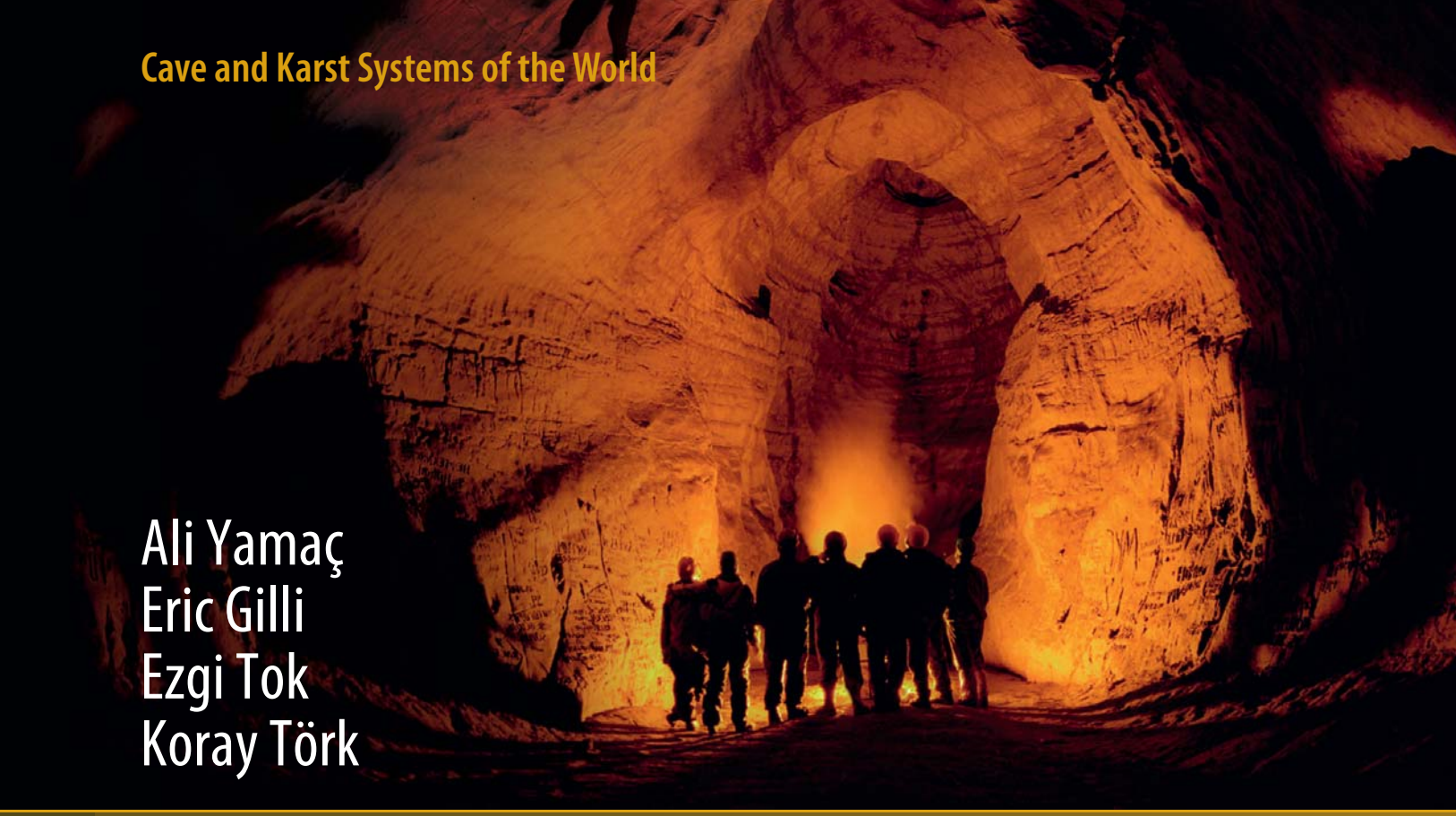
Cave and Karst Systems of the World



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Caves and Karst of Turkey—Vol. 1

History, Archaeology and Caves

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Preface

For the first—almost—three decades of Turkish caving, there were only two speleology organizations in Turkey: Cave Research Association (MAD) established by Dr. Temuçin Aygen in 1964 and Boğaziçi University Speleological Society (BÜMAK) established in 1973.

On the other hand, during those dates, speleology was accepted as both a sport and a discipline all around the world for a long time. Apart from the works and studies carried out in other countries, even in Turkey, there were numerous speleological and biospeleological researches carried out by foreigners years ago or ongoing on those dates. Various foreign explorers and academicians had already published numerous articles and even books about the caves of Turkey.

After all these years, the number of speleological associations in Turkey has reached 18 today and numerous different associations, including the governmental organizations, are actively caving. In the preface of proceedings of the 1. National Speleology Symposium in 1990, Prof. Mustafa Aktar had stated that "Speleology, by extending to numerous areas such as sport, art, and tourism during its development process which started with science has achieved a cultural structure. And in Turkey, the number of people involved in this area as a profession or as an amateur interest has increased and organizations have emerged."

Indeed, with the efforts of all these new associations and organizations, over the years, hundreds of new caves have been explored and researched. Not only with the newly explored caves, but also with the new branches of the previously explored caves, the lengths and depths of the caves constantly change each year. Even during the writing phase of this book, we have witnessed the change of the list of the longest and deepest caves.

Independent from all these explorations performed, numerous different scientific studies are being carried out in recent years related to the caves of Turkey. The works and studies in the areas of cave biology and paleoclimatology, which have gained a huge acceleration especially in recent years, are a sign of the bright and promising future of the scientific cave studies in Turkey. Various researches are being carried out in recent years regarding these issues, and numerous articles have been published. Likewise, in the area of cave archaeology, rather than old-style rough researches, precise scientific works and studies are being carried out. Due to the rapidly developing new techniques, not only in the archaeological excavations but also in the dating and DNA tests, striking results are being achieved.

This book explains the geology, hydrogeology, and exploration stories of 45 caves of Turkey, chosen among the thousands of caves explored and researched until now. Additionally, the findings of 20 caves chosen among 90 archaeological caves researched or excavated until now are explained in a separate chapter.

However, as explained comprehensively in Chap. 4 of this book, the karstic area of Turkey is larger than the total area of numerous countries and for a country with such a large karstic area, neither the number of the speleological associations existing today, nor the number of explorations and scientific works carried out is sufficient. This country, which has tens of thousands of unexplored caves, requires a significant acceleration in the areas of both scientific

and sportive cave explorations and cave archaeology and more importantly needs academic organizations to carry out karst and cave works and studies.

We wish that this book enlightens the immensity of the work required to be carried out and hope that it will form a basis for the new researches.

Istanbul, Turkey

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About the Authors

Ali Yamaç is a Turkish speleologist. He was born in 1957 and caving since 1976. He had explored and surveyed hundreds of caves during those years, of which some are among the deepest and longest caves of Turkey. He was President of Speleological Federation of Turkey during 2007–2009 and President during the establishment of three different caving organizations. He was the leader of the team who had prepared the Cave Inventory of Turkey. In addition to his natural cave explorations, as a part of his artificial cave projects, he had explored and surveyed numerous underground cities and rock dwelled settlements around different regions of Turkey.

Eric Gilli is a French karstologist. He was born in 1957 and studied geology and physical geography in Nice, Paris, and Aix-Marseille. Formerly a consultant in Nice, he has been since 2001 Professor at the Geography Department at the University of Paris 8. His main topics are hydrogeology, karst, caves, groundwater, palaeo-environments, earthquakes, tsunamis, and natural disasters. He has also been involved in shipwreck explorations and troglodyte studies. His international studies have taken him to many parts of world.

Ezgi Tok is a Turkish speleologist. Her research is focused on microbial life in cave environments. She explored several caves all over Turkey to reveal the microbial diversity, the ecosystem functioning of microbial populations, and their relation with the psychochemical conditions within the cave ecosystem. She had been caving since 2007 and joined several national and international speleological expeditions in Turkey and foreign. She also had surveyed and mapped several caves of Turkey; among them İnsuyu Cave, which is the longest, and Kocain Cave, which is the largest chamber of Turkey, are especially important.

Koray Törk is a speleologist and karst hydrogeologist working in most of the karst areas of Turkey. He jointed to Cave Research Association (MAD) as a caver and then have been Member of Mineral Research and Exploration of Turkey (MTA) as a speleologist. He has been working predominantly on karst base natural hazards (sinkhole collapse/obruk) and cave protection for more than ten years.

Abbreviations

AKUMAK	Akdeniz University Caving Club
ASPEG	Anatolian Speleology Group
BSU	Balkan Speleological Union
BUMAD	Boğaziçi International Speleology Association
BÜMAK	Boğaziçi University Speleological Society
CMN	Club Martel de Nice
FSE	European Speleological Federation
ITUMAK	Istanbul Technical University Speleology Club
LUSS	Leicester University Speleological Society
MAD	Cave Research Association
MTA	General Directorate of Mineral Research and Exploration
OBRUK	Obruk Cave Research Group
SCP	Speleo Club de Paris
TMF	Speleological Federation of Turkey
UIS	International Union of Speleology

Speleology in Turkey

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Abstract

Excluding individual studies of some researchers, speleological researches in Turkey started very late, in the 1960s, and they were largely conducted by foreign cavers until a very recent date, the 1980s. In this period and after, numerous caves were found in the Taurus Mountains through the explorations by foreign cavers. The current state of Turkish caving that accelerated only after the 1980s is not enough for a country with such a large karstic area. There are only 18 caving organizations in Turkey, and they generally work without a long-term plan and can not conduct full regional surveys. Despite these negative facts, about 3000 caves were researched and surveyed in the past 40–50 years.

1.1 Precursors

The first known cave research in Turkey is conducted by Dr. Abdullah Bey in Yarımburgaz Cave, near İstanbul. He was born in Vienna in 1801 as Karl Eduard Hammerschmidt. As a multidisciplinary intellectual, Hammerschmidt was an Austrian geologist, entomologist, and physician. After getting his law degree from the University of Vienna in 1827, he studied medicine with an emphasis on anesthesiology. He became a medical doctor in 1837 and worked both as a zoology teacher and a surgeon at the University of Vienna (Fig. 1.1).

He joined the uprising also known as the Vienna Revolution in 1848. After the suppression of the uprising, he entered Turkey along with other revolutionaries from Hungary and was employed as a teacher of medicine, zoology, and mineralogy in the medical school of Istanbul. When Austria demanded Turkey to deport him, he was transferred to Damascus where he worked as a hospital physician. In this term of his life, Hammerschmidt converted to Islam and took on the name "Abdullah Bey." He served in the Turkish army during the Crimean War.

In 1862, he joined the faculty of medicine in Istanbul, teaching geology, mineralogy, and zoology. He founded the Natural History Museum of the Imperial Medical School of Constantinople, with many fossils he gathered around Istanbul over many years. One of the new species found among these fossils was given the name "*Cryphaeus abdullahi*." He was among the founders of the Turkish Red Crescent. He died in 1874 in Istanbul. In his short article, "Die Umgebung des See's Kütchücktschekmetché in Rumelien" which was published in the 12. issue of "Verhandlungen der k.k. Geologischen Reichsanstalt," Abdullah Bey explains the examinations he performed in Yarımburgaz Cave near Istanbul. In his article, Abdullah Bey, who found the Yarımburgaz Cave while performing geological research in the area, explains the chambers, the steps, the structure resembling an altar stone, and the arched cells carved in the rocks found at the cave entrance. He roughly gives the measurements of this area and writes about thinking of this place to be a living quarter or a secret meeting place for people in ages past. Walking a few hundred steps in the main gallery, Abdullah Bey explains the speleothems he encounters in detail (Bey, 1869).

Three years after the publication of this first article of his, Abdullah Bey's second article named "Études Géologiques sur les Environs de Constantinople. Yarym-Bourgas, Macri-Keuy, Sary-Keuy" was published in Gazette Médicale d'Orient. This second article is quite different from the previous one and almost completely focuses on geology. He writes about having visited the Yarımburgaz Cave again during the three years between his articles and notes having traveled 250 m into the cave taking measurements and examining rock formations, even though he could not have reached the end of the cave. He writes that the area was composed of Miocene old limestone and he lists and names the fossils he finds in the area. He explains some of these fossils he

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