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# Geoheritage: Protecting and Sharing

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# **ProGEO – SIGEA**

## **Geoheritage: Protecting and Sharing**

Proceedings and fieldtrip guides of the  
**7<sup>th</sup> INTERNATIONAL SYMPOSIUM ProGEO ON THE CONSERVATION  
OF THE GEOLOGICAL HERITAGE**

Edited by  
**MARIO BENTIVENGA & FRANCESCO GEREMIA**

Bari, Italy  
24-28 September 2012

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*Redazione*

SIGEA: tel./fax 06 5943344  
Casella Postale 2449 U.P. Roma 158  
info@sigeaweb.it  
www.sigeaweb.it

*Progetto grafico e impaginazione*

Angelo Perrini  
angelo\_perrini@fastwebnet.it

*Pubblicità*

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**In copertina:** Il promontorio di Capo Colonna Area calanchiva di Aliano

# Natural values and heritage of a karst system: the Pozzo Cucù cave at Castellana-Grotte (Apulia, Italy)

**KEYWORDS: KARST, CAVE, PROTECTION, APULIA**

## ABSTRACT

The Pozzo Cucù cave was discovered in the territory of Castellana-Grotte (SE Murge, Apulia) in late 1980 during the foundation works for a building at the northern outskirts of town, in an area where significant subsurface karst features were already known. The karst system (indicated as PU 1200 in the Regional register of caves, managed by the Apulian Speleological Federation) soon appeared as one of the longest caves in Apulia, with over 1 km of development, mostly through sub-horizontal passages located at depth of some 20 meters from the ground surface. It consists of two main branches, showing a great variety of underground karst morphologies, and several elements of interest for karst research. For instance, due to presence of many species of importance for biospeleology, the cave was declared in 1995 a Site of Interest for the European Community (SIC, site code IT9120010). In this paper, we briefly describe the main features of Pozzo Cucù karst system, in the attempt to highlight its values as a natural heritage to protect and safeguard. On the other hand, we also mention some of the many episodes of mismanagement that have characterized the site in the last decades, thus testifying to an overall very low attention paid by the local administrators to this remarkable site of the Apulian karst.

Karst settings are well known as very delicate and fragile environments, which may often suffer severe damage due to anthropogenic activities that do not take into any account the peculiarity of karst, and the significance of the natural resources contained therein (Williams, 1993; Parise & Gunn, 2007). Caves are the most typical expression of karst: beside representing the unknown, and in some ways the mystery of the fascinating underground world, karst caves have gained in the last decades a primary role for many branches of science. Being sites where it is possible to preserve sediments that at the surface are being eroded and/or canceled

by mass wasting processes and erosion (Sawosky & Mylroie, 2004), caves may contain remarkable deposits and materials, and are nowadays considered very important for researches in many fields (archaeology, paleontology, anthropology, etc.), besides having become crucial for the development of studies on climate changes.

Apulia region of southern Italy hosts many sites of remarkable importance within the large number (over 2,100 caves; data managed by Apulian Speleological Federation, FSP, website <http://www.fspuglia.it/>) of identified and explored natural caves. Among these, the karst system of Pozzo Cucù, in the municipality of Castellana-Grotte (Low Murge sub-karst region), is one of the most valuable. Pozzo Cucù cave was discovered by chance in late 1980, during the foundation works for a building at the northern outskirts of town. It soon appeared as one of the longest caves in

Apulia, with over 1 km of development, mostly through sub-horizontal passages located at depth of some 20 meters from the ground surface.

Pozzo Cucù cave is located in an area where several other subsurface karst features are present, starting from Grotta della Jena (PU 7 in the register of natural caves by FSP), where many palaeontological remains were found (Dell'Erba, 1881), including a hyaena skull, from which the cave takes name. Further, Grotta della Jena has also an historical importance, since it was the first show cave in Apulia: soon after discovery of the cave, the owner allowed entrance by means of wooden ladders, with a fee of 25 cents. Two other caves are located nearby (Fig. 1): Grave Gentile (PU 11), a 35-m deep vertical shaft, and the Inghiottitoio di Chiancofredo (PU 806). This latter has been clogged since

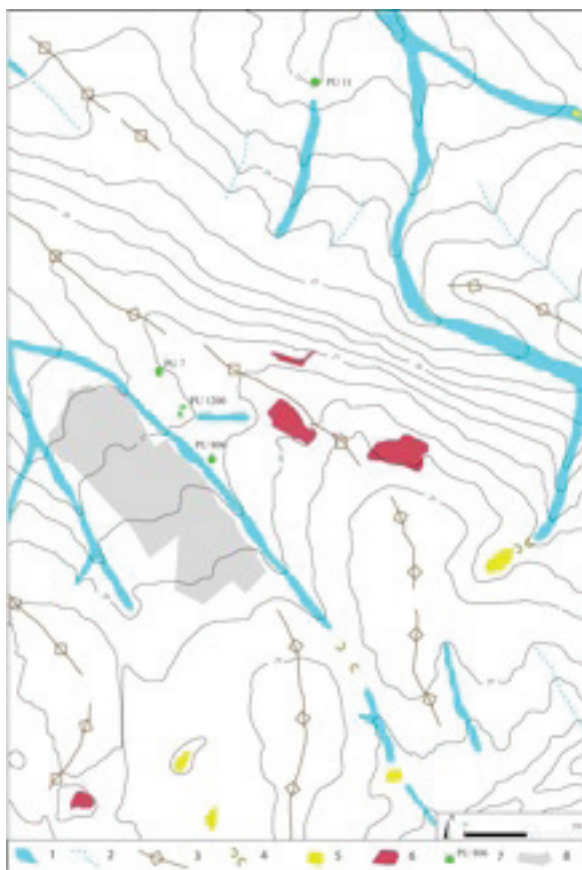


Figure 1 – Geomorphological map of the Pozzo Cucù area, showing also the other caves mentioned in the text. Key: 1) karst valleys (lame); 2) temporary water lines; 3) ridge; 4) morpho-logic saddle; 5) doline; 6) quarry; 7) cave entrance; 8) urban area.

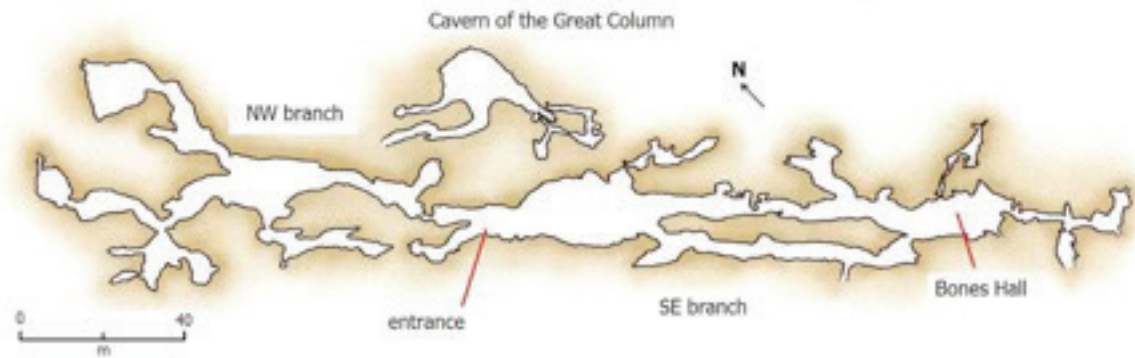


Figure 2 – Plan view of the Pozzo Cucù cave (PU 1200). Data after FSP register of natural caves.

many years, and unfortunately it is no more accessible.

The karst system of Pozzo Cucù (PU 1200) consists of two main branches, respectively directed toward the SE and the NW, and of some other rooms (named Cavern of the Great Column), that are only a few meters from the main cave, but which direct connection has not been found so far (Fig. 2). The SE branch is characterized by large caverns, which size mostly derives from frequent instability phenomena, as shown by the widespread breakdown deposits marking the cave floors. These deposits mask for most of the development of the branch the real pavement of the cave, located some meters below. The terminal part of the SE branch is characterized, before the very final sectors consisting of low and narrow conduits, by one of the largest caverns in the system, the Bones Hall: here, one of the natural accesses to the cave was located, as shown by the presence of a massive debris cone, with diffuse bones and fauna remains, most of which are covered by calcite deposits and flowstones, and fully encompassed in the rock debris.

The NW branch, on the other hand, is characterized by several low passages, corresponding to past phreatic conduits devel-

oped along the sub-horizontal bedding of the limestones, with intervening wider rooms. At the terminal NW part of the system, landslide deposits stop any further continuation.

As from the brief description above, it appears that the Pozzo Cucù system presents a great variety of underground karst features, and, due to its length, can be accounted in the first-rank group of caves in Apulia. In addition to this, many other points highlight the remarkable value of the cave: first and foremost, the high content of paleontological remains. The debris cone in the Bones Hall is rich of fragments and whole pieces of bones that have never been studied in detail so far, but could contribute to put light on the fauna that lived in this sector of Murge during the past epochs. The remains are not limited to the Bones Hall, however: in the first sector of the SE branch, a complete skeleton (Fig. 3) has been found nearby the southern wall. Analysis of the skeleton brought to its identification as a wild cat (Montenegro et alii, 2005). All these data, considered together with those from Grotta della Jena and other sites in Low Murge as well, could be extremely useful in the reconstruction of the palaeo-climate and palaeo-environment of this sector of Apulia in the past.



Figure 3 – The complete skeleton of the wild cat, found in the SE branch of Pozzo Cucù karst system.

Since discovery of the system, the Pozzo Cucù cave was soon considered very important as concerns biospeleology. The first researches carried out at the site pointed out the presence of several species, such as the Orthoptera *Troglophilus andreinii* and Coleoptera as *Italodytes stammeri* and *Batrissodes oculatus* (De Marzo & Vit, 1982). Due to these species, the cave was declared in 1995 a Site of Interest for the European Community (SIC, site code IT9120010).

From the surface karst geomorphology standpoint, the Pozzo Cucù karst system is located in a typical sector of Low Murge (Fig. 1; Parise, 1999, 2011), showing dolines and slight karst valleys (locally called lame, see Parise et alii, 2003), that become interested by surface runoff on the occasion of the main rainfall events, remaining otherwise dry for the rest of the time. Water infiltrates underground at the many swallow holes, as well as through the network of discontinuities in the carbonate rock mass. Any action performed at the surface may have serious environmental consequences for the underground karst ecosystem.

Over the last decades, many episodes of mismanagement and pollution have been registered at Pozzo Cucù, which is quite surprising since the site is included in the list of protected sites of the European Community, as before recalled. Lack of environmental consciousness and scarce attention paid by the local authorities to safeguard and protect the natural resources repeatedly put Pozzo Cucù cave at risk, as for instance occurred in 2005 when works were realized destroying the natural landforms nearby one of the terminal part of the karst system. This was not the only episode to be recorded in the Castellana-Grotte municipality, a territory which should, on the other hand, tribute much greater attention to the underground world, since it is exactly thanks to the Castellana caves (only some 1,5 km from Pozzo Cucù) that this small town of the Murge has become worldwide known. Unfortunately, lack of enforcement of existing laws and regulations, combined with the factors mentioned above, brought to an overall very



Figure 4 – One of the most beautiful sectors of the Pozzo Cucù karst system, highly decorated with speleothems and calcite deposits (photo: V. Martimucci).

low degree of protection of the karst settings, and to high levels of disturbance exerted by man on the natural landscape (Calò & Parise, 2006; North et alii, 2009). Notwithstanding this, the Pozzo Cucù karst system still presents remarkable features (Fig. 4) that might be exploited from a scientific standpoint, but that also contribute to attract more tourists and visitors in the area, especially if linking

the factors of interest here present to those that characterize the Castellana show caves.

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