

**SALT SPRINGS FROM ROMANIA EXPLOITED DURING
EARLY ARCHAEOLOGICAL TIMES:
A NEW CANDIDATE FOR WORLD HERITAGE**

*Los Manantiales de Agua Salada de Rumanía, Explotados en Tiempos
Arqueológicos: un Nuevo Candidato para el Patrimonio Mundial*

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ABSTRACT

Our approach emphasizes on the importance of the first forms of salt springs exploitation meant to obtain recrystallized salt for the development of prehistoric human communities within the continental inlands of Europe. Although it does not compare with the monumental dimension of World Heritage, the exploitation of some salt springs in Eastern Romania goes back around 8 millennia; they may be the oldest such exploitations in the world, as proven by ¹⁴C calibrated data. What differentiates Romanian salt springs from other famous similar areas in Europe is the continuity of exploitation and utilization of natural brine. Actually, these resilient behaviours explain the creation of a whole and complex universe of salt, which also represents a unique point of reference within the intangible World Heritage. It is through this association in variable proportions between tangible (non-monumental) and intangible that these salt springs comprising the oldest traces of salt exploitation can be considered elements of World Heritage. Today, important personalities in the fields of archaeology, anthropology and history posit that salt is a major reference for the development of the entire humanity. Obviously, the breakthrough of this idea requires awareness efforts targeting, on one hand, local communities in those areas and, on the other, national and international scientific and cultural environments concerned with the World Heritage. In this context, a proper motivation is the fact that the last two decades have witnessed an intensification of research on salt, which turned this topic one of the major themes within European archaeology and ethno-archaeology. In terms of local community awareness concerning the importance of salt springs in the economic development of a (micro) area over time, it is worth underlining mostly the specialists' efforts of presenting this topic in the media. Moreover, the impact of a recent initiative of the two museums in the area (Piatra Neamț and Târgu Neamț)—establishing distinct sections that represent, by using museum-inspired means, both archaeological vestiges and traditional practices of natural brine exploitation and utilization—will prove its extent in time. Certain local authorities and private entrepreneurs have pinpointed that valorising tourist areas comprising

the oldest traces of salt exploitation in Romania is an imminent issue. The greatest challenge is finding a balance between the civilization improvements (upgraded access roads, upgrading operating areas, etc.) and the protection of still-alive traditional practices of salt exploitation and use, within rural areas. Certain local authorities and private entrepreneurs have pinpointed that valorising tourist areas comprising the oldest traces of salt exploitation in Romania will become, sooner or later, an imminent issue. The greatest challenge is finding a balance between the civilization improvements (upgraded access roads, upgrading operating areas, etc.) and the protection of still-alive traditional practices of salt exploitation and use, within rural areas.

Key words: Romania, salt springs, local communities, natural heritage, intangible heritage, tangible heritage.

RESUMEN

Nuestro planteamiento resalta la importancia de las primeras formas de explotación de manantiales de agua salada, que se emplearon en obtener sal recristalizada, para el desarrollo de las comunidades humanas prehistóricas ubicadas en la Europa continental. Aunque no puede compararse con la dimensión monumental del Patrimonio Mundial, la explotación de algunos manantiales de agua salada en el Este de Rumanía se remonta a unos 8 milenios atrás; podrían ser las más antiguas explotaciones de este tipo del mundo, según lo prueban las dataciones de C14 calibradas. Lo que diferencia a los manantiales de agua salada rumanos de otras zonas similares de Europa, reconocidas a nivel mundial, es la continuidad de las explotaciones y la utilización de la salmuera natural. De hecho, esta resiliencia comportamental explica la creación, en su conjunto, de un complejo universo de sal, que representa un punto de referencia único dentro del intangible Patrimonio Mundial. Mediante esta asociación, en proporciones variables, de lo intangible (no-monumental) y lo tangible, estos manantiales de agua salada que contienen los más antiguos rastros de la explotación de sal podrían ser considerados elementos del Patrimonio Mundial. Hoy en día, personalidades importantes del ámbito de la arqueología, antropología e historia postulan que la sal es una importante referencia para el desarrollo de toda la humanidad. Evidentemente, la imposición de esta idea requiere esfuerzos de concienciación, dirigidos hacia las comunidades locales, por un lado, y, por el otro, hacia el ámbito cultural y científico preocupado por el Patrimonio Mundial a nivel nacional e internacional. En este contexto, una motivación adecuada consiste en el hecho de que las últimas dos décadas han conocido una intensificación de las investigaciones acerca de la sal, que convirtieron este asunto en uno de los temas de mayor interés dentro de la arqueología y etnoarqueología europeas. En cuanto al grado de concienciación de las comunidades locales respecto a la importancia — a lo largo del tiempo — de los manantiales de agua salada para el desarrollo económico de un (micro) área, hay que resaltar los esfuerzos de los especialistas para conseguir cobertura mediática. Además, el impacto de una reciente propuesta de los dos museos del área (Piatra Neamț y Târgu Neamț) —

de establecer secciones distintas que representen, empleando recursos museísticos, tanto vestigios arqueológicos como prácticas tradicionales de explotación y uso de la salmuera — quedará demostrado con el paso del tiempo. Algunas autoridades locales, junto con empresarios del ámbito privado señalaron que la valorización de zonas turísticas relacionadas con las huellas más antiguas de explotación de la sal en Rumanía es una cuestión de planteamiento inminente. El mayor reto es encontrar un equilibrio entre las mejoras impuestas por la civilización (camino de acceso modernizados, áreas de funcionamiento perfeccionadas etc.) y la protección de las prácticas tradicionales de explotación y uso de la sal que aún perviven en las zonas rurales.

Palabras clave: *Rumanía, manantiales de agua salada, comunidades locales, patrimonio intangible, patrimonio tangible.*

The prehistoric exploitation of salt springs has become an interesting theme in European archaeology for a long time now. The most spectacular discoveries were made at first in Germany and France, also on account of, quite naturally, the advancement of archaeological research in these countries.

Impressive mounds of ceramic debris (briquetage) in Halle (Salle) dated back to 3500–900 BC—a clear sign of salt spring exploitation in the area—became famous in the archaeological world since the 19th century. Equally famous became the Moselle valley area near Seille (Lorraine, France), where research begun at the very beginning of the 20th century and revealed huge banks of debris dated back to the 8th century B.C., located in a salt spring filled area of more than 200 hectares. This tangible heritage completely lacking an aesthetic dimension, which is usually gives prominence to certain artefacts, gradually began to be increasingly appreciated from a totally different perspective, that of technological innovation, namely the obtaining of salt crystals of a certain shape (salt cakes) from salt water. As usual, after these first impressive findings, others more or less spectacular ones followed, which multiplied discoveries in a spatial sense without exceeding a certain chronological inferior limit, as they usually did not exceed the Bronze Age (Nenquin 1961). Since Nequin's synthesis, research concerning the archaeology of salt, especially research related to the exploitation of salt springs, has evolved considerably, especially in the last two decades, when discoveries dating back to the Chalcolithic and even the Early Neolithic periods have multiplied. It is significant in this regard that in the remarkable recent synthesis of the salt in the prehistory of Europe, there are substantial sections in chronological order under the heading Briquetage (Harding 2013, 43-52). Given the archaeological research advance in Western Europe, these discoveries, which begun to arouse interest rather as a cause of their age, mostly took place in this European area. But, since the last quarter of the last century, Southeastern Europe has progressively imposed its self internationally, with reference sites found in Romania, Bosnia and Bulgaria (Harding 2013, 44-51). Given the multitude of salt springs in Romania, around 3000 in number (Romanescu 2014), it was not by accident that some of the most

interesting and old discoveries not only in Europe, but even worldwide, took place here (Figure 1).

Taking into account that the archaeological data looked promising, mainly in regard to their antiquity, the problems of the exploitation of Moldavian salt water springs came to be approached within international research programs. Among these, we may mention the following: (1) two UK-Romanian projects: *Research on Trade and Exchange in the Cucuteni-Tripolye Network* from 2001 until 2005, and *Prehistoric Salt Exploitation in Romania and Anatolia* from 2002 until 2005; (2) two French-Romanian projects: *Aux origines de la production du sel en Europe: préhistoire et écologie des Carpates Orientales* from 2003 until 2004 and, since 2004 *Les eaux salées de la Moldavie roumaine: archéologie, histoire et écologie d'une ressource structurante du territoire*.

The research gained momentum between 2007 and 2010, when intensive investigations were carried out under the Romanian CNCSIS Idei no. 167/2007 project entitled *The salt springs of Moldavia: the ethnoarchaeology of a polyvalent natural resource* (Alexianu and Weller 2009). Given the fact that almost each day of fieldwork revealed new and often unexpected aspects concerning the exploitation, uses, distribution networks, and social contexts related to salt springs and salt mountains/cliffs, we have extended the ethnoarchaeological research framework to the entire Romanian extra-Carpathian area (see the project webpage: ethnosalro.uaic.ro), in order to build a saturated model (Alexianu 2013, 211-225).

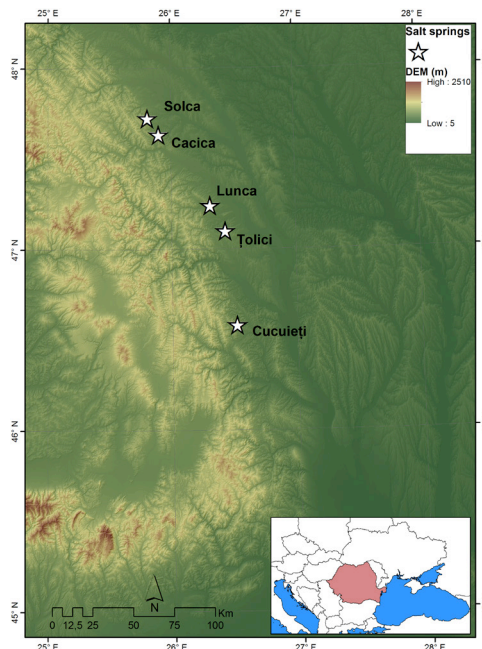


Figure 1. Map with the earliest exploited salt springs from Romania, as attested by archaeological evidence.

The first archaeological survey in the vicinity of a salt spring was conducted in 1968. The publication and interpretation of the ceramic artefacts, on the other hand, only occurred after nearly a decade, and was carried out by a prehistoric archaeologist (Ursulescu 1977). The ceramic remains discovered in the surrounding area of this salt spring, called Slatina Mare, situated in the village of Solca (Figure 2), Suceava County, were attributed to an entire series of archaeological cultures and eras, from Starčevo-Criș, to Precucuteni, Cucuteni-phase B, the first Iron Age and the Early Modern Period. Ursulescu was the first Romanian specialist to identify in some ceramic fragments the briquetage used for the recrystallization of salt from brine. Another survey conducted in 2003 confirmed the prehistoric use of this salt spring only during the Cucuteni period (from which a large amount of briquetage were found) and the Bronze Age (Nicola et al. 2007). What seemed to be an isolated finding gave way to an entire series of salt spring for which exploitation during the archaeological time has been scientifically confirmed.



Figure 2. Brine collecting at the Solca-*Slatina Mare* salt spring.

What followed was the discovery and investigation through systematic excavations of a similar archaeological site. In the close proximity of the salt spring at Lunca-*Poiana Slatinei* (Neamț County), was identified an oval mound (60×25 m) that contained mostly Starčevo-Criș archaeological deposits with a thickness of 2.80 m. Research expansion revealed traces of Linear Pottery culture, Cucuteni culture, Bronze Age, Hallstatt and the Middle Ages (Dumitroaia 1987, Dumitroaia 1984). So far the site in Lunca-*Poiana Slatinei* (Figure 3) is, on account of the age of the exploitation—the oldest in Europe and maybe even worldwide (Weller, Dumitroaia 2005)—and in terms of the magnitude of the research carried out here—including the interdisciplinary research—the most representative specialized archaeological site found in Romania.



Figure 3. Poiana Slatinei–Lunca (Neamț County). Prehistoric and present exploitation of the salt spring. Photos by O. Weller.

At Cacica (Suceava County), despite all the changes caused by a modern salt mining exploitation that is near the salt spring, an 80-cm layer of archaeological deposits was found in the proximity of the mine, consisting in fragments of pottery (briquetage) used for boiling brine in order to produce recrystallized salt cones, and charcoal from the fires used for this purpose. The analysis of the fragments of painted pottery that were found on site showed that salt production activities were carried out here during the Cucuteni culture (Andronic 1989).

At Cucuieți (Solonț comune, Bacău County), in the Slatina Veche point, two mounds consisting of Precucuteni and Cucuteni (phase A), Bronze Age and Iron Age archaeological deposits (Munteanu et al. 2007) were identified. It should, however, be mentioned that so far no briquetage were discovered in this site.

The series of exceptional discoveries continued. In 2005, a French-Romanian team discovered the important archaeological site from Hălăbutoaia–Țolici (Figure 4), Neamț County (Weller et al. 2007, 143). Archaeological excavations started here in 2007 led to the identification of several cultural levels (Starčevo-Criș, Precucuteni, Cucuteni, and Bronze Age), with the archaeological deposit having a thickness of about eight meters. Briquetage fragments were also found here (Dumitroaia et al. 2008). The oldest deposits date back to 6000–3500 BC (Danu et al. 2010).



Figure 4. Hălăbutoaia–Țolici (Neamț County). Prehistoric and present exploitation of the salt spring. Photos by O. Weller.

What differentiates Romanian salt springs from those found in more famous areas of Europe (especially France and Germany) is the continuity of exploitation and use of natural brine even in present times (Alexianu et al. 1992; 2007) (Figure 5). This unique opportunity in Europe was capitalised by the two already-mentioned ethnoarchaeological research projects financed by the Romanian Government. The research conducted in the framework of these two projects followed two main directions: the identification of the salt springs and salt mountains/cliffs and the adjacent archaeological vestiges, and the ethnological investigations through spatial analysis. As we did not commence with preconceived ideas, realities on the field forced us to address quite diverse topics (the only ones mentioned here being the ones related strictly to the salt springs).



Figure 5. Present-day exploitation at Lunca–Poiana Slatinei. Photo by O. Weller.

Thus, much needed attention was given to abandoned salt springs. We defined a typology of salt-spring catchment systems, we performed a classification of settlements that use salt springs, we analysed the means of transport of natural brine, we identified the spatial-temporal strategies for producing recrystallized salt (Rmn. *huscă*), and studied the transmission of knowledge from one generation to another. In terms of current use of natural brine from salt springs we studied human nutrition, food conservation, animal nutrition, traditional human salt therapy, craft uses, hunting and salt spring related hunting, the symbolic use of salt, exchange, sale, gift, etc. (Alexianu, Weller and Brigand, 2007).

Ethnological research was conducted based on original surveys that have continuously been adapted, improved and that became more complex, with information from all age groups, from children to 80–90-years-old elders. Especially the latter proved to be the owners of extremely valuable information on a range of issues that have never been studied in Romania, notably in ethno-archaeology. The memory of these elders and the persistence of some resilient behaviour uncovered a complex universe of salt, which also represents a unique point of reference within the intangible World Heritage.

As is known, the archaeological approach to salt spring exploitation has definite inherent limits even with the increasing number of multidisciplinary approaches. The peculiar opportunity offered by many rural areas in Romania with resilient behaviours of natural brine exploitation and supplying, showed how many unexpected reverberations salt manifests in the various aspects of human existence. Entirely unexpected was the phenomenon of generalised supplying with brine from salt springs. Likewise, totally unforeseen were the various uses of this brine in alimentation and food preservation (Alexianu et al. 2014, 33). A great surprise was the magnitude of therapeutic uses of salt and brine from salt springs, practices that confirm ancient Greek and Roman sources (Curcă 2007, Sandu et al. 2010). Ethnological research unquestionably showed the complexity of other dimensions, for instance the economic and symbolic dimension of salt.

There is, naturally, an obvious minimal methodological reserve to reject the trap of actualism and not to transplant in a more or less mechanical way the realities

of today in the archaeological past, more so during prehistoric times. Although it is impossible to precisely define the contents of one or another dimension of prehistoric times, it is important to realize that such dimensions, unimaginable to any professional archaeologist in the strict sense, have to have definitely existed in the very distant past.

A high-impact move for raising awareness about the importance of the Romanian salt springs was designed and realized in 2006 and consisted of a specialized exhibition of the Museum of Eastern Carpathians in Sfântu Gheorghe (in collaboration with numerous other museum and national archives of Romania). The exhibition, entitled *Salt, Time, Man* occasioned the publication of an extensive 250 page catalogue that includes numerous colour and b&w illustrations. Effectively, the editors drew attention to the small impact that the earliest evidence of salt exploitations in the world has in the Romanian society: "... in Romania, unlike many other European countries that are rich in salt, both research concerning the relationship between human and salt and also its public exposure are much less developed. In the Romanian society there is still no proper understanding of the importance of the natural heritage of the various manifestations of salt, as well as the cultural heritage of human beliefs and practices based on this mineral. Many archaeological remains of ancient salt exploitations, tangible and intangible manifestations in popular culture related to the exploitation, processing and use of salt, still do not receive adequate protection, neither from society as a whole, nor from the local communities or even the state structures in the field" (Cavruc, Chiricescu 2006, 7). The catalogue contains valuable micro summaries concerning archaeological remains of salt exploitation in Romania during the Neo-Eneolithic, Bronze Age and Early Iron Age, and a selective repertoire of salt springs in eastern Transylvania.

Echoes of this successful temporary exhibition were not limited to the time during which the exhibition was open; it had a considerable impact that it on the very organization of museums across Romania, in the form of permanent exhibitions. First and foremost the case of the Museum of History and Archaeology in Piatra Neamț, a notable tourist centre in eastern Romania, where in 2009, at the initiative and under the leadership of Dr Gheorghe Dumitroaia, director of Neamț County Museum, an entire wall of an exhibition room was museographically arranged as to present the importance of the site from Țolici–Hălăbutoaia (Figure 6). An unusual exhibit of great visual impact is a hollow tree trunk that is placed inside the spring in order to prevent the collapse of its banks (Rmn. *buduroi*). We emphasize that this is not the original *buduroi* from the source at Țolici–Hălăbutoaia, which was left *in situ* so as to not disturb in any way the traditional exploitation of the salt spring that still occurs at this site. The *buduroi* shown in the exhibition comes from an abandoned salt spring in the vicinity of the one currently used. Although it was made in contemporary times, it is similar to a Late Neolithic one discovered in a salt spring in France (Bernard et al. 2007). Photos of the archaeological explorations conducted here, but also of the actual exploitation stages of the present-day exploitation of the spring, provide the context necessary

for understanding the functionality of the three-dimensional ethnographic or archaeological pieces arranged to the left and right of the exhibit piece. Special mention should be made of the touristic brochure dedicated to the salt spring exploitation in Eastern Romania, which provide additional information to the interested visitors.

Another important step in highlighting to the public the importance of the salt springs was taken a few years after, in 2011, by the Museum of History and Ethnography in Târgu Neamț, a tourist town in eastern Romania located just a few miles from the site of Lunca–Poiana Slatinei. The hall (Figure 7) dedicated to the world's oldest traces of salt production through recrystallization of salt from brine collected from salt springs, was organized by the head of the archaeological team at Poiana Slatinei, Dr Gh. Dumitroaia, seconded by V. and R. Diaconu, museum curators.

In general, the same exhibition principles were followed as in the similar section in the Piatra Neamț Museum. In this case too, it should be mentioned that the exhibition does not display the original *buduroi* from Poiana Slatinei, where the exploitation of the salt spring by the rural communities continues to this day. The *buduroi* displayed in the permanent exhibition at the Târgu Neamț Museum came from Oglinzi-Slătior, a less important salt spring from the area.



Figure 6. Display case with the *buduroi* from Țolici–Hălăbutoaia in the permanent exhibition of the Piatra Neamț County Museum.



Figure 7. Display case with the *buduroi* from the area of Lunca–Poiana Slatinei in the permanent exhibition of the History and Ethnography Museum in T3rgu Neam7. Photo courtesy of V. Diaconu.

It is expected that museums from the neighbouring counties of Suceava and Bacau will further this initiative of emphasising the salt springs located in the respective counties that show traces of ancient exploitation. An important argument in this regard is the considerable impact that these sections have had on visitors. We are, of course, referring to visitors from Romania, but especially to foreign ones, which seem to appreciate to a higher degree the significance of these archaeological facts, which are little known abroad.

In addition to pursuing increasingly complex research in the field (e.g., Brigand, Weller 2012; Chapman et al. 2000; Monah, Dumitroaia 2007; Monah 2008; Sandu et al. 2012), and the ingenious archaeological and ethnographic exhibits of the museums, the specialists have recently stepped up their efforts to present to the Romanian public, by means of the mass media, the key role that the salt springs played 8000 years in the life of the Neolithic and Chalcolithic populations from Romania of that time.

Certain local authorities and a number of private entrepreneurs have stressed that the capitalisation of the tourist areas containing the oldest traces of salt exploitation in Romania and the world will become, sooner or later, an imminent issue. The greatest challenge is to find a balance between the necessary development (upgraded access roads, upgrading the operating areas, etc.) and the protection of still-alive traditional practices of salt exploitation and use, in rural areas.

The recent comprehensive and nuanced approaches regarding the world heritage (Willems 2012) and the complementarity between the natural, tangible and intangible heritage in the 8000-years-old exploitation of salt springs in Romania are solid arguments for including some of them between the most significant monuments of the world. The excitement that can be felt when visiting them comes not from their greatness as is the case usually. It is rather the thrill of an *illo tempore* transcendence, the excitement of reliving original human reactions in contact with a natural resource that would, in time, decisively contribute to the stability of human communities “as well as enhancing the quality of food, storage, food consumption, and animal and human health” (Ellis 1984, 205).

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BIBLIOGRAPHY

- Alexianu M & Weller O 2009, ‘The Ethnosal project. Ethnoarchaeological investigation at the Moldavian salt springs’ *Antiquity*, vol. 83, issue 321. Available from: <http://antiquity.ac.uk/projgall/weller321/> [15.03.2015].
- Alexianu, M 2013, ‘Saturated model. A first application in world and Romanian ethno-archaeology’, in *Contesting Ethnoarchaeologies*, A Marciniak & N Yalman (eds), Series: One World Archaeology, Vol. 7, Springer, New York, pp. 211-225.
- Alexianu, M, Weller, O, Brigand, R Curcă, R-G 2014, ‘Annäherungen an eine Unsichtbare Vergangenheit: Ethnoarchäologische Forschungen zu den Salzwasserquellen der Moldauischen Vorkarpaten (Rumänien)’, *Studia Antiqua et Archaeologica* 20, pp. 7-35.
- Alexianu, M, Weller, O, Brigand, R, Curcă, R-G, Cotiugă, V & Moga, I 2011 ‘Salt Springs in Today’s Rural World. An Ethnoarchaeological Approach in Moldavia (Romania)’, in *Archaeology and Anthropology of Salt: a Diachronic Approach Proceedings of the International Colloquium, 1-5 October 2008 “Al. I. Cuza” University (Iași, Romania)*, eds M Alexianu, O Weller & R-G Curcă, British Archaeological Reports 2198, Archaeopress, Oxford, pp. 7-23.
- Alexianu, M, Weller, O, & Brigand, R 2012/2013, ‘EthnosalRo: an ethnoarchaeological project on Romanian salt’, *The European Archaeologist* 38, pp. 17-22.

- Alexianu, M, Dumitroaia, Gh & Monah, D, 1992 'Exploatarea surselor de apă sărată din Moldova: o abordare etnoarheologică', *Thraco-Dacica* 13/1-2, pp. 159-167.
- Alexianu, M, Dumitroaia, Gh & Monah, D 2007, 'The Exploitation of the Salt-Water Sources in Moldavia: an Ethno-Archaeological Approach', in *L'exploitation du sel à travers le temps*, eds D Monah, Gh Dumitroaia, O Weller & J Chapman, Constantin Matasă, Piatra Neamț, pp. 279-298.
- Alexianu, M, Weller, O & Brigand, R 2007, *Izvoarele de apă sărată din Moldova subcarpatică. Cercetări etnoarheologice*, Demiurg, Iași.
- Andronic, M 1989, 'Cacica – un nou punct neolitic de exploatare a sării', *Studii și cercetări de istorie veche și arheologie* 40, 2, pp. 171-177.
- Bernard, V, Pétrequin, P, Weller O 2007, 'Captages en bois à la fin du Néolithique: Les Fontaines Salées à Saint-Père-sous-Vézelay' in *Sel, eau et forêt. D'hier à aujourd'hui*, eds O Weller, A Dufraisse, P Pétrequin, Besançon, pp. 299-335.
- Brigand, R & Weller, O 2012, 'Natural resources and settlements dynamics during Later Prehistory in Central Moldavia (Romania). An integrated GIS for spatial archaeological studies' in *Interdisciplinarity Research in Archaeology. Proceedings of the First Arheoinvest Congress, 10–11 June 2011, Iași, Romania*, eds V Cotiugă & S Caliniuc, British Archaeological Reports 2433, Archaeopress, Oxford, pp. 1-18.
- Cavruc, V & Chiricescu, A (eds) 2006, *Sarea, Timpul și Omul. Catalogul expoziției*. Angustia, Sfântu Gheorghe.
- Chapman, J, Monah, D, Dumitroaia, Gh, Armstrong, H, Millard, A & Francis, M 2000, 'The exploitation of salt in the prehistory of Moldavia, Romania', *Archaeological Reports for 1999/2000*, 23, pp. 10-20.
- Curcă, R 2007, 'La halotherapie –textes antiques et pratiques actuelles dans la Roumanie orientale', in *L'exploitation du sel à travers le temps*, eds D Monah, Gh Dumitroaia, O Weller & J Chapman, Constantin Matasă, Piatra Neamț, pp. 259-269.
- Danu M, Gauthier E, & Weller O 2010, 'Human impact and vegetation history on salt spring exploitation (Hălăbutoaia-Țolici, Petricani, Neamț, Romania)', *International Journal of Conservation Science*, vol I, Issue 3, July-September, pp. 167-173.
- Dumitroaia, Gh 1987, 'La station archéologique de Lunca-Poiana Slatinei', in *La Civilisation de Cucuteni en contexte européen*, eds M Petrescu-Dîmbovița, N Ursulescu, D Monah, V Chirica, Bibliotheca Archaeologica Iassiensis, I, Iași, pp. 253-258.
- Dumitroaia, Gh 1994, 'Depunerile neo-eneolitice de la Lunca și Oglinzi, județul Neamț', *Memoria Antiquitatis* 19, pp. 7-82.
- Dumitroaia, Gh, Munteanu, R, Weller, O, Garvăn, D, Diaconu, V & Brigand, R 2008, 'Un nou punct de exploatare a apei sărate în preistorie: Țolici-Hălăbutoaia, jud. Neamț', in *Sarea, de la prezent la trecut*, eds D Monah, Gh Dumitroaia, D Garvăn, Constantin Matasă, Piatra-Neamț, pp. 203-224.

- Harding, Anthony 2013, *Salt in Prehistoric Europe*, Sidestone Press, Leiden.
- Monah, D, Dumitroaia Gh 2007, 'Recherches sur l'exploitation préhistorique du sel en Roumanie', in *L'exploitation du sel à travers le temps*, eds D Monah, Gh Dumitroaia, O Weller & J Chapman, Constantin Matasă, Piatra Neamț, pp. 13-34.
- Munteanu, R, Garvăn, D, Nicola, D, Preoteasa, C & Dumitroaia, Gh 2007, 'Cucuieti-Slatina Veche (Romania). Prehistoric Exploitation of a Salt Resource', in *L'exploitation du sel à travers le temps*, eds D Monah, Gh Dumitroaia, O Weller & J Chapman, Constantin Matasă, Piatra Neamț, pp. 57-70.
- Monah, D 2008, 'Arheologia preistorică a sării în România. Scurt istoric', in *Sarea, de la prezent la trecut*, eds D Monah, Gh Dumitroaia, D Garvăn, Constantin Matasă, Piatra-Neamț, pp. 13-39.
- Nicola, D, Munteanu, R, Garvăn, D, Preoteasa, C & Dumitroaia, Gh 2007, 'Solca – Slatina Mare (Roumanie). Preuves archéologiques de l'exploitation du sel en préhistoire', in *L'exploitation du sel à travers le temps*, eds D Monah, Gh Dumitroaia, O Weller & J Chapman, Constantin Matasă, Piatra Neamț, pp. 35-56.
- Sandu, I, Poruciuc, A, Alexianu, M, Curcă, R-G & Weller, O 2010, 'Salt and Human Health: Science, Archaeology, Ancient Texts and Traditional Practices of Eastern Romania', *The Mankind Quarterly* L, 3, pp. 225-256.
- Sandu, I, Weller, O, Stumbea, D & Alexianu M 2012, 'Analyses archéométriques sur les moules à sel chalcolithiques de l'est de la Roumanie', in *Salt and Gold: The Role of Salt in Prehistoric Europe*, eds V Nikolov & K Bacvarov, Faber, Provardia-Veliko Tarnovo, pp. 143-154.
- Ursulescu, N 1977, 'Exploatarea sării din saramură în neoliticul timpuriu, în lumina descoperirilor de la Solca (jud. Suceava)', *Studii și Cercetări de Istorie Veche* 28/3, pp. 307-317.
- Ursulescu, N 1995, 'L'utilisation des sources salées dans le néolithique de la Moldavie (Roumanie)' in *Nature et Culture*, ed. M Otte, ERAUL, 68, pp. 487-495.
- Weller, O 2015, 'First salt making in Europe: a global overview from Neolithic times', in *Archaeology of Salt. Approaching an invisible past*, eds R Brigand, O Weller, Sidestone Press, Leiden, pp. 67-82.
- Weller, O & Dumitroaia, Gh 2005, 'The earliest salt production in the World. An Early Neolithic exploitation in Poiana Slatinei-Lunca, Romania', *Antiquity* 79, 306. Available from: <<http://antiquity.ac.uk/ProjGall/weller/index.html>> [15.03.2015].
- Weller, O, Brigand, R & Alexianu, M 2007, 'Cercetări sistematice asupra izvoarelor de apă sărată din Moldova. Bilanțul explorărilor din anii 2004-2007 efectuate în special în județul Neamț', *Memoria Antiquitatis* 24, pp. 121-190.
- Weller, O, Brigand, R & Alexianu, M 2010, 'Recherches systématiques autour des sources salées de Moldavie. Bilan des prospections 2008-2010', *Memoria Antiquitatis* 25, pp. 437-504.

Willems, W J H 2012 'World Heritage and Global Heritage: the tip of the Iceberg', in *Proceedings of the First International Conference on Best Practices in World Heritage: Archaeology, Mahon, Minorca, Balearic Islands, Spain, 9-13 April 2012*, ed. A Castillo, Universidad Complutense de Madrid, Madrid, pp. 36-50.