

Radiocarbon dates from prehistoric sites in the Badisco area (Otranto –Le)

Aprile Giorgia¹, Ingravallo Elettra², Tiberi Ida³, Quarta Gianluca⁴, Calcagnile Lucio⁴

¹ *Dipartimento di Beni Culturali-Università del Salento, Via D. Birago 64 -73100 Lecce,*
giorgiaprile@gmail.com

² *Dipartimento di Beni Culturali-Università del Salento, Via D. Birago 64 -73100 Lecce*
ida.tiberi75@gmail.com

³ *Dipartimento di Beni Culturali-Università del Salento, Via D. Birago 64 -73100 Lecce,*
elettra.ingravallo@unisalento.it

⁴ *CEDAD (Centro di Datazione e Diagnostica)-Dipartimento di Matematica e Fisica “Ennio De Giorgi”- Università del Salento*

Abstract – We presents the results of a radiocarbon dating campaign performed on organic samples from three important prehistoric sites of the Porto Badisco territory (Apulia-Southern Italy): *Grotta dei Cervi*, *Cunicolo dei Diavoli* and the village of *Portorosso*.

The dating of a human jaw from *Cunicolo dei Diavoli* has confirmed the funeral use of the cavity during the Copper Age.

On the other hand, AMS radiocarbon dating of a fragment of charcoal extracted from a jug in *Macchia a Mare/Zinzulusa* style from the *Grotta dei Cervi*, made it possible to clarify the long debated chronology of this facies.

Radiocarbon results are also presented from the fortified village of *Portorosso*, dated to the Middle Bronze age (XV-XIV centuries BC).

I. INTRODUCTION

We presents the results of a radiocarbon dating campaign performed on organic samples from three important prehistoric sites of the Porto Badisco territory (Apulia-Southern Italy): *Grotta dei Cervi*, *Cunicolo dei Diavoli* and the village of *Portorosso* (Fig. 1).

The territory of *Porto Badisco*, located 6 km South of Otranto, was inhabited by humans since the Paleolithic, as evidenced by some caves along the paleo-torrent river called "*Canalone*", which gave rise to the "*Porto Badisco*" creek and others, such as *Grotta della Salinacia*, *della Galleria e del Sarcofago*, now eroded by the sea, which overlook the nearby creek called "*Le Tagliate*". The *Grotta dei Cervi* cave, defined since its discovery as the most important post-Palaeolithic art monument in the Mediterranean, was occupied by hunter-gatherers from the Upper Paleolithic as evidenced by hearths, meal remnants, lithic industry, engraved stones and bones found in its cavities. Engraved and painted artworks demonstrate how, already in the

Paleolithic, it was seasonally attracting mobile groups for symbolic and social activities. Nevertheless it is during the Neolithic and the Bronze Age (6-2th millennium BC) that it became an international sanctuary. Perhaps *Grotta dei Cervi* was linked to the *Cunicolo dei Diavoli*, as evidenced by the recent activity of the Apulia Speleological Federation: excavated by P. E. Stasi in the early years of the last century, *Cunicolo dei Diavoli* was used for funerary purposes. In the area close to the two abovementioned cavities, it was there the fortified village of *Portorosso*. The inhabitants of *Portorosso* must have known the *Grotta dei Cervi* and perhaps used it in the middle Bronze Age, as evidenced by the presence of materials in the Cave, very similar to those found during the excavations in *Portorosso*.

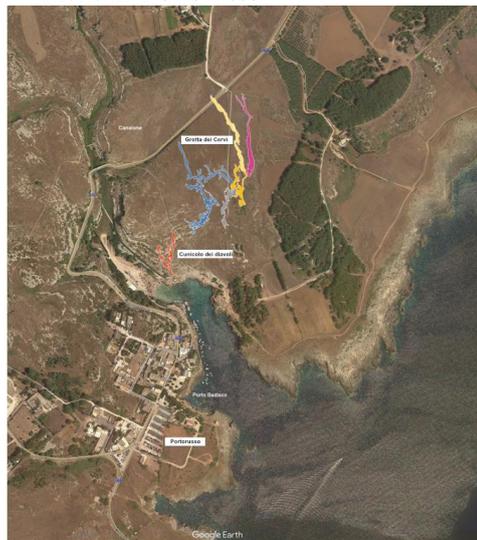


Fig. 1. The Porto Badisco territory with localization of *Grotta dei Cervi*, *Cunicolo dei Diavoli* and the village of *Portorosso*.

From these three contexts, organic samples (human bones, charcoal remains, acorns) were submitted to radiocarbon dating at CeDAD (Centre for Dating and Diagnostics)-University of Salento by AMS (Accelerator Mass Spectrometry). ^{14}C results allowed the assessment of the absolute chronology of some of the contexts (as in the case of the *Cunicolo dei Diavoli* and *Portorusso*) and a facies such as *Macchia a Mare/ Zinzulusa*, long debated from the chronological point of view by scholars.

II. THE CUNICOLO DEI DIAVOLI

The *Cunicolo dei Diavoli*, probably owing its name to the difficult access and almost certainly connected to one of the *Grotta dei Cervi* corridors (Fig.1), was excavated at the beginning of the last century but nothing was known so far about the funeral use of the cavity during the Metals Age [1].

The ^{14}C analysis of a human jaw recovered from this Cave allowed the absolute dating of one of the excavated burials to the Copper Age (3,500-3,090 BC) (Fig.2) confirming the practice of collective inhumation in natural caves throughout the Eneolithic period as attested in south-central Italy and, in the Salento territory, in *Grotta Cappuccini* [2] and *Campana d'Oro* [3] caves, dated to the second half of the III millennium BC.

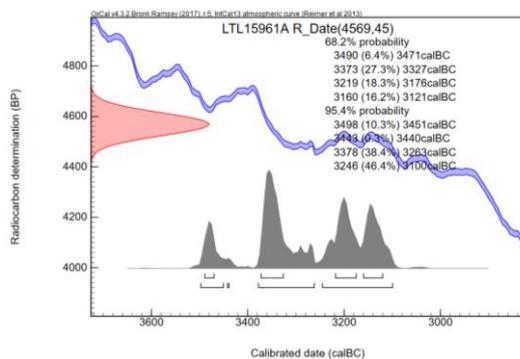


Fig. 2. Calibration of ^{14}C dating of a bone from *Cunicolo dei Diavoli*.

III. GROTTA DEI CERVI

The *Grotta dei Cervi* was, from the 6th to the 2nd millennium BC, a sacred place for the people of the Mediterranean area. The cave has five entrances (A-E), opening on the top of a slope overlooking the creek of *Porto Badisco* (Fig.1).

The entrances enter into many cavities connected, through meandering passages, to three main corridors growing between 20 and 28 m in depth and for 200 m in length.

On the walls of the corridors there are hundreds of signs interpreted by P. Graziosi [4] some as realistic representations (scenes of deer hunting, agricultural activities, sociality scenes) and others as abstract images (realistic subjects whose essence is reduced to graphemes).

Discovered on 1 February 1970 by five members of the Speleological Group "Decio de Lorentiis" of Maglie (Le), it was the subject of several excavation campaigns since March 1970 by the Superintendence at the Antiquities of Apulia.

The study of the ceramic complex of the excavations led by F.G. Lo Porto in the years 1970-71 [5] has allowed to shade light on the phases of use of the cavities A-D-E and to reconstruct the trading circuit in which *Grotta dei Cervi*, and with it the entire Salento, were involved since the 6-5th millennium BC.

Exogenous raw materials such as cinnabar and bitumen confirmed, for example, the amplitude of contacts of the V millennium BC communities.

The cinnabar, identified by XRF (X-Ray Fluorescence) analyses also performed at CeDAD, was on a Serra Alto style pot: it could have come from Tuscany (Monte Amiata mine) or from Eastern Adriatic (for example Suplja Stena mine).

Gas-chromatographic analyses carried out by the Chemical Analysis Laboratory for the Environment and Cultural Heritage of University of Salento has identified Selenizza mine in Albania as the source area of the bitumen used as glue to repair a vase of Serra d'Alto style from *Grotta dei Cervi*.

Ceramic vessels, also, refer to productions lacking on the territory and spread, however, in Sicily and in different regions of the eastern Adriatic and Greece (for example Danilo and Dimini styles, Channeled and White on Dark pottery).

Here we presents the absolute dating of a jug decorated with grooving, a typical shape of the *Macchia a Mare/ Zinzulusa* facies, found in different contexts of southern Italy.

The date comes from a fragment of charcoal embedded in the ceramic mixture (Fig.3).



Fig. 3. Jug in Macchia a Mare/Zinzulusa style and the extracted charcoal fragment.

The obtained absolute dating (4,370-4,220 BC) (Fig.4) has enabled not only to convey the vessel itself but also to chronologically define a facies - that of *Macchia a Mare /Zinzulusa* - long and widely debated. Its placement at the end of the fifth millennium BC confirms the contemporaneity of the *Paterno-Ripoli-Fossacesia* facies, widespread in Central Italy, with *Macchia a Mare/Zinzulusa*, both having shapes and decorations in common.

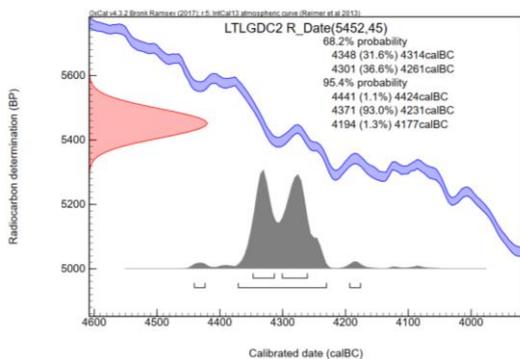


Fig. 4. Calibration of ^{14}C dating of the charcoal fragment extracted from *Macchia a Mare/Zinzulusa* jug from *Grotta dei Cervi*.

IV. PORTORUSSO

The Bronze Age settlement of Portorosso is placed on a peninsula about 400 meters away from the *Grotta dei Cervi* and the *Cunicolo dei Diavoli* (Fig. 1). Excavations conducted in 2015-2016 by G. Aprile and I. Tiberi under the scientific direction of Superintendence archeology, fine arts and landscape for the Lecce, Brindisi and Taranto provinces, have revealed the remains of a fortified coastal settlement protected on the inside by a complex defensive structure. It originally delimited an area of about 3 hectares.

The fortification was made up of an embankment and a wall leaning against it. The wall was made of stones in the lower part and brick in the upper. The defensive system also provided narrow crossings to facilitate evacuation in case of danger.

The excavation involved part of the fortification and a building built right next to it.

In the investigated area, the settlement was destroyed by a violent fire that ended the frequentation of this portion of the site, favoring, however, the extraordinary preservation of the archaeological remains.

The building next to the fortification has a rectangular plan with wattle and daub walls and it seems to have been functional to performing ritual activities. This is indicated by the peculiarity of the materials and cultural installations found inside (Fig. 5).



Fig. 5. Some cooking plates of Portorosso.

On the floor, about seven cooking plates were laying as offers, vegetables (fruits) perhaps originally stored in perishable containers and small vases containing sets of pebbles, miniature vessels, bone, bronze and stone artifacts.

The ceremonies probably included the use of fermented cereal drinks, as suggested by the results of the two pissids analysis. In the two recipients analyzed, ricinoleic acid was also identified with ergosterol, which could indicate the presence of ergot sclerosis, a parasitic fungus of wild cereals with toxic and psychoactive properties [6]. A dating on an acorn found near a plate allows to attribute the use of this structure to the middle Bronze Age (1,490-1,290 BC) (Fig. 6) and the village of Portorosso in the coastal occupation phenomenon by means of the fortified sites at strategic points as is the case at this time in the rest of the region.

The building of Portorosso, moreover, is one of the rare testimonies of cultural areas attributable to the middle Bronze Age (XV-XIV century BC).

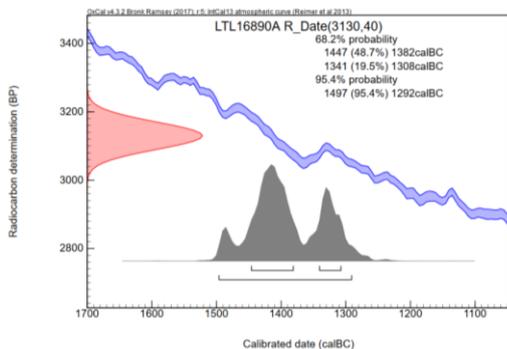


Fig. 6. Calibration of ^{14}C dating of the acorn from Portorosso.

V. CONCLUSIONS

Radiometric dating carried out on organic materials from the sites of *Grotta dei Cervi*, *Cunicolo dei Diavoli* and *Portorosso* has allowed to reconstruct the history of one of the most important geographical areas for the understanding of the dynamics of populations of Southern Italy during the prehistory.

The territory of Badisco, along the Adriatic coast of Salento, at the easternmost point of the peninsula, is divided by a sea arm of just about forty miles from the eastern Adriatic regions: for this reason it has represented for millennia a nodal point for contacts between different areas of the Mediterranean.

The presence of wind-sheltered creeks must have favored the landing by sailors who reached caves to perform ceremonies in honor of deities known and revered since the Neolithic and Copper and Bronze Ages.

Easy to reach from the sea was also the 2nd millennium BC site of Portorosso, whose cultural building had the function of welcoming offers from those who were facing a sea voyage or had escaped its dangers.

REFERENCES

- [1] P. E. Stasi, "Grotta Funeraria a Badisco (Terra d'Otranto)", *Arch. Antrop. Etnol* XXXVI, 1906, pp. 3-11.
- [2] E. Ingravallo, "Grotta Cappuccini (Galatone) tra eneolitico e primo Bronzo", *Collana del Dipartimento di Beni Culturali – Università del Salento*, 11, 2002, Galatina.
- [3] G. Aprile, F. Orlandi Barbano, "La Grotta Campana d'Oro di Poggiardo (Lecce)", *Atti IIPP XLIII*, 2011, pp. 767-769.
- [4] P. Graziosi, "La Grotta dei Cervi di Porto Badisco", *Origines IIPP*, 1980, Firenze.
- [5] I. Tiberi, "Culti e pratiche rituali nel Mediterraneo dal neolitico all'età del Bronzo: Grotta dei Cervi e Grotta delle Veneri, due monumenti del Sud-Est peninsulare", *Tesi di Dottorato in Scienze del Patrimonio Culturale-Dipartimento di Beni Culturali, Università del Salento*, 2017; G. Aprile, S. Bianco, E. Ingravallo, I. Muntoni, I. Tiberi, "Grotta dei Cervi: gli scavi Lo Porto 1970-71", *Rivista di Scienze Preistoriche*, in progress.
- [6] G. Aprile, F. Notarstefano, I. Tiberi, "Indicatori di pratiche culturali nel sito fortificato dell'età del Bronzo di Portorosso (Otranto-Le): evidenze archeologiche e analisi dei residui organici", *Studi di Antichità* 14, 2016, in press.