

## Rapid Communication

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# The Mountain Sanctuary of Matzanni in Sardinia: Project Motivations and Preliminary Research Results

<https://doi.org/10.1515/opar-2020-0114>

received June 20, 2020; accepted August 19, 2020.

**Abstract:** The Matzanni Project tracks the role of the large mountain sanctuary of Matzanni-Vallermosa (southwestern Sardinia) in a scalar network from the local to, potentially, the Bronze Age global. Exploitation of metals in the mountainous setting of the sanctuary constitutes a major research focus together with understanding how metal extraction and religion may have intersected.

**Keywords:** Nuragic culture, Multi-Mode Survey, Bronze and Iron Age settlement, Networks

## 1 Matzanni: Small and Large in the Bronze Age World

This paper reports briefly on a new archaeological project that has commenced at the mountain sanctuary of Matzanni in southwestern Sardinia. Fieldwork at Matzanni began in the Autumn of 2019 as a collaboration between Danish and Sardinian agencies of archaeology and heritage. The focus on Matzanni had two major motivations. Firstly, the almost unexplored condition of the sanctuary and its commanding position high above the settlements of two fertile plains. Secondly, the adjacent wealth of metalliferous minerals, in particular iron, copper, tin, lead and silver, easily accessible from the sanctuary, although thus far without firm evidence of prehistoric exploitation. Furthermore, on the micro-scale, Matzanni seems to echo macro-scale mechanisms during the long period of Bronze Age demise in Europe.

The site may epitomise a tight bond between metallurgy and religion, which invites further exploration of different scales. Such a liaison may have a wider bearing on how metals and novel religious ideas were transmitted, through short and long distances, after c. 1200 BC when Bronze Age societies either collapsed or were transformed within the Mediterranean and elsewhere. The research initiative was prompted by the hypothesis that Sardinia and Scandinavia were linked to one another during c. 1200–700 BC, in a manner involving not only trade in metals but likely also the transmission of religious ideas, which is apparent in the striking similarities between iconography from the two regions.

Co-motivating the fieldwork is understanding Sardinia's apparently changing significance in the Mediterranean geopolitical flux and shifting trading dependencies from the Late Bronze Age (LBA) into the Final Bronze Age (FBA) and then the Early Iron Age (EIA) (table 1). The 24,000 square kilometres of Nuragic Sardinia interpose a north-south dividing line, marking an interface between broadly divergent sociocultures in the east and the west of the Mediterranean Sea. We hope to advance the state of the debate concerning Nuragic Sardinia's position as either an isolated backwater or a well-connected hub influencing its trading partners near and far. We are especially looking west to the regions of the Western Mediterranean Sea and beyond to the Atlantic fringe as far as Scandinavia in the northwest corner of the Bronze Age world (Vandkilde, 2017).

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**Table 1:** Nuragic chronology according to Depalmas (2009a, 2009b, 2009c). EIA (Early Iron Age) is technologically and terminologically still Bronze Age in parts of non-Mediterranean Europe.

Nuragic culture divides into four main periods ( <sup>14</sup> C)	
MBA	1775/1750–1350 BC
LBA	1350–1200/1150 BC
FBA	1200–950 BC
EIA	950–720 BC

## 2 The Nuragic Sanctuaries

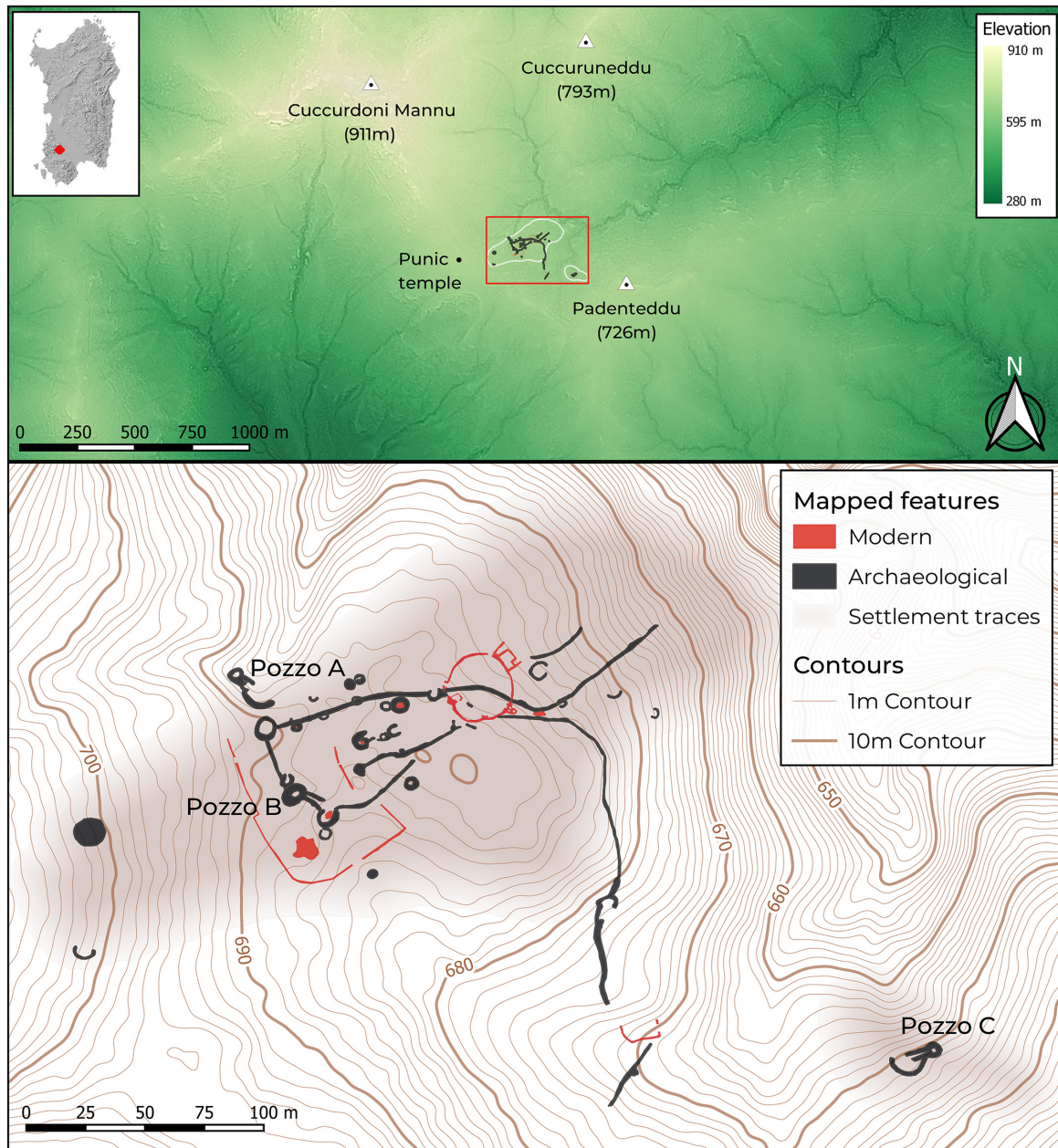
Nuragic sanctuaries have been interpreted as territorial precincts rich in water (Lilliu, 1988). Recently, their relations with settlements, pathways or natural resources in the landscape have been emphasised (Depalmas, 2005; Ialongo, 2011). Sanctuaries emerged at the troubled end of the Late Bronze Age c. 1200 BC, when many Nuraghe towers were abandoned, and small-towns began to evolve around the larger towers. Following the generally accepted Nuragic chronology (table 1), the sanctuaries developed during the FBA, albeit quite possibly with their maximum expansion in the EIA. Earlier phases are evident at most sites (e.g. Depalmas, 2014; 2018; Salis, 2017). While clearly devoted to water cults, Nuragic sanctuaries seem to have served several purposes (Bernardini, 2017, p. 213). A sanctuary typically covers an extended plot of land and comprises religious and more profane activities that occur interlocked. There are spaces for ceremonial performances as well as areas for the production and accumulation of metalwork and other goods (Bernardini, 2017).

The sanctuaries are often interpreted as loci of unifying reference for the population and organisational units of a larger geographical area; ‘confederate compounds’ in Lilliu’s original wording (1988). Nuragic sanctuaries could then have served as aggregation sites for dispersed communities in a distributed network. However, it is equally possible that the sanctuaries formed core points in more centralising networks. Such a central role would be in alignment with the metal-led growth in Nuragic political economy after c. 1200 BC: a scenario of change from a corporate to a more ranked social system could be realistic for Sardinia toward the end of the LBA c. 1200 BC, whilst in FBA–EIA some form of social hierarchy appears established and manifest. Network nucleation around central units imbued with religion and metallurgy—sanctuaries and great nuraghe alike—may corroborate this hypothesis.

Cohabitation and intertwinement of cult and metallurgy are supported by the substantial production of metal artefacts and ample metal hoarding in the sanctuaries. The so-called *bronzetti* stand out in this context as miniature versions in bronze of several categories of warrior heroes, some with horned helmets and round shields, in addition to figurines of boats and bulls. The phenomenon of displaying religiously motivated votive offerings joint with conspicuous hoarding of valuables (Ialongo, 2013; Depalmas, 2018) has been coupled to a social model of wealth redistribution by Webster (2015): the Nuragic elite controlled the amount of prestige goods in circulation within the community (Ialongo, 2011, 2013; Campus, Leonelli, & Lo Schiavo, 2010). In this manner, the sanctuaries appear as poli-functional places where the religious spaces and water cults served to tie the upper societal rung to a divine domain while simultaneously building political and ideological consensus (Depalmas, Bulla, & Fundoni, 2016; Bernardini, 2017).

## 3 Matzanni: A Nuragic Sanctuary in Sardinia

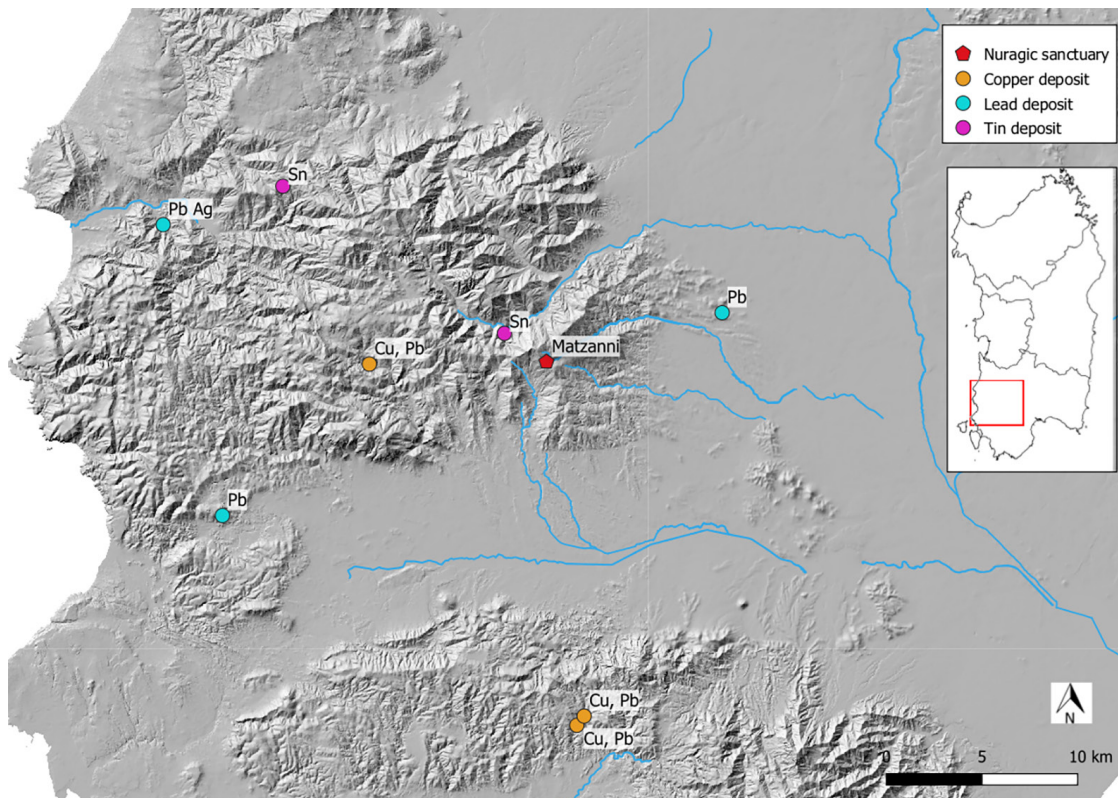
Matzanni stands prominent among the Nuragic sanctuaries. The team, led by Moesgaard Museum and Aarhus University (DK), combined walk-over, geophysical and photogrammetric surveys with network analysis. Here we report essential information about Matzanni, present the first accurate planimetry of the site, discuss our research questions and hypotheses, and present some early results.



**Figure 1:** *Top:* Matzanni is located at 692 m a.s.l., on a plateau bordered by mountains in the area of Monte Linas. *Bottom:* Initial planimetry of the site (maps David Stott).

Matzanni was discovered by Domenico Lovisato in the 1890s (Lovisato, 1900), and has been investigated sporadically: Antonio Taramelli (1916), Francesco Sedda and Giovanni Lilliu (1975), and Vincenzo Santoni and Fabio Nieddu during the excavations by Soprintendenza Archeologica di Cagliari and Oristano 2004–2007 (Nieddu, 2007).

Matzanni is unique among Nuragic sanctuaries due to its three monumental sacred wells (*pozzi sacri*) and its mountainous location high above two fertile plains (figure 1). The setting is known for its abundant minerals. Matzanni holds a commanding position at the head of the Campidano plain, with the Cixerri's valley immediately west over the watershed, making the site a key to communication between the plains. Network analyses coupled to visibility and accessibility strongly indicate Matzanni's central position locally. Sites on the agricultural plains were visible from viewpoints on the periphery of the precinct, but Matzanni itself is invisible from the plains.



**Figure 2:** The mineral deposits that may have been exploited in southwestern Sardinia during the Bronze Age (after Lo Schiavo et al., 2005; Begemann et al., 2001; maps Valentina Matta).

Apart from the three sacred wells, remains of other ritual buildings and an extensive settlement linked to the sacred temenos are visible on the surface, indicating numerous sub-surface features. The sanctuary dates typologically to the FBA, with an initial phase in the later LBA (Nieddu, 2007). Continued habitation is certainly a possibility even in the EIA. During the period of Punic colonisation, activities are implied by the temple of *Genna Cantonis* (IV century BC) close to the Bronze Age site.

## 4 Research Questions

The main question addressed by the team is why the sanctuary was placed in this location. Aside from Matzanni's prominent position, one of the most significant elements regarding the location of the site is its proximity to high-density mineral deposits, in particular copper, tin and lead (silver) (Sanna et al., 2011) (figure 2). Matzanni and its distinctive association with metal, water and religion interlink with our inquiries into the significance of the maritime routes connecting Sardinia and Scandinavia.

Votive bronze figurines (*bronzetti*) are cited in the excavation report from Well A (Nieddu, 2007), but few signs of metallurgical production have been reported compared with other contemporary sanctuary sites (Lo Schiavo et al., 2005; Moravetti et al., 2017). Therefore, the fieldwork at Matzanni is driven by the hypothesis that metallurgy was practised on the site jointly with rituals targeting water as a resource. Drought and tensions on the agricultural plains may have prompted the foundation of Matzanni, where life-giving water could be both worshipped and exploited for day-to-day uses. The site offered opportunities for large-scale metallurgical production based on the indispensable resources of metal, water and timber. The sanctuary character of Matzanni and its elevated position indicate a unifying role either as a neutral aggregation enclosure for the three plains or as a religious and economic hub during the FBA



**Figure 3:** *Top:* Drone-derived orthophotograph of Wells A, B and their environs. *Bottom:* Initial magnetic survey results show major walls and anomalies indicating a complex of structures adjacent to Well B (photographs and maps David Stott).

and later. To start testing these hypotheses, the initial fieldwork campaign in 2019 sought to define the extent of the site by mapping walls, buildings and mineral resources in its immediate surroundings. Methods for detecting surface and sub-surface evidence of metalworking were also explored.

## 5 2019 Survey

The walk-over survey was conducted alongside GPS, drone and ground-based photogrammetry to map structures and archaeological surface materials. This revealed a dense palimpsest of stone structures and surface ceramics, extending further east than hitherto recognised. Several substantial, intersecting stone enclosure walls were identified. These may form part of larger structures associated with the sanctuary, but their interrelationships are as yet unclear.

A Geometrics G858 caesium vapour magnetometer in a gradiometer configuration was used to map approximately 0.5ha. The scrub precluded continuous survey, so discrete measurements were acquired at 0.5m intervals. Two areas were targeted: around Wells A and B to investigate any sub-surface structures related to ritual activity; and hut structures and enclosure walls to the east of the wells.



**Figure 4:** A broken stone mallet is another indication of metallurgical activities in the settlement towards the east. This *testa di mazza* is usually interpreted as a tool for crushing and concentrating metalliferous ores (Gallin & Tykot, 1993; photograph Heide Nørgaard).

A geological survey aimed to locate possible areas of mineral exploitation surrounding the sanctuary. Metal scraps or metal workshops were not identifiable on a superficial level. However, crushed bedrock and several quartz outcrops, rich in malachite and ferrous minerals, were located close to Well C.

## 6 Future Work

We plan a full documentation of Matzanni's layout in the mountain setup to unveil the internal organisation of the temenos with adjacent small-town and the links to onsite resources. The methodology will remain mainly non-destructive. Soil samples will help clarify seasonal patterns, livelihoods, duration of occupation and metallurgical exploitations of timber (deforestation). Ongoing metallurgical analyses and isotopic matching will explore the potential significance of Matzanni as a major metal production site, from mining and metalworking to distribution to on-site and off-site consumers.

The centrality of the site and the tangle of the sacred and the profane is a further question we would like to pursue because there is little understanding of this issue both here and at other sanctuaries on Sardinia. A major motivation for the fieldwork is the enigmatic link between Sardinia and the Scandinavian Bronze Age (figure 5). This comprised the potential transfer of metals (Ling et al., 2012, 2014) and religious properties associated with water and horned figures in giant and miniature format.



**Figure 5:** showcases horned warriors in Scandinavia (A–Viksø, B–Grevenvænge, Denmark) and Sardinia (C–Serri and D–Abini, Sardinia) often in miniature format, and tied to water-linked central sanctuaries c. 1200–700 BC (photographs Heide Nørgaard).

**Acknowledgements:** We are grateful for fruitful cooperation with our partners and student assistants Cristina Concu, Monica Fadda, Gioia Concas, Viviana Cau and Nicola Porru (University of Cagliari), Laura Ahlqvist and Mathias Jensen (Aarhus University), and our main funding body, Soprintendenza Archeologica di Cagliari and Oristano, Comune di Vallermosta and Professor Salvatore Crobu; and the Danish Ministry of Culture (FORM.2019-0032).

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