



HAL
open science

The earliest rock salt exploitation in Europe. A salt moutain in Spanish Neolithic

Olivier Weller

► **To cite this version:**

Olivier Weller. The earliest rock salt exploitation in Europe. A salt moutain in Spanish Neolithic. *Antiquity*, 2002, 76 (292), p. 317-318, en ligne www.antiquity.ac.uk/projgall/Pre2003/Weller/weller.html. halshs-00004565

HAL Id: halshs-00004565

<https://shs.hal.science/halshs-00004565v1>

Submitted on 28 Nov 2005

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

**The earliest salt production in the world: an early Neolithic exploitation in
*Poiana Slatinei-Lunca, Romania***

Olivier Weller & Gheorghe Dumitroaia

In Europe, salt exploitation during the Iron Age has been a subject for many studies, based on the earthenware remains called briquetages. In the last few years, studies on the pre- and protohistoric origin and development of this type of production have increased throughout Europe (Weller (ed.) 2002). The use of fire is central to this type of production. It enables the brine to evaporate and crystallize into hard and transportable salt cakes, moulded in pottery containers. The first briquetages appear in the mid-fifth millennium BC in central and eastern Europe (Weller 2002a). Should we therefore assume that briquetages are the earliest salt exploitations in Europe? It does not seem so if we consider the research carried out for more than 20 years by the History and Archaeology Museum of Piatra Neamt (Romania) (Dumitroaia 1987, Monah 1991), as well as by the Chrono-Ecology Laboratory (UMR 6565, CNRS) in eastern France (Pétrequin *et al.* 2001) and by others in Catalonia (Weller 2002b). As a result of the meeting of these two teams during a research program on the salt springs of Romanian Moldavia, we can present here the latest results from the most ancient salt exploitation site in Europe, and probably in the world.

Figure 1. 1. Location of the *Poiana Slatinei* site (Lunca, Vânători-Neamt)

Figure 2. Salt spring (foreground) and *Poiana Slatinei* prehistoric exploitation site (photo by O. Weller)

A unique site in the north east of Romania

In 1984, the Romanian team of the Museum of Piatra Neamt brought to light the earliest evidence for European salt exploitation at the *Poiana Slatinei* site in Lunca, Vânători-Neamt (Figure 1) (Dumitroaia 1994). This site is unique in Europe for the preservation of its 60

metres long by 25 metres wide stratified midden of ash, charcoal and red coloured burnt soil (Figure 2). Located in the vicinity of a still-used salt spring, it contains large amounts of combustion soils. The succession of combustion and feruse areas have formed a sizeable mound almost 3 metres high. This exploitation was facilitated by the strong natural concentration of this salt spring: 160 g/l, i.e. six more times than the sea water. Painted ware from the different trenches (Starcevo-Cris culture IIIb-IVa) (Dumitroaia 1994) shows that most of this deposit can be dated to the Early Neolithic. The examination of this deposit, carried out by G. Dumitroaia, has also revealed Precucuteni, Komarov-Costisa, Noua and Hallstadian exploitations.

Research in 2004

In 2004, the S1.02 sondage, opened in 2002 on top of the deposit, was extended in order to analyse samples (soils, charcoals, pollen) and carry out detailed and systematic recording (Figures 3 and 4). The Franco-Romanian team conducted the 2004 excavation and extended it to 20m². In doing so, they revealed the base of the deposit unreached in 2002 because of a significant rise in the water table to a depth of 3.5m. A 5.25m deep, wood-lined shaft for salted water was discovered. This was filled with a combustion midden containing some Starcevo-Cris decorated ware. Although no finds of this period were recorded, the two corresponding C14 AMS dates (710-900 AD) seemed to prove this well was medieval. The well, whose opening is no longer preserved, was in fact dug through the neolithic layers and then back-filled in medieval times.

The Bronze Age exploitations also left a series of well-stratified fireplaces on the eastern part of the deposit, over 0.70m high (Trench S XI). Both C14 dates, carried out on two fireplaces 0.40m apart, suggest a short period of exploitation (between 1750 and 1630 BC) (Figure 5).

Figure 3. *Poiana Slatinei* site map (based on Dumitroaia 1994). Click to enlarge.

Figure 4. Section north of the S1.02 and stratigraphic details (Fire pits and combustion levels) (photos by O. Weller)

The earliest exploitations dated by C14

We now have nine C14 AMS dates available. They have been produced by the same laboratory (Poznan Radiocarbon Laboratory, Poland) on the earliest and best preserved part of the deposit. These calibrated dates are consistent and confirm the early date for European salt exploitation at the end of the seventh millennium BC (Figure 6). Clearly, that the first salt exploitation emerged in Eastern Europe during the earliest Neolithic (6050-5500 BC).

Production intensity and uses of this crystallised salt for these early Neolithic communities of eastern Europe have yet to be determined. Was it only intended to be used for food? To preserve it ? For the herds' needs? Or can we already see, in this early production, a desire to produce and exchange a rare status-enhancing substance?

Figure 5. List of the calibrated dates for S XI (Bronze Age). Click to enlarge.

Figure 6. List of the calibrated dates with 1 and 2 sigmas apart from S1.02 (Early Neolithic). Click to enlarge.

Perspectives

During five centuries, the successive exploitation has formed an accumulation of combustion soils of over 2 metres. Chemical and micro-morphological analyses should provide essential evidence for the interpretation of these tens and even hundreds of Neolithic fireplaces. These analyses, together with the work on micro-fossils and charcoal, are being carried out as part of the joint research program. The ultimate goals are to identify the range of techniques employed, to examine how the resource was managed, to study the interactions with the natural environment, and finally to assess the socio-economic impact of this first European salt production.

Acknowledgements

We would like to acknowledge for their support the department of archaeology and social sciences of the French Ministry of Foreign Affairs, the CNRS Human and Social Sciences department, as well as the whole team from the History and Archaeology Museum of Piatra Neamt and the paleoenvironment specialists of the Chrono-Ecology Laboratory (UMR 6565, CNRS).

References

- DUMITROAIA G. 1987. La station archéologique de Lunca-Poiana Slatinii, in M. Petrescu-Dîmbovita *et al.* (ed.) *La civilisation de Cucuteni en contexte européen.* Iasi: Universitatea AL.I. Cuza, Bibliotheca archaeologica iassiensis I: 253-258.
 - - 1994. Depunerile neo-eneolotice de la Lunca si Oglinzi, judetul Neamt. *Memoria Antiquitatis* XIX: 7-82.
 - MONAH D. 1991. L'exploitation du sel dans les Carpates orientales et ses rapports avec la Culture de Cucuteni-Tripolye, in V. Chirica & D. Monah (ed.) *Le Paléolithique et le Néolithique de la Roumanie en contexte européen.* Iasi: Universitatea AL.I. Cuza, Bibliotheca archaeologica iassiensis IV: 387-400.
 - MONAH D. 2002. L'exploitation préhistorique du sel dans les Carpates orientales, in O. Weller (ed.) *Archéologie du sel : Techniques et sociétés dans la Pré- et Protohistoire européenne:* 135-146. Actes du colloque 12.2 du XIVe Congrès de l'UISPP, 2001, Liège et de la Table Ronde du Comité des Salines de France, 1998, Paris. Internationale Archäologie, ASTK, 3, Rahden/Westfalie: Verlag Marie Leidorf GmbH.
- PÉTREQUIN, P., O.WELLER, E. GAUTHIER & A. DUFRAISSE. 2001. Salt springs exploitations without pottery during Prehistory. From New Guinea to the French Jura, in P. Pétrequin & S. Beyries (ed.) *Ethnoarchaeology and its transfert:* 37-65. Proceedings of the 5th meeting of the European Association of Archaeologists, Bournemouth, England, 1999. BAR International Series 983. Oxford: Archaeopress.
- WELLER O. 2002a. Aux origines de la production du sel en Europe, in O. Weller (ed.) *Archéologie du sel : Techniques et sociétés dans la Pré- et Protohistoire européenne:* 163-175. Actes du colloque 12.2 du XIVe Congrès de l'UISPP, 2001, Liège et de la Table

Ronde du Comité des Salines de France, 1998, Paris. Internationale Archäologie, ASTK, 3, Rahden/Westfalie: Verlag Marie Leidorf GmbH.

WELLER O. 2002b. The earliest rock salt exploitation in Europe. A salt moutain in Spanish Neolithic. *Antiquity* 76 (2): 317-318.

WELLER O. (ed.). 2002c. *Archéologie du sel : Techniques et sociétés dans la Pré- et Protohistoire européenne*: 163-175. Actes du colloque 12.2 du XIVe Congrès de l'UISPP, 2001, Liège. Internationale Archäologie, ASTK, 3, Rahden/Westfalie: Verlag Marie Leidorf GmbH.