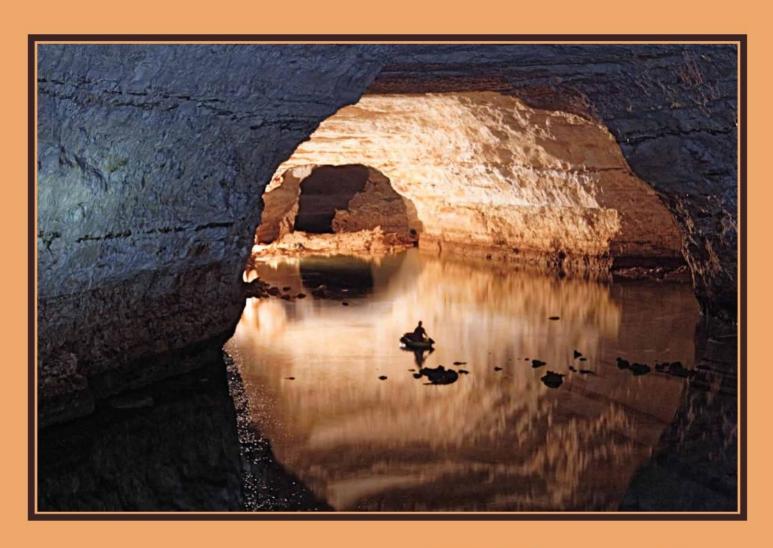


# Proceedings of the

International Congress of Speleology, Sydney 2017

Volume Two







### 17th INTERNATIONAL CONGRESS OF SPELEOLOGY

Sydney, NSW, Australia

July 23–29, 2017

### Proceedings

**VOLUME 2** 

**Edition 2** 

Edited by
Kevin Moore
Susan White
2017

## 17th INTERNATIONAL CONGRESS OF SPELEOLOGY

Sydney, NSW, Australia

July 23-29, 2017

**Proceedings** 

VOLUME 2

**Edition 2** 

Produced by the Organizing Committee of the 17th International Congress of Speleology.

Published by the Australian Speleological Federation Inc and Speleo2017 in the co-operation with the International Union of Speleology.

Design by Kevin Moore

Layout by Kevin Moore

Printed in Victoria Australia

The contributions were assisted with language and edited. Contributions express author(s) opinion.

Recommended form of citation for this volume:

Moore K., White S. (Eds), 2017. Proceedings of the 17th International Congress of Speleology (Ed. 2), July 23–29, Sydney, NSW Australia

Volume 2, Australian Speleological Federation Inc. Sydney.

ISBN 978-0-9588857-0-6

© 2017 Australian Speleological Federation Inc,

This work is licensed under Creative Commons Attribution ShareAlike International License

(CC-BY-SA). To view a copy of this license, visit https://creativecommons.org/licenses/by/4.0/.

Individual Authors retain copyright over their work, while allowing the conference to place this unpublished work under a Creative Commons Attribution ShareAlike which allows others to freely access, use, and share the work, with an acknowledgement of the work's authorship and its initial presentation at the 17th International Congress of Speleology, Sydney NSW Australia.

Cover photo: Keir Vaughan-Taylor on Lake 2, Koonalda Cave, Nullarbor Plain. (Photo by Kevin Moore)

Back Cover: The Khan and Beagum in Kubla Khan Cave Tasmania (Photo by Garry K. Smith)

#### Hypogea 2015 and 2017: a Short, but very Intense, History

Mario Parise<sup>1</sup>, Roberto Bixio<sup>2</sup>, Carla Galeazzi<sup>3</sup>, Ali Yamac<sup>4</sup>

Affiliation: <sup>1</sup>Department of Earth and Environmental Sciences, University "Aldo Moro", Via Orabona 4, 70125 Bari, Italy,

mario.parise@uniba.it; National Research Council, IRPI, Bari, Italy

<sup>2</sup>Centro Studi Sotterranei, Genova, Italy; roberto.bixio@gmail.com

<sup>3</sup>Egeria Centro Ricerche Sotterranee, Rome, Italy; carla.galeazzi3@alice.it

<sup>4</sup>OBRUK Cave Research Group, Istanbul, Turkey; ayamac@gmail.com

#### Abstract

In March 2015 at the National Research Council headquarters in Rome, Italy, the congress Hypogea 2015, an International Congress of Speleology in Artificial Cavities, was held. Organized by the Commission on Artificial Cavities of the International Union of Speleology (UIS) in co-operation with the local associations Egeria, ASSO and Roma Sotterranea, and under the auspices of UIS and the Italian Speleological Society (SSI), the congress was very successful. There were over 70 contributions from 11 countries that were organized in 8 different thematic sessions. As a result, a voluminous proceedings book of over 550 pages was printed and distributed at the congress, edited by Mario Parise, Carla Galeazzi, Roberto Bixio and Carlo Germani. The Italian experience left an indelible mark on the cavers interested in artificial cavities, and soon a proposal for organization of the congress in 2017 came from Turkey, in the remarkable landscape of Cappadocia. The work of preparation for the congress started soon after Hypogea 2015, and at the time of writing (December 2016) we are about to finalize the proceedings. These, once again, will be distributed as a nice volume that we hope will be another reference point for researches and activities in artificial cavities. In this contribution we summarize the activity so far completed, from the initial idea of Hypogea 2015, to the 2017 congress in Cappadocia. Aimed at moving further ahead, looking toward Hypogea 2019 . . . . . . .

Keywords: artificial cavities, UIs Commission, Hypogea

#### 1. Introduction

Artificial cavities, that is the cavities excavated and realized by man during past epochs, are a long-time object of interest for a variety of scholars, which is not limited to cavers but also includes scientists and researchers (archaeologists, to historians, anthropologists, etc.), not used to the underground environment. Studying artificial cavities means opening a window on the history of the sites, since in many cases they have been the first place where human beings lived and performed their cults, or where they kept livestock, stored grains and other groceries. Actually, there are many different types of artificial cavities, and related sub-categories, as shown in the Typological Tree, the classification initially proposed by the Commission of Artificial Cavities of the Italian Speleological Society, and later approved also at international level by the corresponding Commission of the International Union of Speleology (UIS; Galeazzi, 2013; Parise et al., 2013).

This latter Commission since 2009 (year in which appointment of new president and members were carried out) have been particularly active, promoting a series of meetings, workshops and activities. For instance, it is worth to recall here the workshop organized in Turin (Italy) on May 18-20, 2012, dedicated to "Classification of the typologies of artificial cavities in the world". The workshop consisted in 11 invited lectures covering several aspects of the classification of artificial cavities, plus additional 10 posters, and a final discussion devoted to establishing a general classification of artificial cavities. The workshop proceedings have been published in 2013 as a special issue of the journal Opera Ipogea (Parise, 2013).

In 2013, on the occasion of the 16<sup>th</sup> International Congress of Speleology at Brno (Czech Republic), the UIS Commission proposed a specific session, entitled "Speleological Research and Activities in Artificial Underground", which was very successful, receiving 18 abstracts from 10 different countries worldwide.

Apart from these very successful activities, most of the work by the UIS Commission on Artificial Cavities was focused in the last years on the organization of a specific international congress. The chosen name was HYPOGEA, which well represents the underground world in which we are deeply interested. Two long years of preparation eventually allowed us to host the International Congress of Speleology in Artificial Cavities Hypogea 2015.

Organized by the UIS Commission on Artificial Cavities, in co-operation with the local associations Egeria, ASSO and Roma Sotterranea, and under the auspices of UIS and of the Italian Speleological Society, the congress was held in March 2015, at the National Research Council headquarters in Rome, Italy. Choice of the venue was straightforward: the city of Rome is worldwide famous for its extraordinary richness in history, with a huge number of testimonies present below the present city, in the forms of a great variety of artificial cavities, including the remains of the several km-long aqueducts built to supply with water the town (Judson and Kahane, 1963; Blackman, 1979; Hodge, 1992; Kolowski Ostrow, 2002). Further, during the last decades the general attention on artificial cavities in Italy has greatly increased, due to a number of



Figure 1. Logo and banner of the Hypogea 2015 Congress.



Figure 2. Hypogea 2015: shots taken during the sessions, held at the prestigious facility of the headquarters of the National Research Council of Italy in Rome, in the Marconi Hall. To the lower right corner, a moment of the "invasion" by the Roman gladiators.

problems linked to occurrence of sinkholes caused by ancient quarries and mines in several regions (Parise & Gunn, 2007; Parise, 2013, 2015; Parise & Vennari, 2013); thus, also from the standpoint of civil protection issues, the topic has become of wide interest.

Hypogea 2015 received over 70 contributions from 11 countries, that were organized in 8 different thematic sessions, covering the following issues:

- · Hypogean civil dwellings;
- · Hydraulic underground works;
- Mining works;
- Religious Cult structures;
- · Archaeological studies;
- · New technologies for artificial cavities;
- Typologies, symbols, terms, and Cadastre of Artificial Cavities;
- Miscellaneous.

150 scholars from 15 countries attended the event. The official sessions were also enriched by accompanying events, such as a peaceful "invasion" of the congress hall by a group of ...... Roman gladiators! It was an exhibition (Fig. 2) organized thanks to availability of an historical group, Gruppo Storico Romano, specialized in historical reconstruction and in the use of ancient clothes, outfits and weapons used during the Roman age.

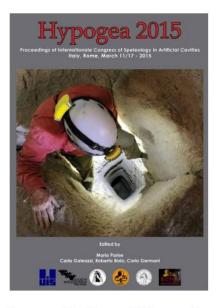


Figure 3. Cover page of the Hypogea 2015 proceedings.

A voluminous proceedings book of over 550 pages (Fig. 3), edited by Mario Parise, Carla Galeazzi, Roberto Bixio and Carlo Germani, was printed and distributed at the congress, containing the many interesting contributions presented (Parise et al., 2015).

Further, several field trips were organized, both during the days of the congress and as post-congress excursion (Fig. 4). In detail, the field trip in Rome gave the opportunity to "travel" during 23 centuries (from the 6th century B.C. to the 17th century A.D.), exploring arcaic water drains, mithraeums, ancient aqueducts, tuff mines, ancient roman houses, nimphaeus and inquisition cells. The post-congress excursions, on the other hand, covered sites as the Alban Hills and Narni. The Alban Hills, located a few kilometers south-east from Rome, in an area that was historically inhabited by Latin populations and by ancestors of the Romans, are extremely rich in underground sites, which include, among the others, the inlet of the Albano drain, some Nymphaeus, and the Catacomb of San Senatore at Albano. Narni, in Umbria region, is a town which preserves significant monuments of the Roman period, such as an imposing bridge built by Augustus and the long acqueduct named Formina. Destroyed during barbarian invasions, the town reached its maximum splendor in the Middle Ages, as shown by the urban characteristics and by several historical buildings. At Narni, the excursions were focused on the Formina Aqueduct and the undergound of the St. Domenico Church, including the Inquisition cells. Overall, Hypogea 2015 was a great success, which definitely went beyond any positive expectation.



Figure 4. Images of some of the field trips organized for the Hypogea 2015 edition.

The Italian experience left an indelible mark on the cavers interested in artificial cavities, and soon a proposal for organization of the congress in 2017 came from Turkey, in the remarkable landscape of Cappadocia (Fig. 5). The work of preparation for the congress started soon after Hypogea 2015, by opening a dedicated website aimed at informing interested people, and at collecting the abstracts and full papers to be submitted to the congress (Fig. 6). At the time of writing (February 2017) we are about to finalize the proceedings. These, once again, will be distributed as a nice volume that we hope will be another reference point for researches and activities in artificial cavities.

As with Rome for the first edition of Hypogea, the choice of Cappadocia for the 2017 congress was dictated by the enormous relevance that this area of central Turkey has for the history of artificial cavities. Thousands of man-made caves, belonging to about all the categories in the artificial cavities classification, are distributed in this region, with some of the most famous worldwide underground settlements. Studied since several centuries as one of the most interesting sites for such features, Cappadocia never ceases to show new and unexpected sites of interest for the speleology in artificial cavities. Notwithstanding the difficult political situation, and the widespread attacks and problems in the last few years, we hope that the 2017 congress will be a good occasion to strengthen the relationships started in Rome. Aimed at moving further ahead, looking toward Hypogea 2019 . . . . .



Figure 5. The poster prepared to advertise the Hypogea 2017 Con gress in Cappadocia.



Figure 6. The banner of the Hypogea 2017 Congress, at the website http://hypogea2017.com.

#### References

Blackman DR, 1979. The volume of water delivered by the four great aqueducts of Rome. *Papers of the British School at Rome*, **46**.

Galeazzi C, 2013. The typological tree of artificial cavities: a contribution by the Commission of the Italian Speleological Society. *Opera Ipogea*, **1**, 9–18.

Hodge AT, 1992. Roman aqueducts and water supply, London

Judson S, Kahane A, 1963. Underground drainage ways in southern Etruria and northern Latium. *Papers of the British School at Rome*, **31**, 74–99.

Koloski Ostrow AO (ed.), 2001. Water use and hydraulics in the Roman city. *Archaeological Institute of America, Colloquia* and Conference Papers 3, Kendall/Hunt Publication Co., 131 p...

Parise M (Ed.), 2013. Proceedings of the international workshop on speleology in artificial cavities "Classification of the typologies of artificial cavities in the world" (Torino/Italy – May 18-20, 2012). Opera Ipogea, 1/2013.

Parise M, 2013. Recognition of instability features in artificial cavities. In: Filippi M, Bosak P (Editors), *Proceedings* 16<sup>th</sup>

International Congress of Speleology, Brno, 21-28 July 2013, 2, 224-229.

Parise M, 2015. A procedure for evaluating the susceptibility to natural and anthropogenic sinkholes. *Georisk*, **9**(4), 272-285, DOI:10.1080/17499518.2015.1045002.

Parise M, Gunn J, (Eds.), 2007. Natural and anthropogenic hazards in karst areas: Recognition, Analysis and Mitigation. *Geol. Soc. London, Special Publications*, **279**, 202.

Parise M, Vennari C, 2013. A chronological catalogue of sinkholes in Italy: the first step toward a real evaluation of the sinkhole hazard. In: Land L, Doctor DH, Stephenson B (Eds.), *Proc. 13<sup>th</sup> Multidisciplinary Conf. on Sinkholes and the Engineering and Environmental Impacts of Karst, Carlsbad (New Mexico, USA)*, 6-10 May 2013, National Cave and Karst Research Institute, 383-392.

Parise M, Galeazzi C, Bixio R, Dixon M, 2013. Classification of artificial cavities: a first contribution by the UIS Commission. In: Filippi M, Bosak P (Editors), *Proceedings* 16<sup>th</sup> International Congress of Speleology, Brno, 21-28 July 2013, **2**, 230-235.

Parise M, Galeazzi C, Bixio R, Germani C, (eds) 2015. Proceedings of the International Congress in Artificial Cavities "Hypogea 2015". Rome, March 11-17, 2015, ISBN 978-88-89731-79-6, 543 pp.

