

Scientific report

2011–2014

concerning the implementation of the project

PN-II-ID-PCE-2011-3-0825, no. 219/5.10.2011

The ethno-archaeology of the salt springs and salt mountains from the extra-Carpathian areas of Romania

(EthnosalRo)

The following is a synthesis of the scientific reports for the years 2011, 2012, 2013 and 2014, which are also available *in extenso* in Romanian. The yearly scientific reports assess the degree of implementation of the project in correlation with the scientific capitalisation in scholarly journals, study volumes, as well as the increase of the project's visibility on a national and international scale through participations at scientific gatherings and the organising by the project members of sessions at gatherings of the highest notability. Special sections of the reports make reference to the international feedback to publications by *EthnosalRo* members.

2011

Objective no. 1/2011, namely the *Theoretic grounding of the concept of anthropology of salt*, was accomplished. The vast problematics on salt has been up to this moment addressed sectorally in geological, chemical, technological, archaeological, historical, ethnographical, ethnoarchaeological, linguistic and literary works. After a grandiose encyclopedic attempt of a Spanish Renaissance scholar from the 16th century, Bernardino Gomez Miedes's (first edition) *Commentariorum de sale libri quattuor* (Valentiae 1572) / (second edition) *Commentariorum de sale libri quinque* (Valentiae 1579), the endeavours gradually became more specialised, particularly in the 20th century, but also more atomized. Our innovatory idea is to unify under the sign of cultural anthropology the very diverse approaches on this essential reference of life, exactly in order to highlight its primordial importance for the entire evolution of mankind, but also to restore its eminence, steadily suppressed since the industrial and, above all, the globalisation era.

The themes that must be investigated from a holistic approach can be synthetized, in a first approach, as follows:

- a) Types of salt

- b) Techniques of salt exploitation;
- c) Uses of salt in the diachronic past;
- d) Trade, barter, gift;
- e) Linguistic reflexes of the referential *salt*;
- f) Salt in religious beliefs;
- g) Symbolism of salt;
- h) Salt and economic development;
- i) Control of the salt resources;
- j) Social and societal implications of the exploitation, storing and control of the salt resources.

A **second objective** set for 2011 consists of conceiving a series of ethnographic questionnaires adjusted for the specificities of traditional exploitation of salt outcrops (salt mountains or banks). Embodying the conclusions drawn from the theoretical configuration of the concept of anthropology of salt, these new questionnaires are capable of registering the quasi-totality of relevant elements for this type of resource exploitation still practiced in Romania. The three types of questionnaires are structured according to the location of the ethnographic inquiry (at the salt outcrop, at a sheepfold, or in the consumer settlement).

2012–2013

Meeting the results

The objectives listed in the yearly implementation plan for 2012 have been fully met. A special mention should be made with respect to the situation from Botoșani, Iași and Vaslui counties, where despite the presence of toponyms related to salt and to the thorough field work, there were no identifiable salt springs or salt outcrops that are or can be exploited on the surface. The halotoponymy from these areas is linked to geological processes of capillarity that produce salty spots which predominantly contain potassium salts. Nevertheless, field investigations revealed that the herders use these salts for feeding sheep, improvising small basins with saline water, which is outside of the actual scope of the project. The objectives set to be accomplished in 2013, according to the financial resources allocated by the funding authority, have been fully met with respect to the toponymic, bibliographic and methodological (the critical grounding of employing ethnographic analogies for explaining archaeological phenomena and context from the extra-Carpathian area) facets, and are under way with respect to the field investigations with associated activities in Prahova county (collecting samples of saline water, GPS registering), as well as ethnographic inquiries estimated at ca. 60-70 (for Buzău and, partially, Prahova counties). After populating the database with the new data collected on the field, spatial analysis was performed, the information from written sources were confronted with those from the ethnographic inquiries, and the modelling of the distribution network for non-industrial salt was produced.

Research directions

- Defining the first nutrition supplement based on NaCl from the inner continental area of Europe (see Annex, point 1);
- Determining the parameters of the demographic dynamics in the hydrographic basins remote from the salt sources in the Moldavian piedmont (see Annex, point 1);
- The assessment of the quantities of salt required by the communities investigated archaeologically through non-destructive methods led to the employment of a recent

method for estimating the surface area of a Cucutenian site from the region of Moldavia (see Annex, point 1);

- Original research on the saturated model in ethnoarchaeology on a global scale and in Romania;
- Defining the parameters of the geological and geographic basis of the pre- and proto-historical exploitation of the salt springs and salt outcrops in Romania (see Annex, point 3B);
- The theoretical grounding of the original method of spatial ethnoarchaeology;
- The ratio between the salt springs and the density of identified (and in some cases archaeologically investigated) settlements has also been investigated with regards to the mobility linked to these "salt attractors". The results of the investigations were presented at the 18th Annual Meeting of the European Association of Archaeologists, Helsinki, 2012;
- The elaboration of an original model on the toponymic impact of the salt springs from Romania;
- The investigation of the linguistic reflexes of salt in the languages with the oldest written attestations in Europe, conducted as part of a wider original study, constitutes the topic of poster presented at the International Conference of Ethnoarchaeology in Rome, pending partial publication (only the Latin lexicon) in a collective volume published abroad (see Annex, point 3B);
- The ratio between the invisible heritage on salt and the archaeological time (see Annex, point 3B);
- Human interaction and the impact of the exploitation of the salt springs in the case of one of the most ancient exploitation points in the world (Hălăbutoaia, Țolici, Neamț county);
- The completion of the database concerning the foreign travellers in the Romanian principalities with make reference to the salt resources;
- Establishing the relationships between the exploitation of brine from salt springs and the exploitation of salt outcrops.

Increasing the international visibility

The project's website was built and continuously updated. The presentation of the *EthnosalRo* project was published in the online journal *The European Archaeology* published by the European Association of Archaeologists (see Annex, point 4C). All the members of the project, up to the level of MA student, have participated to five major scientific events (four abroad and two in Romania; see Annex, points 3B and 5). One member of the project was elected chairman of a session (Gh. Romanescu), and two others (M. Alexianu and R-G. Curcă) were invited as Visiting Professors to Buffalo University, USA (see Annex, point 3A).

Organization of sessions at scientific gathers with major international visibility

A session on the archaeology of salt around the world was approved as part of the 7th World Archaeological Congress (Jordan, 13-19 January 2013). The organisers of this session were four project members (M. Alexianu, O. Weller, R. Brigand, R.-G. Curca) (see Annex, point 3A). The same members further submitted successfully the session entitled *Salt of the Earth: an Invisible Past in European Archaeology* organised as part of the 19th Annual Meeting of the European Association of Archaeologists (Pilsen, 4-8 September 2013). We mention that from the eleven papers delivered by specialists from Japan, France, Germany, Croatia, Rep. of Moldova, Switzerland, Spain, Poland, and Romania, four concerned the salt from the Carpathian areas of Romania, a fact that reveals the intensity of such researches carried out in Romania, above all by the members and external collaborators of the *EthnosalRo* project (see Annex, point 3A).

ANNEX

1. ISI articles

- M. Alexianu, *Lexicographers, paroemiographers and slaves-for-salt barter in ancient Thrace*, Phoenix, Vol. 65 (2011), 3-4, p. 389-394.
- M. Alexianu, I. Sandu, R. Curcă, *Fire, Brine and Wood: The First Nutritional Supplement in the Inland World*, Mankind Quarterly, Vol. 52, Nos. 3-4 (Spring-Summer 2012), p. 415-427 (M. Alexianu, I. Sandu, R.-G. Curcă).
- A. Asăndulesei, L. Istina, V. Cotiuğă, F.-A. Tencariu, Șt. Caliniuc, R.-Șt. Balaur, A.-P. Crețu, C. Nicu, B. Venedict, *Cesium magnetometer survey in the Cucuteni settlement of Fulgeriș – La Trei Cireși, Bacău County, Romania*, Romanian Reports in Physics, Volume 64, Number 3, 2012.
- R. Brigand, A. Asăndulesei, O. Weller, V. Cotiuğă, *Contribution à l'étude du peuplement chalcolithique des bassins hydrographiques du Bahluet et du Valea Oii (dép. Iasi)*, Dacia N.S., tome LVI, 2012, p. 5-32.

Accepted for publication in ISI journals

- I. SANDU, V. VASILACHE, M. ALEXIANU, R.-G. CURCA, *Chemical explanation of an original milk curdling ethnoprocedure by natural brine*, Revista de chimie, vol.65, nr.1/2014.
- Ghe. ROMANESCU, M. A. CRETU, I. G. SANDU, E. PAUN, I. SANDU, *Chemism of streams within the Siret and Prut drainage basins: water resources and management*, Revista de Chimie, vol.64, nr.12/2013.
- Ghe. ROMANESCU, I. SANDU, C. STOLERIU, I. G. SANDU, *Water resources in Romania and their quality in the main lacustrine basins*, Revista de Chimie, vol. 65, nr.3/2014.
- Ghe. ROMANESCU, E. PAUN, I. SANDU, I. JORA, E. PANAITESCU, O. MACHIDON, C. STOLERU, *Quantitative and qualitative assessments of groundwater into the catchment of Vaslui river*, Revista de Chimie, vol. 65, nr.4/2014.

2. Reviews in ISI journals of publications by EthnosolRo members

- M. Alexianu, O. Weller and R.-G. Curcă, eds. *Archaeology and Anthropology of Salt: A Diachronic Approach. Proceedings of the International Colloquium, 1–5 October 2008, Al. I. Cuza University (Iasoi, Romania)*. (British Archaeological Reports International Series 2198, Oxford: Archaeopress, 2011, 226pp., several illustrations (in colour & b/w) and maps, ISBN 978-1-4073-0754-1), Review by Elisa Guerra Doce, *European Journal of Archaeology* 16 (2) 2013, 336-339.

- M.-T. Alexianu, O. Weller, R.-G. Curcă (eds.), *Archaeology and Anthropology of Salt. A diachronic approach*. Proceedings of the International Colloquium, 1-5 October 2008, Al. I. Cuza University (Iași, Romania), BAR – 2198, Oxford, 2011, **Review** by Nena Galanidou, *Antiquity*, Vol 86, No 333 (2012), p. 935-937.
- M.-T. Alexianu, O. Weller, R.-G. Curcă (eds.), *Archaeology and Anthropology of Salt. A diachronic approach*. Proceedings of the International Colloquium, 1-5 October 2008, Al. I. Cuza University (Iași, Romania), BAR – 2198, Oxford, 2011, **Review** by Oana Macari, *Mankind Quarterly*, Vol LII, No 2 (Winter 2011), p. 222-229.

3. International visibility

A.

- **Photographic exposition** « Du sel et des hommes: approches ethnoarchéologiques », Maison de l'Archéologie et de l'Ethnologie, CNRS-Universités Panthéon-Sorbonne et Paris Ouest La Défense, November 2012 — January 2013.
- **Organising a session** on the project's theme at the *7th World Archaeological Congress*, Jordan, 13-18 January 2013, entitled *Archaeology of salt: approach to an invisible past*. Organisers: M.-T. Alexianu; O. Weller; R. Brigand; R. Curcă.
- **Organising the Ethnoarchaeology and Experimental Archaeology session** at the Third Arheoinvest Congress, Iași, June 6-8, 2013. Organisers: Pierre Petrequin, Marius Alexianu.
- **Organising a session on the project's theme** at the 19th Annual Meeting of the European Association of Archaeologists, Pilsen 4-6 September 2013, entitled *Salt of the Earth: an invisible past in European Archaeology*. Organisers: R. Brigand, O. Weller, M. Alexianu, R. Curcă.
- M.-T. Alexianu and R. Curcă: **Visiting Professors** at State University of New York at Buffalo, United States of America (Department of Anthropology); December 2012. Lecture delivered: *Understanding the Prehistoric Salt Springs: Ethnoarchaeological Investigations in the Romanian Carpathians*.
- Ghe. Romanescu was elected **chairman of a session** at the *International Congress on Informatics, Environment, Energy and Applications (IEEA 2012)*, March 17-18, 2012, Singapore.

B

Participations at international scientific gatherings

- Ghe. Romanescu, M. Alexianu, O. Weller — *Fresh rivers and salt springs: modern management and ethno-management of water resources in Eastern Romania* — International Congress on Informatics, Environment, Energy and Applications (IEEA 2012), Singapore, March 17-18, 2012.

- E. Gauthier, O. Weller, J. Giraud, R. Brigand — *Diffusion of Raw Materials and Manufactured Objects. A challenge for spatial analysis?* — Computer Applications and Quantitative Methods in Archaeology (CAA 2012), Southampton, March 26-30, 2012.
- A. Asăndulesei, R. Brigand, V. Cotiuğă, O. Weller — *Neolithic and Chalcolithic territorial patterns in Moldavia (Romania). Remarks on Neamt and Iasi regions (abstract)* — Computer Applications and Quantitative Methods in Archaeology (CAA 2012), Southampton, March 26-30, 2012.
- L. Saligny, X. Rodier, F. Bertonecello, F. Favory, E. Fovet, C. Gandini, E. Gauthier, J. Giraud, M. Leroy, L. Nuninger, N. Poirier, O. Weller — *Formalization of scientific process and conceptual modelling for the study of territorial and products circulation dynamics (ArchaeDyn II programme)* — Computer Applications and Quantitative Methods in Archaeology (CAA 2012), Southampton, March 26-30, 2012.
- M. Alexianu, V. Cotiuğă, A. Asăndulesei, R.-St. Balaur, R. Curcă, St. Caliniuc — *Salt springs and mobility: Natural invariants and human variables in archaeological sequences from Eastern Romania* — European Association of Archaeologists 2012 annual meeting (EAA 2012), Helsinki, August 29-September 1, 2012 (abstract in *European Association of Archaeologists 2012. Abstracts*, p. 105-106).
- E. Gauthier, O. Weller, J. Giraud, R. Brigand, M. Gabillot, P. Pétrequin — *Theoretic space-time modeling of the diffusion processes of raw materials and manufactured objects* (poster) — European Association of Archaeologists 2012 annual meeting (EAA 2012), Helsinki, August 29-September 1, 2012.
- M. Alexianu, O. Weller, R. Brigand — *Patrimoine invisible-temps archéologique: une géométrie variable* — *Italian Society for Ethnoarchaeology (AIE)*, International Conference "The Intangible Elements of Culture in the Ethnoarchaeological Research", Roma, 21-23.11.2012.
- R.-G. Curcă — *The linguistics of salt: from history to prehistory* (poster) — *Italian Society for Ethnoarchaeology (AIE)*, International Conference "The Intangible Elements of Culture in the Ethnoarchaeological Research", Roma, 21-23.11.2012.
- M.-T. Alexianu, R.-G. Curcă, A. Asăndulesei, R. Balaur, Șt. Caliniuc — *The spatial ethnoarchaeology of the salt springs from the Eastern Subcarpathians of Romania* — 7th World Archaeological Congress (WAC-7), Dead Sea, Jordan, 13–18 January 2013.
- O. Weller — *Salt making in prehistory: a global overview from the European perspective* — 7th World Archaeological Congress (WAC-7), Dead Sea, Jordan, 13–18 January 2013.
- R.-G. Curcă — *Halotherapy: from ethnography and history to prehistory* — 7th World Archaeological Congress (WAC-7), Dead Sea, Jordan, 13–18 January 2013.
- Ghe. Romanescu — *The geological basis for the development of salt production in ancient Romania* — 7th World Archaeological Congress (WAC-7), Dead Sea, Jordan, 13–18 January 2013.

- D. Monah, Șt. Caliniuc — *The importance of salt in ritual exchanges in the Southeastern European Chalcolithic* — 7th World Archaeological Congress (WAC-7), Dead Sea, Jordan, 13–18 January 2013.
- A. Asăndulesei, R.-Șt. Balaur, F.-A. Tencariu — *Ethno-archaeological research concerning the salt supply in Neolithic and Chalcolithic communities from Eastern part of Romania* — 7th World Archaeological Congress (WAC-7), Dead Sea, Jordan, 13–18 January 2013.
- M. Alexianu, A. Asăndulesei, R. Balaur, R. Brigand, Șt. Caliniuc, V. Cotiuță, R.-G. Curcă, Ghe. Romanescu, I. Sandu, F.-A. Tencariu, O. Weller — *Diachronic (from the Palaeolithic to 5th c. A.D.) site density around the salt springs from the Romanian Eastern Carpathians. An ethnoarchaeological model* — Third Arheoinvest Congress, Iași, Romania, 6-8 June 2013.
- I.-C. Nicu, Ghe. Romanescu, A. Asăndulesei, V. Cotiuță — *Morphometrical and geomorphological characteristics of the landscape from the Valea Oii basin (tributary of the Bahlui River). Direct implications for Chalcolithic archaeological sites* — Third Arheoinvest Congress, Iași, Romania, 6-8 June 2013.
- O. Weller - *First Salt Making in Europe: a Global Overview from Neolithic times*, 19th Annual Meeting of the European Association of Archaeologists, 4-8 September, Pilsen, Czech Republic.
- R. Brigand, O. Weller, A. Asăndulesei - *Spatial Models for Salt Archaeology. A Neolithic Case Study from Moldova (Romania)*, 19th Annual Meeting of the European Association of Archaeologists, 4-8 September, Pilsen, Czech Republic.
- M. Alexianu, O. Weller, R. Brigand, I. Sandu, Ghe. Romanescu, R. Curcă, V. Cotiuță, R. Balaur, Șt. Caliniuc, F. Tencariu, *Natural brine or rock salt exploitation? Ethnoarchaeological researches in the extracarpathian area of Romania*, 19th Annual Meeting of the European Association of Archaeologists, 4-8 September, Pilsen, Czech Republic.
- Romanescu G., Alexianu M., Romanescu A.M., Romanescu G., *Distribuția masivelor de sare și exploatarea vechilor și actualelor rezerve de ape mineralizate din bazinul hidrografic Siret (Romania) – studiu de caz pentru zona estică a Carpaților Orientali.*, Seminarul geografic internațional „Dimitrie Cantemir”, ediția a XXXIII-a, 18-20 octombrie 2013, Iași.

C.

Volumes published in the framework of the project

- V. Cotiuță, Șt. Caliniuc (eds.), *Interdisciplinarity Research in Archaeology. Proceedings of the First Arheoinvest Congress, 10–11 June 2011, Iași, Romania*, BAR International Series 2433, Oxford, Archaeopress, 2012, ISBN 978-1-4073-1032-9.
- B. Moinier, *Le sel dans la culture antique*, Parthenon Verlag, Kaiserslautern, 2012.

- **Salt effect.** Proceedings of the Second Arheoinvest Symposium — *From the Ethnoarchaeology to the Anthropology of Salt*, “Alexandru Ioan Cuza” University of Iași (Romania), 20-21 April 2012 (eds. M. Alexianu, R.-G. Curcă, V. Cotiugă), Oxford, Archaeopress, 2013 (in press).

4. Publications in non-ISI journals and in collective volumes

- I. Sandu, O. Weller, D. Stumbea, M. Alexianu, *Analyses archéométriques sur les moules à sel chalcolithiques de l'est de la Roumanie*, in V.Nikolov, K.Bacvarov (eds.), *Salt and Gold: The Role of Salt in Prehistoric Europe*, Provadia-Veliko Tarnovo, 2012, p. 143-154.
- M. Alexianu, O. Weller, R. Brigand, R.-G. Curcă, *Ethnoarchaeologische Forschungen zu den Salzwasserquellen der moldauischen Vorkarpaten, Rumaenien*, in V.Nikolov, K.Bacvarov (eds.), *Salt and Gold: The Role of Salt in Prehistoric Europe*, Provadia-Veliko Tarnovo, 2012, p. 155-172.
- O. Weller, *La production chalcolithique du sel à Provadia-Solnitsata: de la technologie céramique aux implications socio-économiques*, in V.Nikolov, K.Bacvarov (eds.), *Salt and Gold: The Role of Salt in Prehistoric Europe*, Provadia-Veliko Tarnovo, 2012, p. 67-87.
- M. Alexianu, O. Weller, R. Brigand, R.-G. Curcă, *Ethnoarchéologie des sources salées de la Moldavie précarpatique: une taxonomie des habitats*, Thraco-Dacica, 2012, p. 141-150.
- Ghe. Romanescu, M. Alexianu, O. Weller, *Fresh Rivers and Salt Springs: Modern Management and Ethno-Management of Water Resources in Eastern Romania*, in Fan Hong (ed.), *Informatics, Environment, Energy and Applications. Selected, peer reviewed papers from the 2012 International Congress on Informatics, Environment, Energy and Applications (IEEA 2012)*, March 17-18, 2012, Singapore. Singapore, IACSIT Press, 2012, p. 207-219.
- R. Brigand, O. Weller, *Natural resources and settlements dynamics during Later Prehistory in Central Moldavia (Romania). An integrated GIS for spatial archaeological studies*. In V. Cotiugă and S. Caliniuc (eds.), *Interdisciplinarity Research in Archaeology. Proceedings of the First Arheoinvest Congress, 10–11 June 2011, Iași, Romania*, BAR International Series 2433, Oxford, Archaeopress, 2012, p. 1-18.
- O. Weller, *Plaidoyer pour quelques grains de sel dans la Préhistoire européenne*, Tyrage, s.n, vol. VI [XXI], no. 1 (Arheologie. Istorie Antică), 2012.
- M. Alexianu, O. Weller, R. Brigand, *EthnosalRo: an ethnoarchaeological project on Romanian salt*. In *TEA The — the European Archaeologist*, Issue 38: Winter 2012/2013, p. 17-22.
- S. Cassen, O. Weller, *Idées et faits relatifs à la production des sels marins et terrestres en Europe, du VIe au IIIe millénaire*. In: J. Soares (ed.), *Prehistory of Wetlands*, Museum of Archaeology and Ethnography of the District of Setúbal (MAEDS) (in press, 2012).

5. Participations at national scientific gatherings

- M. Alexianu — *Anthropology of salt: a first conceptual approach* — Second Arheoinvest Symposium. From the Ethno-archaeology to the Anthropology of Salt, Iasi, 20-21 April 2012.
- O. Weller, Gh. Dumitroaia, R. Brigand, D. Garvăn, M. Alexianu, R. Munteanu — *Un grain de sel dans les Carpates : regards croisés sur l'exploitation passée et actuelle des sources salées (dép. Neamț)* — Second Arheoinvest Symposium — From the Ethno-archaeology to the Anthropology of Salt, Iasi, 20-21 April 2012.
- I. Sandu, R.-G. Curcă, V. Vasilache, M. Canache — *The correlation between the chemical composition and the domestic uses of brine* — Second Arheoinvest Symposium — From the Ethno-archaeology to the Anthropology of Salt, Iasi, 20-21 April 2012.
- R. Brigand — *Territoires, hommes et sel. Variations archeogéographiques* — Second Arheoinvest Symposium — From the Ethno-archaeology to the Anthropology of Salt, Iasi, 20-21 April 2012.
- Ghe. Romanescu — *The perception of salt springs in the Romanian geographic and geologic literature* — Second Arheoinvest Symposium — From the Ethno-archaeology to the Anthropology of Salt, Iasi, 20-21 April 2012.
- V. Cotiuğă — *On salt exploitation in the Romanian principalities through the accounts of foreign travellers* — Second Arheoinvest Symposium — From the Ethno-archaeology to the Anthropology of Salt, Iasi, 20-21 April 2012.
- M.-T. Alexianu — *Salt springs in Romanian toponymy* — Second Arheoinvest Symposium — From the Ethno-archaeology to the Anthropology of Salt, Iasi, 20-21 April 2012.
- Al. Bounegru — *Halotoponyms and halohydronyms as reflected in medieval documents from Wallachia* — Second Arheoinvest Symposium — From the Ethno-archaeology to the Anthropology of Salt, Iasi, 20-21 April 2012.
- Al. Bounegru — *Halotoponyms and halohydronyms as reflected in the atlas "Plans des Bukowiner Districts in 72 sections welche in denen Jahren 1773, 1774 und 1775 von einen Departament des Kays: Königlicher General Staabs geometrisch aufgenommen worden"* — Second Arheoinvest Symposium — From the Ethno-archaeology to the Anthropology of Salt, Iasi, 20-21 April 2012.
- M.-T. Alexianu — *Ethnoarchaeology of Salt Springs and Salt Mountains from the extra-Carpathian zone of Romania* (poster) — EUROINVENT-2012 European Exhibition of Creativity and Innovation, section Innovative Research, Iași, 10-12 May 2012.
- M.-T. Alexianu, O. Weller, R. Brigand, I. Sandu, Ghe. Romanescu, R.-G. Curcă, V. Cotiuğă, A. Asăndulesei, Șt. Caliniuc, R.-Șt. Balaur, Al. Bounegru — *A Romanian CNCS project (2011–2014): The ethnoarchaeology of the salt springs and salt mountains from the extra-Carpathian areas of Romania* — Second Arheoinvest Congress — Interdisciplinary Research in Archaeology, Iași, 7-9 June 2012.
- R. Brigand, A. Asăndulesei, O. Weller, V. Cotiuğă — *GIS-based spatial analysis in Chalcolithic. Case study in Moldova* — Second Arheoinvest Congress — Interdisciplinary Research in Archaeology, Iasi, 7-9 June 2012.

- C. Nicu, G.h. Romanescu, A. Asăndulesei, V. Cotiugă, S. Gania, R.-Șt. Balaur — *Interdisciplinary geographical and archaeological approaches in Cucutenian settlements from the Valea Oii River watershed* — Second Arheoinvest Congress — Interdisciplinary Research in Archaeology, Iași, 7-9 June 2012.
- M. Alexianu, V. Cotiugă, A. Asăndulesei, Șt. Caliniuc — *Research in Spatial Ethnoarchaeology on the Supplying with Brine from Salt Springs in Moldavia Romania* (abstract) — “Human Impact on the Natural Environment in the Neo-Eneolithic of South-Eastern Europe” International Colloquium, Piatra-Neamț, 24-26 October 2012.
- O. Weller, M. Danu, E. Gauthier, D. Sordoillet, A. Dufraisse, C. Delhon, R. Brigand, Ghe. Dumitroaia, D. Garvăn, R. Munteanu, V. Diaconu — *Human Interaction and Environmental Impact of Salt Spring Exploitation over 2000 Years (Hălăbutoaia-Țolici, Petricani, Neamț, Romania)* (abstract) — “Human Impact on the Natural Environment in the Neo-Eneolithic of South-Eastern Europe” International Colloquium, Piatra-Neamț, 24-26 October 2012.

6. Scientific events organised within the framework of the project

- *Second Arheoinvest Symposium — From the Ethno-archaeology to the Anthropology of Salt* — Arheoinvest Symposium Series — Iași, 20-21 April 2012.
- *Second Arheoinvest Congress — Interdisciplinary Research in Archaeology* (International participation) — Iași, 7-9 June 2012.
- *Third Arheoinvest Congress – Interdisciplinary Research in Archaeology* (International participation) – Iași, June 6th-8th 2013

7. Awards

- **Grand Prize** — M.-T. Alexianu, O. Weller, R.-G. Curcă (eds.), *Archaeology and Anthropology of Salt. A diachronic approach*. Proceedings of the International Colloquium, 1-5 October 2008, Al. I. Cuza University (Iași, Romania), BAR – 2198, Oxford, 2011 — National Salon of Technical and Scientific Books, Euroinvent, 11.05.2012.
- **Gold Medal** — M.-T. Alexianu, *Ethnoarchaeology and anthropology of Salt Springs and Salt Mountains from the extra-Carpathian zone of Romania*, Euroinvent, 11.05.2012.

2014

The present scientific report assesses the degree of achievement of the activities associated to the objectives of the current year, in correlation with the targeted research directions, with their capitalisation in major journals and in volumes of studies of books, as well as in national and international scientific gatherings. Special sections are dedicated to the international visibility of the *EthnosalRo* project within and outside the European Community, and the involvement of the young and experienced project members in fulfilling the objectives set for 2014. The report also has two annexes.

ATTAINING THE OBJECTIVES

Objective no. 1 set to be achieved in 2014 (**developing the database on the salt springs and salt mountains from Prahova, Dambovita and Arges counties**) has been fully attained in terms of toponymic research, field work, conducting ethnographic inquiries, collecting samples of saline water from the salt springs, surface investigation around the salt springs, and collecting GPS location data. In regards the ethnographic inquiries, we aimed to conduct them in a systematic manner not only at the salt springs/outcrops, but also in a number of consumer sheepfolds and settlements, in order to multiply the analysis vantage points of the various facets investigated. The analyses of the saline water samples are at the moment of speaking under way.

With respect to **Objective no. 2 (Modelling the distribution network of the saline water/salt boulders for the aforementioned counties)**, all the associated activities have likewise been fully met, namely the charting of the GPS data, applying spatial analysis methods to the data concerning the salt sources, and the elaboration of specific cartographic models. An important achievement in this sense is the configuration, for the first time ever, of working models for the supplying with salt of the settlements and sheepfolds from the area of an outcrop, models which have been correlated with the types of pastoralism as defined by Romanian ethnographic works.

The elaboration of 50% of the final synthesis, which constitutes **Objective no. 3**, will be finalised by the end of 2014, considering the very high amount of information that must be processed and correlated.

RESEARCH DIRECTIONS

The year 2014 witnessed, on the one hand, the completion of a series of researches started in the previous year, and, on the other, the commencing and in some cases even the completion of other researches, which are pending publication in journals or volumes. An important part of the research conducted in 2014 have been disseminated at various international or national scientific gatherings. In the following, we briefly present these researches:

- 1. Multi-faceted approach of the salt outcrop from Alghianu (Bodesti village, Vrancea county) with respect to the local and pendulatory pastoralism**
- 2. Experimental archaeology researches on the production of salt blocks**

3. Chronological layers in our knowledge of the intangible heritage on salt
4. The diachronic impact of the saline water reserves on the evolution of the human communities
5. Models of selecting human occupation in the areas with salt resources
 6. Ethnoarchaeological researches on the use of natural brine for preserving food
7. Configuring a radial model of salt supplying of the permanent and seasonal human settlements
8. Implications of the Romanian intangible heritage of salt for the conception and carrying out of research projects
9. The salt springs exploited during Prehistory in Romania as part of the world heritage
10. Capitalising from a current perspective of the pioneering works of Romanian ethnographers concerning the role of salt in Romanian feasts

INCREASING THE INTERNATIONAL VISIBILITY

The website of the project *EthnosalRo* has been updated continuously with all the necessary information, particularly the implementation of the project's staged activities and increasing the international visibility. All the members, to the level of MA student, have participated to no less than 15 international scientific gatherings. Two members have been invited as visiting professors by universities from Argentina and Chile. The *EthnosalRo* project in these two Latin-American countries was regarded as representing Romanian, as well as European research, in the context in which many of our research directions have not been explored as such in South America. Bernard Moinier's volume published within the framework of the project *EthnosalRo* was available, as of the 2nd of December 2014, in 29 libraries indexed by the Worldcat system. The volume *Contesting Ethnoarchaeologies* (eds. A. Marciniak and N. Yalman; 2013), which contains a chapter authored by M. Alexianu, was present as of the same date in 216 Worldcat libraries.

REFERENCES IN A VOLUME OF STUDIES PUBLISHED BY SPRINGER

The volume *Contesting Ethnoarchaeologies: Traditions, Theories, Prospects* (eds. A. Marciniak, N. Yalman), published by the prestigious Springer publishing house in December 2013, contains an introduction signed by the two editors entitled *Non-anglophone Ethnoarchaeologies in the Past and Today: An Introduction* and containing multiple references to the study *The saturated model: a first application on World and Romanian Ethnoarchaeology* by M. Alexianu, which also constitutes the 11th chapter of the volume. We hold the opinion that these references contribute to the highest degree to the international visibility of the *EthnosalRo* project and, in general, of Romanian ethnoarchaeology. The textual reproduction of the references is clarifying:

p. 8-9: "The second most pronounced and distinct theoretical framework is proposed by Alexianu (Chap.11, this volume). The saturated model he advocates is a logical-mathematical model that is intended to grasp all the existing parameters while studying a given object, phenomenon or process.

This grasp of all the existing parameters is a prerequisite for reaching definite knowledge. While a list of considered parameters does not have to be finite, the saturated model is in place when there are enough parameters for adequately defining the investigated object. The model also specifies conditions concerning the requirements as regards the knowledge of the parameters”.

p. 9: “South-Eastern Europe has a particularly high ethnoarchaeological potential, although there is no direct ethnic continuity. However, local villages, such as those in Romania, maintains direct, organic relations with the natural environment, providing a natural reservoir for potentially powerful ethnoarchaeological studies (Chap. 11 by Alexianu, in this volume).”

p. 10: “The idea of direct historical continuity is criticized by some scholars (Chap. 7 and 11 by Yalman and Alexianu, this volume). They point to the fact that Europe is devoid of ethnic continuity between the distant past and the present. Considering the significant time span between the two phenomena under investigation (i.e., the distant past and the present), the achieved results are problematic at best.”

“In Romania, ethnoarchaeology is also undergoing dynamic development, as manifested by the emergence of academic courses, numerous seminars and the flourishing of research projects (Chap. 11 by Alexianu, this volume).”

p. 11: “Other equally complex issues may involve the study of pastoralism in the rural landscape, systems of salt exploitation and the emergence of writing systems (Chaps. 8, 9, 11 and 12 by Kenig et al., Kong, Alexianu, and Tacaoglu, in this volume).”

p.12: “**The ‘salt project’, along with studies of high-land zone exploitations and settlements forms are remarkable examples of this kind of study from Romania (Alexianu, Weller & Curcă, 2011; Nandriş 1985).**”

In the same vein, we also mention that the thematic index from the end of the volume contains several notable references to Romanian archaeology and ethnoarchaeology.

SYNTHETIC BREAKDOWN OF THE PUBLICATIONS AND PARTICIPATIONS OF THE *ETHNOSALRO* MEMBERS TO INTERNATIONAL AND NATIONAL SCIENTIFIC GATHERINGS IN 2014

- 3 volumes of studies elaborated in the framework of the project (see Annex I: A.I.1-3);
- 3 ISI articles published (see Annex I: A.II.1.1-3);
- 1 ISI article accepted for publication (see Annex I: A.II.1.4);
- 1 ISI article submitted for review (see Annex I: A.II.1.5);
- 1 ERIH article accepted for publication (see Annex I: A.II.2.1);
- 1 BDI article published (see Annex I: A.II.2.2);
- 2 studies published in ISI Proceedings (see Annex I: A.III.1-2);
- 1 study published in International Proceedings (see Annex I: A.III.2.1);
- 1 study accepted for publication in International Proceedings (see Annex I: A.III.2.2);
- 3 chapters accepted for publication in a specialised book (see Annex I: A.IV.1-3);
- 15 participations at international scientific gatherings (see Annex I: B.I.1-15);
- 2 participations at national scientific gatherings (see Annex I: B.II.1-2);
- 2 conferences held abroad (see Annex I: B.III.1-2).

ANNEX I

A. PUBLICATIONS

I. VOLUMES EDITED IN THE FRAMEWORK OF THE PROJECT

I.1. Marius Alexianu, Roxana-Gabriela Curcă, Vasile Cotiugă (eds.), *Salt Effect. Proceedings of the Second Arheoinvest Symposium, 20-21 April 2012, Iași, Romania*, BAR International Series, Oxford, Archaeopress, 2014, ISBN 978-1-4073-****-* (in print).

I.2. Robin Brigand, Olivier Weller (eds.), *Archaeology of salt: approaching an invisible past*, Leiden, Sidestone, 2015 (in print).

I.3. Vasile Cotiugă, Stefan Caliniuc (eds.), *Interdisciplinary Research in Archaeology. Proceedings of the Second Arheoinvest Congress, 7-9 June 2012, Iași, Romania*, BAR International Series, Oxford, Archaeopress, 2015, ISBN 978-1-4073-****-* (in press).

II. ARTICLES

II.1. ISI JOURNALS

II.1.1. Gheorghe Romanescu, Ion Sandu, Cristian Stoleriu, Ioan-Gabriel Sandu, *Water Resources in Romania and Their Quality in the Main Lacustrine Basins*, *Revista de Chimie*, vol. 65, no. 3, p. 344-349.

II.1.2. Ion Sandu, Viorica Vasilache, Marius Alexianu, Roxana-Gabriela Curcă, *Chemical explanation of an original milk curdling ethnoprocedure by natural brine*, *Revista de chimie*, vol. 65, no. 1, 2014, p. 120-122.

II.1.3. Gheorghe Romanescu, Elena Paun, Ion Sandu, Ionuț Jora, Emilian Panaitescu, Ovidiu Machidon, Cristian Stoleriu, *Quantitative and qualitative assessments of groundwater into the catchment of Vaslui river*, *Revista de Chimie*, vol. 65, no. 4, 2014, p. 401-410.

II.1.4. Ion Sandu, Maria Canache, Traian Mihăescu, Marin Chirazi, Andrei-Victor Sandu, Laura-Monica Trandafir, Alina-Costina Luca, Laura Checherita, *The Influence of NaCl Aerosols on the Functional Characteristics on Children*, *Revista de Chimie*, 66, 1, 2015 (in press).

II.1.5. Felix Tencariu, Marius Alexianu, Vasile Cotiugă, Ion Sandu, Viorica Vasilache, *Briquetages and salt cakes: an experimental approach of a prehistoric technique*, *Journal of Archaeological Science* (in evaluate).

II.2. ERIH AND BDI JOURNALS

II.2.1. Mihaela Asăndulesei, *Salt exploitation references in Plinius Maior's work*, *Studia Antiqua et Archaeologica*, XX, 2014 (in press).

II.2.2. Robin Brigand, Andrei Asăndulesei, Ionuț Cristi Nicu, *Autour de la station eponyme de Cucuteni: paysage et peuplement (Valea Oii, Iași, Roumanie)*, *Tyragetia*, vol. VIII [XXIII], nr.1, 2014, p.89-106.

III. PROCEEDINGS

III.1. ISI PROCEEDINGS

III.1.1 Gheorghe Romanescu, Marius Alexianu, Andrei Asăndulesei, *The distribution of salt massifs and the exploitation of ancient and current reserves of mineralized waters within the Siret hydrographical basin (Romania). Case study for the eastern area of the Eastern Carpathians*. In *International Multidisciplinary Scientific Geoconferences. 17–26 June 2014, Bulgaria. 14th GeoConference on Water Resources, Forests, Marine and Ocean Ecosystems. Conference proceedings, volume I, Hydrology & Water Resources*, Sofia, STEF92, p. 731–746.

III.1.2. Andrei Asăndulesei, Marius Alexianu, Roxana-Gabriela Curcă, Ștefan Caliniuc, Mihaela Asăndulesei, *Settling selection patterns in the Subcarpathian areas of Romania. Salt resources as a determining factor for prehistoric occupation*. In *International Multidisciplinary Scientific Geoconferences. 17–26 June 2014, Bulgaria. 14th GeoConference on Informatics, Geoinformatics and Remote Sensing. Conference proceedings, volume III, Photogrammetry & Remote Sensing, Cartography & GIS*, Sofia, STEF92, p. 829–839.

III.2. INTERNATIONAL PROCEEDINGS

III.2.1. Robin Brigand, Andrei Asăndulesei, Olivier Weller, Vasile Cotiugă, *Chalcolithic territorial patterns in central Moldavia (Iași County, Romania)*, in G. Earl, T. Sly, A. Chrysanthi, P. Murrieta-Flores, C. Papadopoulos, I. Romanowska and D. Wheatley (eds.), *Archaeology in the Digital Era. Papers from the 40th Annual Conference of Computer Applications and Quantitative Methods in Archaeology (CAA)*, Southampton, 26-29 March 2012, Amsterdam University Press, 2014, p. 624-635.

III.2.2. Marius Alexianu, Olivier Weller, Robin Brigand, *Romanian Salt Springs, Intangible Cultural Heritage, Archaeological Reconstruction: A Variable Geometry*, in Biagetti, S., Stoppiello, A. A., and Lugli, F. (eds), *Proceedings of the International Conference "The Intangible Elements of Culture in the Ethnoarchaeological Research"*, Roma, 21-23.11 2012, Springer, New York, 2015 (in press).

IV. BOOK CHAPTERS

IV.1. Marius Alexianu, Felix Tencariu, Andrei Asăndulesei, Olivier Weller, Robin Brigand, Ion Sandu, Gheorghe Romanescu, Roxana-Gabriela Curcă, Ștefan Caliniuc, Mihaela Asăndulesei, *The Salt from the Alghianu Beck (Vrancea County, Romania): A Multifaceted Ethnoarchaeological Approach*, in Robin Brigand, Olivier Weller (eds.), *Archaeology of salt: approaching an invisible past*, Leiden, Sidestone, 2015 (in press).

IV.2. Olivier Weller, *First salt making in Europe: a global overview from Neolithic times*, in Robin Brigand, Olivier Weller (eds.), *Archaeology of salt: approaching an invisible past*, Leiden, Sidestone, 2015 (in press).

IV.3. Robin Brigand, Olivier Weller, *Spatial analyses for salt archaeology. A case study from Moldavian Neolithic (Romania)*, in Robin Brigand, Olivier Weller (eds.), *Archaeology of salt: approaching an invisible past*, Leiden, Sidestone, 2015 (in press).

B. PARTICIPATIONS AT SCIENTIFIC GATHERINGS

I. International

I.1. Andrei Asăndulesei — *Archaeological prospection and GIS-based analysis on Chalcolithic settlements from Eastern Romania* — National Archaeology Student Conference 2014 (NASC 2014), Flinders University Department of Archaeology, Adelaide, Australia, 11-13 April 2014.

I.2. Marius Alexianu, Andrei Asăndulesei, Felix-Adrian Tencariu, Ion Sandu, Gheorghe Romanescu, Roxana-Gabriela Curcă, Mihaela Asăndulesei — *Ethno-archaeology of Salt Supply during the Neolithic and Chalcolithic in the Romanian Carpathians* — International Symposium on Archaeometry (ISA 2014), University of California, Los Angeles, 19-23 May 2014.

I.3. Andrei Asăndulesei, Ionuț Cristi Nicu, Radu Balaur, Ștefan Caliniuc, Vasile Cotiugă, Cristian Stoleriu, Oana Stoleriu — *Subsurface Survey and Spatial Analysis on Chalcolithic Settlements from Eastern Romania* [poster] — International Symposium on Archaeometry (ISA 2014), University of California, Los Angeles, 19-23 May 2014.

I.4. Marius Alexianu, Ion Sandu, Andrei Asăndulesei, Roxana-Gabriela Curcă, Ștefan Caliniuc, Mihaela Asăndulesei — *Savory Salt: Ethnoarchaeological research in Romania* — Theoretical Archaeology Group 2014 Conference (TAG 2014), University of Illinois at Urbana-Champaign, 23-25 May 2014.

I.5. Gheorghe Romanescu, Marius Alexianu, Olivier Weller, Gabriela Romanescu — *Sweet rivers and salt springs: modern management and ethno-management of water resources in eastern Romania* — A IX-a ediție a simpozionului internațional Mediul Actual & Dezvoltare Durabilă, Iași 6-8 iunie 2014.

I.6. Gheorghe Romanescu, Marius Alexianu, Andrei Asăndulesei — *The distribution of salt massifs and the exploitation of ancient and current reserves of mineralized waters within the Siret hydrographical basin (Romania). Case study for the eastern area of the Eastern Carpathians* — 14th

International Multidisciplinary Scientific GeoConference (SGEM 2014), Albena, Bulgaria, 17-26 June 2014.

I.7. Andrei Asăndulesei, Marius Alexianu, Roxana-Gabriela Curcă, Ștefan Caliniuc, Mihaela Asăndulesei — *Site catchment analysis in Subcarpathian areas. Salt resources as a determining factor for prehistoric habitation* — 14th International Multidisciplinary Scientific GeoConference (SGEM 2014), Albena, Bulgaria, 17-26 June 2014.

I.8. Andrei Asăndulesei, Marius Alexianu, Felix Tencariu, Ștefan Caliniuc, Roxana-Gabriela Curcă, Mihaela Asăndulesei — *Salt and prehistoric (from the Neolithic to the Early Bronze Age) population movements in the Eastern Carpathians of Romania. A diachronic GIS-based analysis* — European Association of Archaeologists 20th Annual Meeting (EAA 2014), ITU, Istanbul, 10-14 September 2014.

I.9. Felix Tencariu, Marius Alexianu, Andrei Asăndulesei, Mihaela Asăndulesei, Ștefan Caliniuc — *The use of the natural brine for food preservation. Ethnoarchaeological research in the extra-Carpathian area of Romania* — European Association of Archaeologists 20th Annual Meeting (EAA 2014), ITU, Istanbul, 10-14 September 2014.

I.10. Robin Brigand, Mariana Vasilache, Olivier Weller — *5th millenium BC in the Carpathian-Dniestrian region. An overview of Cucuteni A settlement patterns* [poster] — European Association of Archaeologists 20th Annual Meeting (EAA 2014), ITU, Istanbul, 10-14 September 2014.

I.11. Robin Brigand, Olivier Weller, Mariana Vasilache, Andrei Asăndulesei — *Le peuplement néo-énéolithique de Moldavie: analyse et modélisation spatiale* — International Colloquium Cucuteni Culture within the European Neo-Eneolithic Context, Piatra Neamț, 15-17 octombrie 2014.

I.12. Marius Alexianu, Roxana-Gabriela Curcă — *Patrimoniul imaterial românesc despre sare. Implicații în cercetarea arheologică* — the 24th Scientific Meeting of the National Museum of History of Moldova, Chișinău, 16-17 October 2014.

I.13. Robin Brigand, Olivier Weller, Mariana Vasilache, Andrei Asăndulesei — *Analyses spatiales et modélisation du peuplement néo-énéolithique des Carpates orientales* — the 24th Scientific Meeting of the National Museum of History of Moldova, Chișinău, 16-17 October 2014.

I.14. Marius Alexianu, Roxana-Gabriela Curcă — *Romanian intangible heritage of salt. Implications for archaeological research* — ICAHM 2014 Annual Conference Universal Standards for Archaeological Heritage Management (ICAHM 2014), Jishou City, Hunan Province, China, 20–23 October 2014.

I.15. Mihaela Asăndulesei — *Symbolic uses of salt in baptism, wedding and funeral in Eastern Romania* — Conferința internațională „Vulnerabilität und Resilienz in den Siedlungsräumen entlang der Donau“, Trier, Germania, 26 noiembrie 2014.

II. National

II.1. Mihaela Asăndulesei — *Antropologia culturală a sării în spațiul est-carpatic. Studiu de caz: practici și valori simbolice în ritualurile de trecere prezentate în opera lui Simion Florea Marian*

— Sesiunea națională a studenților și doctoranzilor. Istorie - Arheologie – Muzeologie, Ediția a XXII-a, Alba Iulia, România, 13-14 noiembrie 2014.

II.2. Felix-Adrian Tencariu, Marius Alexianu, Vasile Cotiugă — „*Briquetages*” și calupuri de sare: o abordare experimentală a unei tehnici preistorice — ‘Arheologia experimentală — metodă de generare și testare a ipotezelor arheologice’ National Colloquium, Alexandria, 17 octombrie 2014.

III. Conferences held abroad

III.1. Marius Alexianu, Roxana-Gabriela Curcă: visiting professors la Pontifical Catholic University of Chile; 28.05.2014: *Etnoarqueología simbólica de la sal en la Prehistoria y el Mundo Antigo*.

III.2. Marius Alexianu, Roxana-Gabriela Curcă: visiting professors la Universidad De La Plata, Buenos Aires, Argentina; 26.05.2014: *Salt Springs in Prehistory: Ethnoarchaeological Investigation in Romania*.