic and ethnoarchaeological sources provided, over the last decades, solid information regarding the prehistoric mining of salt rock and the use of brine springs for obtaining salt. This has also allowed for a series of hypothesis about the trade of salt, trading routes and various types of goods involved in salt trading etc. Much of this impressive literature is based on the ethnoarchaeological research done in the last two decades, especially by Romanian and French/Romanian team<sup>1</sup>. Since 2007, this work has been realised under the coordination of Marius Alexianu, through three consecutive grants financed by the Romanian Government (cf. ethnosal.uaic.ro, ethnosal.ro and ethnosalro.uaic.ro/ethnosalro3/).

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\* Interdisciplinary Research Institute – Science Department (Arheoinvest Centre), Alexandru Ioan Cuza University of Iași, Romania, adifex@gmail.com.

\*\* Interdisciplinary Research Institute – Science Department (Arheoinvest Centre), Alexandru Ioan Cuza University of Iași, Romania, andrei.asandulesei@yahoo.com.

<sup>1</sup> ALEXIANU *et alii* 2007; WELLER, ALEXIANU 2007; WELLER *et alii* 2007; ALEXIANU, WELLER 2007; ALEXIANU *et alii* 2008; WELLER *et alii* 2010; ALEXIANU *et alii* 2012; ALEXIANU *et alii* 2015.

The ethnologic inquiries done recently, referred to: the exploitation and appraisal methods implied, means of transport, containers, distance, frequency, the supply, redistribution, and social organisation, behaviours, trade, ethnoscience, toponymy, symbolical approach.

In this paper will be highlighted some of the traditional, daily uses of the brine by the inhabitants of the communities near the salt water springs and surroundings. The focus will be mainly on one area covered by field investigations between 2017 - 2019, namely the Bistrița-Năsăud county.

It should be mentioned that previously there have been undertaken research on salt sources in this area, some accompanied by ethnographic surveys, and/or geographical and geological indications.

### THE BRINE SPRINGS: SETUPS, USES, FREQUENCY, SUPPLY AREA

As already stated, our fieldwork has been guided by previous research, published recently. Of these, the most relevant to the specificity of our approach is the work of Andrea Chiricescu, who has mapped and undertaken ethnographic research in nine localities with salt water springs from Bistrița-Năsăud county<sup>2</sup>. Starting from here, and benefiting from other indications as well<sup>3</sup>, we decided to check some of the points mentioned in the literature, to complete the ethnographic and cartographic information. This led to the identification of both other springs in already known locations, as well as the discovery of new saltwater sources, used currently or in the near past (Pl. I). The field work methodology consisted in finding the brine springs, taking measurements and photos, GPS location, followed by ethnoarchaeological inquiries in the closest village/villages (see Appendix), based on a standard ethnographic questionnaire.

As a result, we visited 15 localities having on their radius a total of 29 salt water springs (SWS), as follows: 1. Șieu Sfântu (one SWS); 2. Blăjenii de Jos (one SWS); 3. Tăure (one SW); 4. Nimigea de Jos (Ungurească) (two SWS); 5. Mintiu (two SWS); 6. Cepari (two SWS); 7. Dumitra (two SWS); 8. Nepos-Slătinița (one SWS); 9. Livezile (four SWS); 10-11. Josenii Bârgăului/Mijlocenii Bârgăului (four SWS); 12. Bistrița Bârgăului (two SWS); 13. Colibița (three SWS); 14. Viile Tecii (two SWS); 15. Pinticu (two SWS).

Generally, but not necessarily, depending on salinity, purity, distance and accessibility from the surrounding settlement, the salt water springs are differently set up.

Many brine sources from the extra-Carpathian areas, even if known and intensively used by the locals, appear as simple holes dug in the ground, filled with salt water (the so called *bâlca*). The only arrangements are some wooden sticks stuck in the ground, intended to support a small recipient (plastic mug, jar) needed to pour the salt water into bigger recipients. Sometimes, piles of dried, spiky shrubs are arranged around the springs to stop the access of livestock (excessive consuming of brine by animals is often deadly).

Unlike it, in the intra-Carpathian area we didn't face this situation. The vast majority of brine sources are or were carefully arranged and taken care of.

A first category, with only few examples, belongs to the springs lightly set up, mostly surrounded with rocks, wooden planks, or captured and channelled via small pipes or grooves for easier utilization: Nepos/Slătinița; Livezile-*Hâgă*; Bistrița Bârgăului (Pl. II).

The second category of consists on salt water springs which are set up as fountains, traditionally with hollow tree trunks (*buduroi, știubei*) or wooden planks, or, more recently, with concrete or metal tubes or plastic barrels. Some of them are captured and channelled with long plastic or metal pipes: Livezile-Valea Lungă; Livezile-Stână; Mijlocenii Bârgăului; Cepari – spring no. 2; Dumitra – spring no. 2; Mintiu – spring no. 2 etc. (Pl. III).

The most common are the springs not only set up as fountains, but also covered with a construction of wooden planks or trunks, covered with furring, ceramic tiles, asbestos or metal sheets (the so called “salt wells

<sup>2</sup> CHIRICESCU 2013: 12-76.

<sup>3</sup> CHINTĂUAN 2002; ICHIM 2017.

with houses”): Șieu Sfântu; Dumitra – spring no. 1; Cepari – spring no. 1; Colibița (all three springs); Mintiu – spring no. 1; Tăure; Blăjenii de Jos; Josenii Bârgăului (Pl. IV-V).

The brine springs are generally known by the whole community, and often by all the inhabitants of the surrounding settlements, even if those have their own spring. Today, taking brine from the springs is generally free, allowed for anyone who needs it. There are few exceptions – for example, the salt well with house from Mintiu is administered by the Church and kept locked by a local woman (Ioana Mureșan, 67 y.o.). The supply with brine requires programming and costs 0.1 lei per litre, money that goes to the church.

The springs are attended on foot, horse wagon or by car, depending on the accessibility and the needed quantities of brine. Frequently, the users go to the spring on foot, within a distance varying from a few hundred meters to 4-5 km. The users usually carry two plastic recipients of 5 to 10 litres each. Users with horse wagons take more brine, 100 to 500 litres, used especially for supplying the sheepfolds in the area, for cheese making. Quantities up to 1000 litres, or more, are taken into large recipients by car, mostly for cheese factories.

In terms of uses, our research did not experience huge surprises (if compared to the data from Moldova, Muntenia and Oltenia). If anything, we noticed that here there is a much smaller variety and frequency of uses of the natural brine than in the extra-Carpathian areas, probably due to a more significant presence of rock salt. The most common uses of brine are: for food preservation, for livestock feed, for making table salt through evaporation-crystallization by boiling, for cooking (as it is) and for curative purposes.

The most frequent use is for different types of food preservation and cooking. We observed two levels of brine consumption: private (household), and commercial (cheese factories).

The most common use of brine is individual, inside the household, for preserving different vegetables, making cheese or preserving various types of meat and bacon.

The pickles (cucumbers, green tomatoes, cabbage and many others) are made especially in the early autumn, today in smaller or large glass or plastic jars or barrels, once in wooden barrels. The recipients are kept over the winter in special still rooms or cellars. For pickles, the concentrated brine is diluted at a one to ten ratio (one litre of brine for 10 litres of common water). Sometimes the brine is less concentrated, so the ratio will be smaller. Either way, the solution must pass the “egg test”, meaning that a chicken egg must float in it, otherwise, “you must add more brine until it does”.

The cheese (*telemea*), made from cow milk, is preserved in similar containers, cut in slices, and the brine is usually diluted to a 1 to 4 ratio. Unlike the other areas of Romania, here, within the sheepfolds, the brine is not usually used for making cheese.

Only a few people informed us that they are using the brine, as it is, for every day cooking (polenta, borsch and so on). They prefer it to the salt in the stores, and know exactly the amount of brine needed, according with the quantities of food made.

Over 80% of the informants told us that they did themselves, or had seen or heard about making fine, white table salt by boiling the brine, and approximatively 15% are still doing so. This operation was done by putting 5 to 10 litres of brine in a cast iron or aluminium kettle, slowly boiling it until the water evaporates and sun drying the humid salt left. Some informants told us that this method was used an especially long time ago, when salt was hard to find, or too expensive, and today, only the poorest people are still doing it. Others said that they are still doing it, and this produces better salt than that of the market.

Another important use of brine is for livestock feed. Often the stored, dried hay, is sprayed with brine, for several reasons: longer preservation (it doesn't get mouldy), it is not spoiled by mice, and is also better consumed by the animals. Sometimes, they even used it to replace the rock salt for lick.

The brine is also currently used for curative purposes. People use it mainly to alleviate rheumatic pains, by keeping their legs in hot brine for a couple of minutes. It is sporadically used for inhalation (steam from the hot brine) as treatment for colds and flu. Two informants told us that they use the brine for treating open wounds (both human and animal – it stops the bleeding and also cleans the wounds).

We have little information, without details, on the use of brine, in the near past, for the processing of animal skins (lambs, cattle).

Concerning the frequency of exploitation, the brine springs are usually used less in the spring, experience some use in the summer, and are highly used in the autumn and winter. In the early autumn, because it is the pickles season, and in the winter, before Christmas, when, traditionally, pigs are sacrificed. For now, we have no information about present or past commercialization of the brine (unlike the rock salt).

We were also interested in the areas of supply distribution with brine, meaning the distances and directions to the settlements using the same salt water springs. The data gathered reflects mostly the situation as it was in the recent or not too distant past, since nowadays the brine wells are less and less utilised, and primarily only by the locals. According to this, and in addition to gustative characteristics of the brine, flow and purity of the salt water springs, and accessibility to it (by various means of transport, or in the absence thereof), we distinguished three types of springs:

1. Village type, for the springs of strictly local importance, utilized by one to three villages, within a radius of maximum 5 km (Livezile, Mijlocenii Bârgăului, Colibița – Pl. VI).
2. Communal type, for the springs utilized by more than four villages, within a radius of 5 to 20 km (Bistrița Bârgăului, Șieu Sfântu, Nepos/Slătinița – Pl. VII).
3. Supra – communal type, in the case of springs used by many settlements (both rural and urban) and whose attraction is exerted over long distances (Mintiu, Nimigea de Jos – Ungurească, Dumitra, Tăure – Pl. VIII).

#### OBSERVATIONS AND FINAL REMARKS

As it is generally accepted, any ethnoarchaeological approach (regardless the subject and geographical area) should be designed and performed as a means to help the archaeological interpretation. In this case, the hypothesis is that, in times when salt was not as available as it is today, but it was at least as much important for both human and animal consumption, the salt water springs must have been exploited, maybe in ways similar to the ones we have just presented. Of course, one cannot copy/paste situations from the present over the distant past, just because there is multiple evidence that people are doing it today, and were doing it in the near past (meaning the last three – four hundred years). But, to sustain this hypothesis, we do have other arguments, even if indirect:

1. The brine springs were known, and exploited in prehistory for obtaining salt, as salt crusts, by pouring brine over large wooden bonfires – since Early Neolithic – Lunca – Poiana Slatinei<sup>4</sup>, or as salt cakes by using the briquetage technique in the Early Neolithic – Solca (Suceava County)<sup>5</sup>, especially during the Chalcolithic – Căcica, Solca<sup>6</sup>, Răucești-Munteni, Lunca, Oglinzi<sup>7</sup>, Țolici<sup>8</sup>, and probably in the Bronze Age – Figa, Caila, Săsarm<sup>9</sup>. From the archaeological evidence, as well as from several experiments with briquetages<sup>10</sup> (TENCARIU *et al.* 2015), it is obvious that this technique implies a considerable effort and large quantities of raw materials (clay, wood, brine). So, at least for the salt cakes, it is likely that these were produced for trade at medium and large distances, and not for local consumption.

2. It is obvious that people had the same need, both now and then, to preserve certain types of food: meat, milk (as cheese), and maybe fruits and vegetables.

3. One may argue that today, people are using plastic recipients to transport and store the brine, but this situation is not older than 20-30 years. Previously, almost all informants told us, that the recipients for brine

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<sup>4</sup> WELLER, DUMITROAIA 2005.

<sup>5</sup> URSULESCU 1977.

<sup>6</sup> NICOLA *et alii* 2007.

<sup>7</sup> DUMITROAIA 1994.

<sup>8</sup> DUMITROAIA *et alii* 2008.

<sup>9</sup> HARDING, KAVRUK 2013.

<sup>10</sup> TENCARIU *et alii* 2015.

procurement and storage were the same as the ones that could be assumed for the ancient times: wooden buckets and clay pots. At least, for the last ones, hundreds of modern ceramic fragments are to be found, just around the springs.

4. It is common sense to believe, that people who were much more connected to nature than we are today, were able to know how to benefit from every advantage that the environment provided.

We've come a long way, but comparing to what could and should be ahead of us, it was a smooth road. The hard part is just beginning, since we deal with an impressive database of places, numbers, behaviors and techniques. Moreover, the archaeological discoveries regarding the exploitation of salt over time, even if spectacular, are rather discrete. We do have now the premises to fully substantiate interpretative models impossible to achieve anywhere else in Europe. It is obvious that the modelling based on such a consistent database maximizes the credibility of using the ethnographical analogy to understand the various contexts on the archaeological time. Still, in a certain sense, ethnoarchaeology faces difficulties in giving answers and reaching clear transcultural analogy mechanisms, but for sure it does offer the opportunity to raise the proper questions regarding the past.

#### ACKNOWLEDGEMENTS

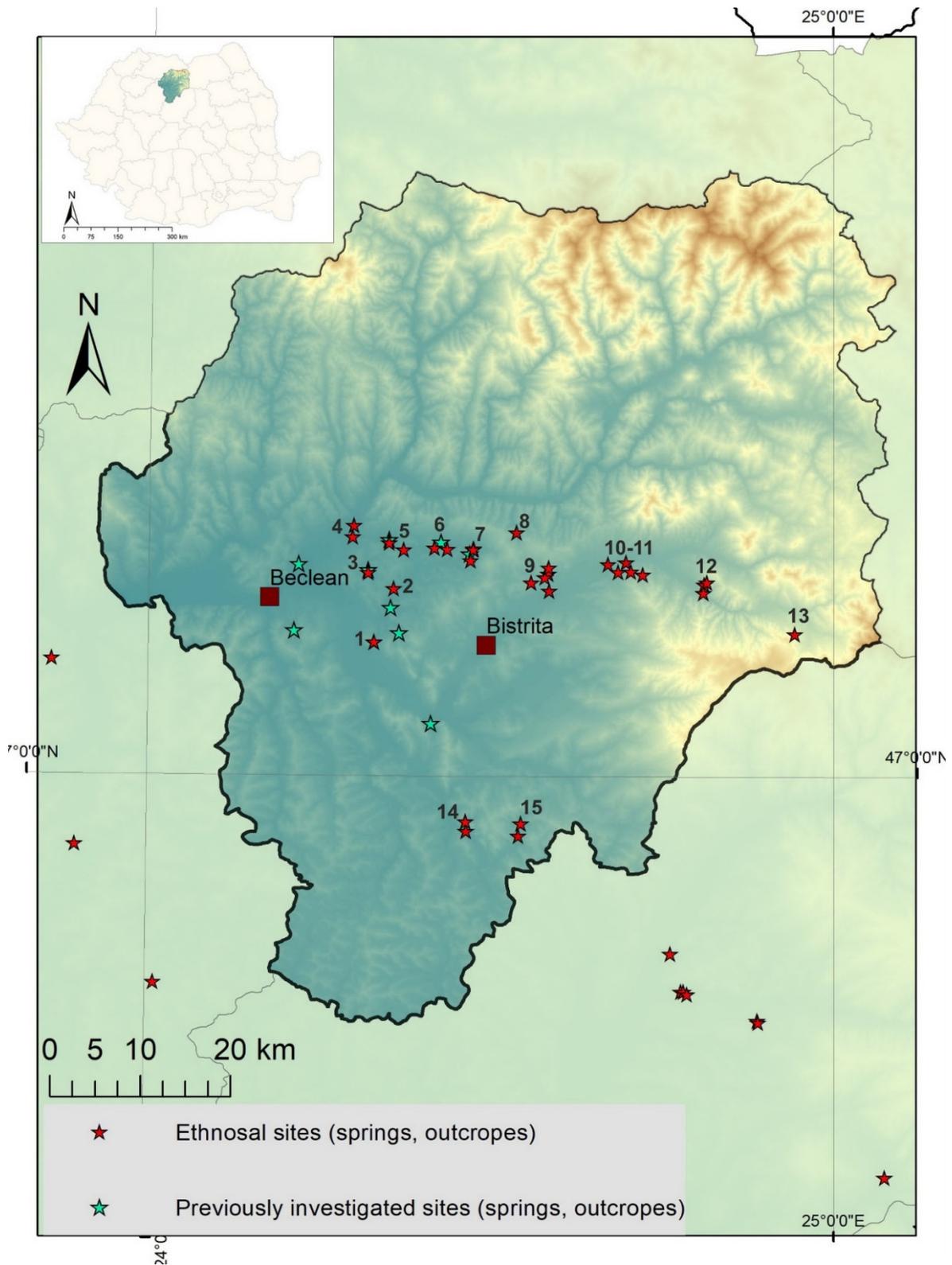
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**Appendix. Names and locations of the informants interviewed within the ethnoarchaeological surveys.**

| No. | Name and age of the informant | Village/ city of the informant (Bistrița-Năsăud County) |
|-----|-------------------------------|---|
| 1   | Ioana Mureșan, 67             | Mintiu  |
| 2   | Silai Ștefan, 52              | Nimigea de Jos (Ungurească)                             |
| 3   | Attila Balogh, 82             | Nimigea de Jos (Ungurească)                             |
| 4   | Maria Huci, 68                | Chintelnic (for the Șieu Sfântu spring)                 |
| 5   | Maria Pudilik, 68             | Chintelnic (for the Șieu Sfântu spring)                 |
| 6   | Ioan Ordace, 58               | Dumitra   |
| 7   | Ioan Vasile Țânca, 74         | Dumitra   |
| 8   | Ioan Blaga, 76                | Tăure   |
| 9   | Constantin Emil Șofrac, 54    | Mijlocenii Bărgăului                                    |
| 10  | Emil Pop, 75                  | Josenii Bărgăului                                       |
| 11  | Liviu Răzvanța, 60            | Viile Tecei   |
| 12  | Ion Galbăn, 53                | Livezile  |
| 13  | Grigore Anii, 75              | Nepos   |
| 14  | Viorica Timiș, 40             | Bistrița Bărgăului                                      |

## BIBLIOGRAPHY

- ALEXIANU, WELLER 2007 Alexianu, M, Weller, O., *Les recherches ethnoarchéologiques dans la zone de Poiana Slatinei, Lunca: enquêtes en 2004 et premiers résultats*, in: Monah D., Dumitroaia Gh., Weller O., Chapman J. (eds.), *L'exploitation du sel à travers le temps. Colloque international de Piatra Neamt (Roumanie)*, Ed. C. Matasă, coll. "Bibliotheca Memoriae Antiquitatis", XVIII, Piatra Neamt, 299-318.
- ALEXIANU, WELLER, BRIGAND, 2007. Alexianu, M., Weller, O., Brigand, R., *Izvoarele de apă sărată din Moldova subcarpatică. Cercetari etnoarheologice*. Ed. Demiurg, Iași.
- ALEXIANU et alii 2008 Alexianu, M., Weller, O., Brigand, R., Curcă R., *Cercetări etnoarheologice asupra izvoarelor de apă sărată din Moldova subcarpatică*, in: *Tyrageia. Arheologie, Istorie Antica*, II, 155-177.
- ALEXIANU et alii 2012 Alexianu, M., Weller, O., Brigand, R., Curcă R., *Ethnoarchéologie des sources salées de la Moldavie précarpatique : une taxonomie des habitats*, in: *Thraco-Dacica*, N.S., XI, 1-2, 141-150.
- CHINTĂUAN 2002 Chintăuan, I., *Apele minerale din județul Bistrița-Năsăud*, Ed. Supergraph, Cluj-Napoca.
- CHIRICESCU 2013 Chiricescu A., *Civilizația sării în sudul Transilvaniei. Raport de cercetare*, Ed. Angustia, Sfântu Gheorghe.
- DUMITROAIA 1994 Dumitroaia, G., *Depunerile neo-eneolitice de la Lunca și Oglinzi, județul Neamț*, in *Memoria Antiquitatis*, XIX, 7-79.
- DUMITROAIA et alii 2008 Dumitroaia, G., Munteanu, R., Weller, O., Garvăn, D., Diaconu, V., Brigand, R., *Un nou punct de exploatare a apei sărate în preistorie: Țolici-Hălăbutoaia, Jud. Neamț*, in: Monah, D., Dumitroaia, Gh., Garvăn, D. (ed.), *Sarea de la prezent la trecut*, in col. BMA XX, Piatra Neamț, 203-224.
- HARDING, KAVRUK 2013 Harding, A., Kavruk, V., *Explorations in Salt Archaeology in the Carpathian zone*, in col. "Archaeolingua" 28, Budapest.
- HARDING, KAVRUK 2010 Harding, A., Kavruk, V., *A prehistoric salt production site at Băile Figa, Romania*, in: *Eurasia Antiqua*, 16, 131-167.
- ICHIM 2017 Ichim, D., *Transilvania. Sarea, oameni și locuri*, Ed. Magic Print, Onești.
- NICOLA et alii 2007 Nicola, D., Munteanu, R., Garvăn, D., Preoteasa, C., Dumitroaia, G., *Solca-Slatina Mare (Roumanie). Preuves archéologiques de l'exploitation du sel en préhistoire*, in: Monah, D., Dumitroaia, Gh., Weller, O., Chapman, J. (eds.), *L'exploitation du sel à travers le temps*, in col. BMA, XVIII, Piatra-Neamț, 35-56.
- TENCARIU et alii 2015 Tencariu, F. A., Alexianu, M., Cotiugă, V., Vasilache, V., Sandu, I., *Briquetage and salt cakes: an experimental approach of a prehistoric technique*, in: *Journal of Archaeological Science*, 59, 118-131.
- URSULESCU 1977 Ursulescu, N., *Exploatarea sării din saramură în neoliticul timpuriu, în lumina descoperirilor de la Solca (jud. Suceava)*, in: *Studii și Cercetări de Istorie Veche și Arheologie*, 28, 3, 307-317.
- WELLER, ALEXIANU 2007 Weller, O., Alexianu, M., *Recherches ethnoarchéologiques sur le sel dans la zone de Lunca*, in: *Cahiers du sel*, 17, 29-45.
- WELLER, BRIGAND, ALEXIANU 2010 Weller, O., Brigand, R., Alexianu, A., *Recherches systématiques autour des sources sales de Moldavie. Bilan des prospections 2008-2010*, in: *Memoria Antiquitatis*, XXV, 437-504.
- WELLER, BRIGAND, ALEXIANU 2007 Weller, O., Brigand, R., Alexianu, A., *Cercetări sistematice asupra izvoarelor de apă sărată din Moldova. Bilanțul exploatărilor din anii 2004-2007 efectuate în special în județul Neamț*, in: *Memoria Antiquitatis*, XXIV, 121-190.
- WELLER, DUMITROAIA 2005 Weller, O., Dumitroaia, Gh., *The earliest salt production in the world: an early Neolithic exploitation in Poiana Slatinei-Lunca, Romania*, in: *Antiquity*, 79 (306). ([www.antiquity.ac.uk/ProjGall/weller/index.html](http://www.antiquity.ac.uk/ProjGall/weller/index.html)).



Pl. I. Map of Bistrița-Năsăud county, indicating the brine springs identified and investigated so far (map by the authors).



Pl. II. Brine springs lightly set up (photos by the authors).



Pl. III. Brine springs set up as fountains (photos by the authors).



Joseonii Bârgăului



Șieu Sfîntu



Pl. IV. "Salt wells with houses" (photos by the authors).



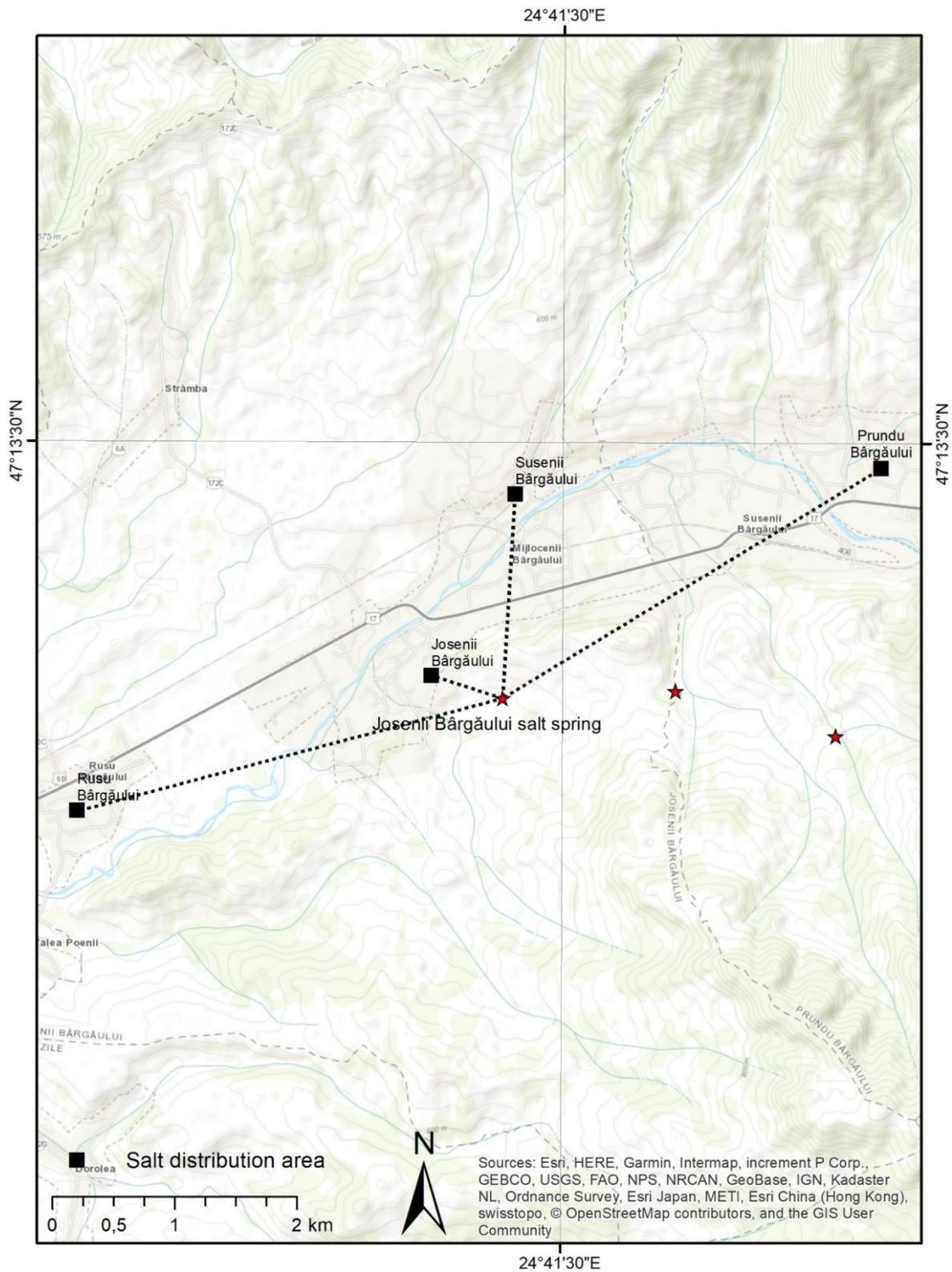
Colibița - Poiana Slatinii



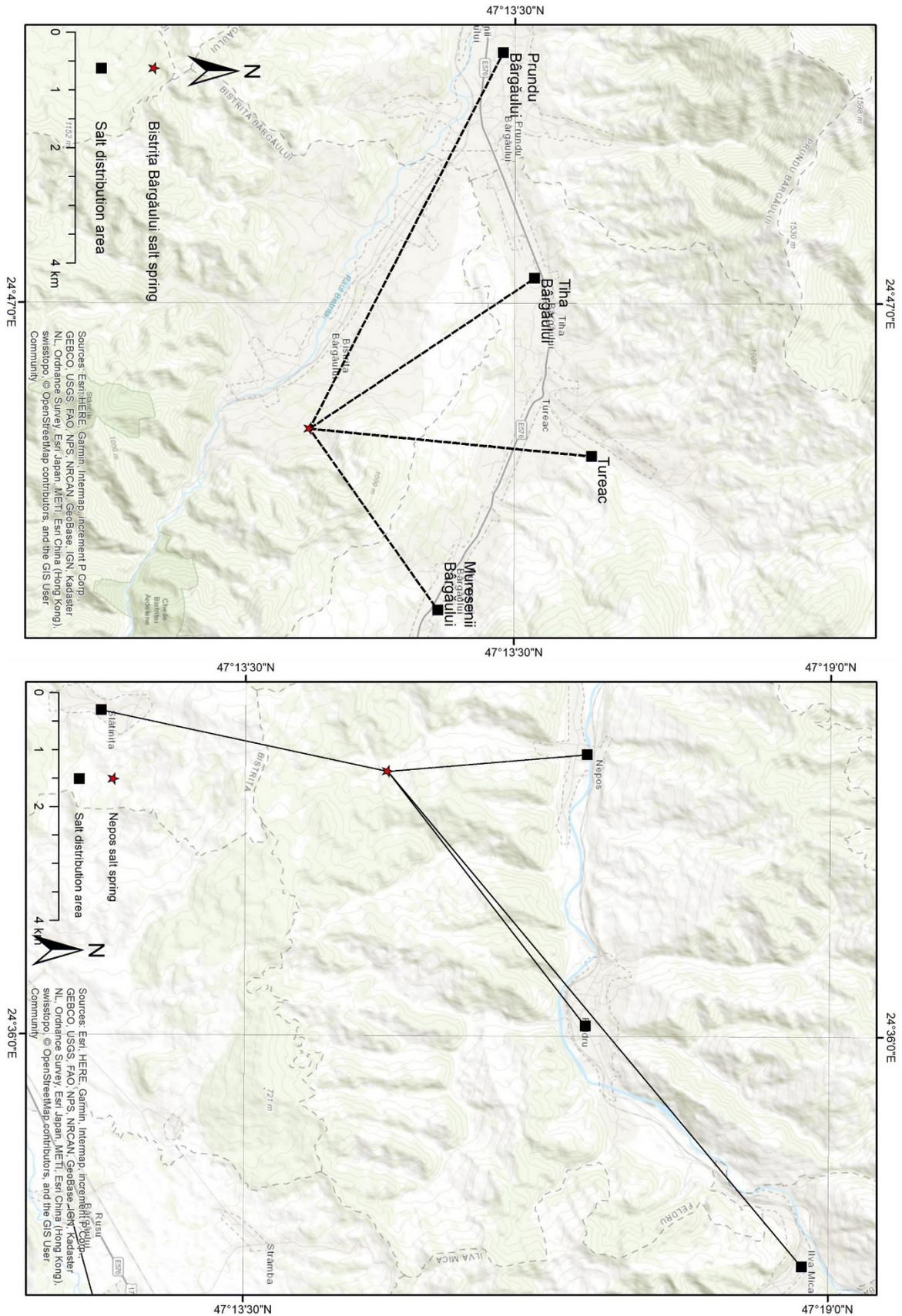
Colibița - Ștubei



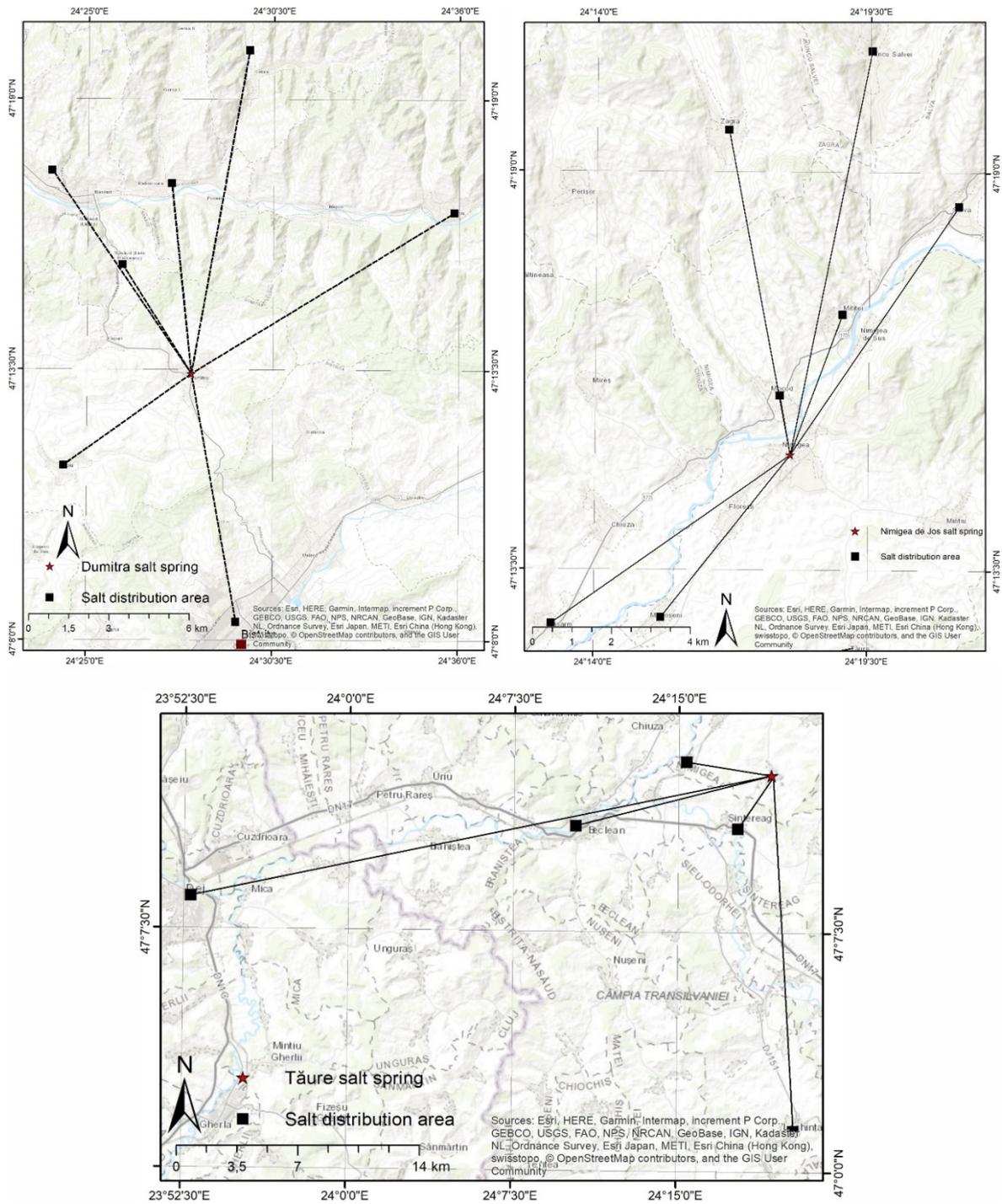
Pl. V. "Salt wells with houses" (photos by the authors).



Pl. VI. Area of supply distribution for village type brine springs – Josenii Bărgăului (map by the authors).



Pl. VII. Areas of supply distribution for communal type brine springs – Bistrița Bârgăului and Nepos (maps by the authors).



Pl. VIII. Areas of supply distribution for supra-communal type brine springs – Dumitra, Nimigea de Jos, Tăure (maps by the authors).

