

Differences and similarities in Quaternary Stratigraphy between Atlantic and continental Europe

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# **DIFFERENCES AND SIMILARITIES IN QUATERNARY STRATIGRAPHY BETWEEN ATLANTIC AND CONTINENTAL EUROPE**

# **CONFERENCE ABSTRACTS**

Edited by J.-L. Monnier, J.-P. Lefort and G. Danukalova



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Around 120 scientists from all over Europe have contributed to the conference with presentations about the stratigraphic record of Quaternary environments and dealing with climatology, glacio-isostatism, biostratigraphy, Quaternary fluvial systems and relationships between archeology and sedimentology. New views are expressed on the tectonic control of the Quaternary deposits in Western Europe and sea level changes. The theme of the last glacial-interglacial transition (broadly including the Holocene) ranges from palaeoglaciology to radiocarbon dating. New results from France, Netherlands, Austria, Switzerland, Russia, Italy, Croatia, Serbia, Bulgaria, Ukraina, Caucasus, Belgium, Lithuania and United Kingdom are given.

Editors: J.-L. Monnier, J.-P. Lefort and G. Danukalova

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## THE GROTTA GRANDE OF SCARIO (SALERNO, ITALY): A SPOT ON THE ARCHEOLOGY AND THE ENVIRONMENT DURING THE LAST INTERGLACIAL (OIS 5) OF THE MEDITERRANEAN REGION

Annamaria RONCHITELLI and Paolo BOSCATO, Dipartimento di Scienze Ambientali "G. Sarfatti" - U.R. Ecologia Preistorica, Università di Siena, Via delle Cerchia 5 - 53100 Siena, Italy, *E-mail: ronchitelli@unisi.it, boscato@unisi.it*

Federico MASINI, Daria PETRUSO and Giovanni SURDI, Dipartimento di Geologia e Geodesia, Università di Palermo, Via Archirafi 22 - 90123 Palermo, Italy, *E-mail: fmasini@unipa.it, dariape72@unipa.it, gsurdi@unipa.it*

Carla Alberta ACCORSI and Paola TORRI, Dipartimento del Museo di Paleobiologia e Orto Botanico, Università di Modena/Reggio Emilia, V.le Caduti in Guerra 127 - 40132 Modena, Italy, *E-mail: carlaalberta@unimore.it*

**The Site.** The Grotta Grande of Scario is a coastal cave located in the centre of Mediterranean region on the Tyrrhenian side of the Italian Peninsula. The morphology of the cave and the sedimentary processes were controlled by the eustatic fluctuations during the late Middle Pleistocene and the early Late Pleistocene. The cave was frequented by humans of Middle Palaeolithic culture. The site is located 2 Km from the village of Scario (Salerno, Campania, Southern Italy). The cave, which develops along a fault perpendicular to the coast line, is formed by two large chambers joined by a short corridor. The external chamber opens directly on the sea. Excavations have been carried on since 1979 by the University of Siena in collaboration with Soprintendenza Archeologica of Salerno. Six test pits have been excavated, the most significant of which are located close to the entrance of the cave (trenches A, F), while a third pit, whose study is in progress, is located along the corridor (trench C).

**Stratigraphy.** Two different series have been recognised in trench A. The older one (about 2,4 m thick) is represented by a marine conglomerate at the bottom, followed by continental sandy - silty deposits sealed by a stalagmite. An erosional surface cuts these deposits, followed by a red cemented breccia with alternating concreted archaeological and earth levels that represent the younger series (about 1 m thick). The occurrence of *Cladocora coespitosa* and *Spondylus* sp. within the basal conglomerate and a  $135 \pm 11$  Ka dating ( $^{230}\text{Th}/^{234}\text{U}$  method) of the stalagmite suggests that the lower series of trench A may have formed during the interglacial-glacial cycle correlated to the OIS 7 - OIS 6. The retrieval of *Strombus bubonius* within the basal level of the younger sequence indicates that the deposition of this series possibly started during a high-stand phase nearly contemporaneous or slightly after the Eutyrrhenian (OIS 5e). The series of trench F (about 1 m thick) is more articulated and a very synthetic report is given here. The bottom is made up by a breccia level with *S. bubonius* and *Patella ferruginea* followed by a marine conglomerate on which a continental series is superposed. The continental deposits are mainly archaeological, and are sealed at the top by a tephra level. The discovery of a paleo-surface inhabited by humans within the continental levels is noteworthy. The occurrence of the warm molluscs assemblage in the basal level suggests that the deposition of this series also started after the Eutyrrhenian high-stand.

**Archaeology.** Trench F is particularly interesting for the presence of structures which organize the living space, both horizontally as well as vertically, in between them. These structures, rather rare in Middle Palaeolithic, testify to a settlement organization, with clean areas separated from spaces with waste products accumulation. A small stretch of wall made up of large stalagmite intentionally resting on a pile of stones, bones and ground separates in this area the cave atrium from a shallow tunnel, a sort of a little cave into the cave. Inside the tunnel there is an accumulation of stones, pebbles and pieces of concretion, lithic tools and bones along the two lateral walls; the central band is almost

totally free of materials and completely free of charcoal. The lithic industry is characterized by the prevalence of calcareous knapped pebbles over the debitage products, only half of which being in flint materials. Just in the outside zone, in the both areas A and F, retouched implements (mostly lateral convex scrapers and transversal straight scrapers) appear together with flakes and more numerous cores. The Levallois system is present. The raw material used by prehistoric men was mainly flint pebbles but also jasper or quartzite are utilised; a small part of lithic industry is made out of bad quality flint lists, stratified in the limestone of the territory near the cave.

**Vertebrates.** Mammals, birds, reptiles and amphibians remains have been found, but only mammals have been studied in the details. Trenches A and F yielded a fairly diversified large mammal assemblage. The ruminants are common in both trenches and include ibex, fallow deer, red deer and bison, while roe deer and chamois are present in trench A only. The occurrence of wild boar is sporadic. Scant remains document the occurrence of the straight tusked elephant and of a hippo in trench F, while a single specimen documents the forest rhino in trench A. Carnivores are rare: only the brown bear is represented by skeletal remains, while the probable occurrence of a hyena is documented by one coprolite found on the human occupational surface in trench F. Large mammal remains are concentrated within the archaeological levels. Small mammals are represented by more numerous remains and document a well diversified assemblage. The long tailed field mouse (*Apodemus sylvaticus*) is the dominant taxon. The water vole and the Savi ground vole are present in both trenches, while the bank vole (*Clethrionomys glareolus*) is present only in trench F. In trench A some pine voles (*Terricola subterraneus*) have been identified. The fat dormouse (*Glis glis*) occurs in both trenches but it is more represented in the lower levels of trench F associated with the common dormouse (*Muscardinus avellanarius*), while the garden dormouse (*Eliomys quercinus*) is present only in trench A. Among insectivores three species of mole, the lesser white toothed shrew (*Crocidura suaveolens*) and the bicoloured shrew (*Crocidura leucodon*) have been recognised in trench F, while only *C. suaveolens* and *Talpa europaea* have been so far identified in trench A. The hedgehog is a sporadic occurrence in trench F only. Eventually some bats also occur, which have still to be studied in the details. The changes in the relative abundance of small mammal taxa indicates a forested environment in the lower part of the continental deposits of trench F, as it is documented by the abundance of dormice and the occurrence of the bank vole. The landscape evolves towards more open conditions (perhaps related to more arid climate) in the upper portion of the F sequence. The occurrence of the hippo and the abundance of fallow deer remains confirms the temperate–warm climate in the lower deposits. The lower series of trench A lacks vertebrate remains, while vertebrates occur in the upper part of the younger sequence. The large mammal assemblage is here dominated by the ibex followed by the fallow deer and the roe deer. The sporadic occurrence of the chamois is noteworthy. Among small mammals the Savi ground vole is abundant, while the dormice are poorly represented. This assemblage seems to indicate a landscape that was locally less forested and cooler climatic conditions, that are likely posterior to the warmer forested environment in which the F trench series was deposited.

**Palinology.** Pollen was studied in both sequences of trench A (published data) and the analysis of trench F is in progress. In the lower A sequence pollen showed a forest landscape (*Abies*, *Juniperus* type, *Pinus*, deciduous broadleaves, *Quercus ilex* and other Mediterranean trees) and some shifts of vegetational belts possibly forced by minor climatic oscillations. In the upper A sequence pollen suggest that more significant climatic-depending vegetation changes had occurred and forest clearance was in progress. At the top the climate shifted towards cooler conditions and a dry steppe-like vegetation spread in the landscape.

**Conclusions.** The Grotta Grande record can be positioned within the climatic fluctuation posterior to the warm interglacial OIS 5e peak. Deposit of this interval are rather uncommon even in the Italian peninsula and therefore the integration of sedimentological, archaeological, faunal and palinological data provides an important piece of information to the puzzling reconstruction of the Late Pleistocene Mediterranean environments before the onset of the glaciation.