

SPELAEOLOGICAL INVESTIGATIONS NEAR BORSH, ALBANIA

by

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ABSTRACT

In August 2010 fieldwork was undertaken in the limestone hills surrounding Borsh, Southern Albania. Limited geological observations were made as the discovery of caves not geology was the primary object. A resurgence was identified but no sinks found. A fossil fragment was found and explored to a depth of 20 m. In general the area does not display much evidence of large interconnected cave systems. The modern drainage is likely to be very immature and fed mostly by percolation. Potential for future discoveries is probably limited.

INTRODUCTION

The town of Borsh is located on the Albanian Riviera approximately 30 km north of Sarande. It is surrounded by limestone hills and a river valley enters the sea on the Northwest side of the town. The Albanian Riviera was the focus of a reconnaissance expedition undertaken by three members of the Society in August 2010.

Geography

The area surrounding Borsh is dominated by N-S trending ridge lines with large numbers of dry and active stream beds draining the hills. The highest ground visited during this expedition was an 1,100 m high peak some 3 km to the East of Borsh. At this altitude the vegetation consists almost entirely of dry grass. There is almost no surface water.

Geology

The lithology of Southern Albania is dominated by the rocks of the Ionian zone. This broad zone begins with Evaporites overlain by shallow water platform carbonates that range in age from Late Triassic-Early Jurassic. Long successions of pelagic carbonates up to 4 km thick then follow. These are poorly dated but range between Mid Jurassic and Eocene in age. 4-6 km of Late Eocene-Early Miocene turbidites finish off the sequence.

The Ionian zone is dominated by large scale linear folding and by high angle reverse faults. This is the result of two main phases of deformation. The second, around the Miocene-Pliocene boundary led the thrusting of the Ionian zone over the Sazani zone to the East a thrust which is very close to the area of study.

The limestones exposed around Borsh in the area of study are Cretaceous, pelagic carbonates. As far as could be ascertained the rocks are devoid of fossils as would be appropriate for pelagic material. The rocks are thickly bedded and generally dip to the East at an angle of around 40° as can be seen at the entrance of Hallelujah Hole (Figures 2 and 3). It is thought that there may be extensive dolomitisation in the area although the expedition did not have the means to test this theory.

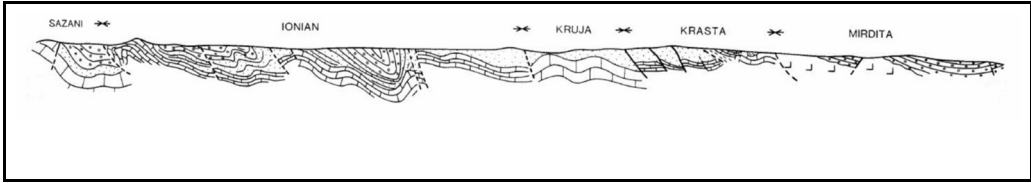


Figure 1. *Geological cross section of Southern Albania .
After Robertston and Shallo, 2000.*

This area is close to the Ionian-Sazani thrust zone. A probable thrust was identified at our base camp (N 40.07018° E 19.84924°). This was evidenced by a zone of poorly exposed shattered rock as well as a topographic low. Interestingly caves were located to the West of this thrust but not to the East.

Epikarst

The Epikarst is in general poorly developed although this varies across the area of study. The rocks to the East of the thrust at base camp displayed few karren forms other than some fracture controlled microfissures. To the West of this fault the rocks displayed more mature karren forms including micropits and solution runnels.

The hillside to the West of Borsh was examined once and was very different. There were areas of well developed clint and grike and small shafts, most of which were choked with boulders. I believe that this western area is probably in the Sazani lithological zone. The rocks of this zone are shallow water carbonates as opposed the those of the Ionian zone which are deep pelagic carbonates. Shallow water carbonates formed in the photic zone are likely to be more carbonate rich than deep water carbonates. This would go some way towards explaining the differing maturity of the epikarst.

CAVES

A small number of caves were logged of which one, Hallelujah Hole, was explored for a significant distance.

Hallelujah Hole (N 40.06345° E 19.86065°)

This cave is located at an altitude of 260 m in a shallow dry valley 300 m to the East of Borsh. A bedding plane entrance leads to a small boulder floored chamber. A short dig undertaken at the back of this chamber lead to a short passage. This passage closes down after a short distance but a slot in the floor leads to a well decorated 15 m pitch in a steeply dipping rift. This lands on a boulder floor which can be penetrated for a reasonable depth until the gaps between the boulders become too small.

The cave was entirely dry and although it probably takes some surface runoff after heavy rain it is not related to modern drainage. The entrance of the cave is bedding controlled and the passage beyond the dig is aligned along strike. The pitch however descends at 90° to the bedding and is most likely fault or joint controlled.

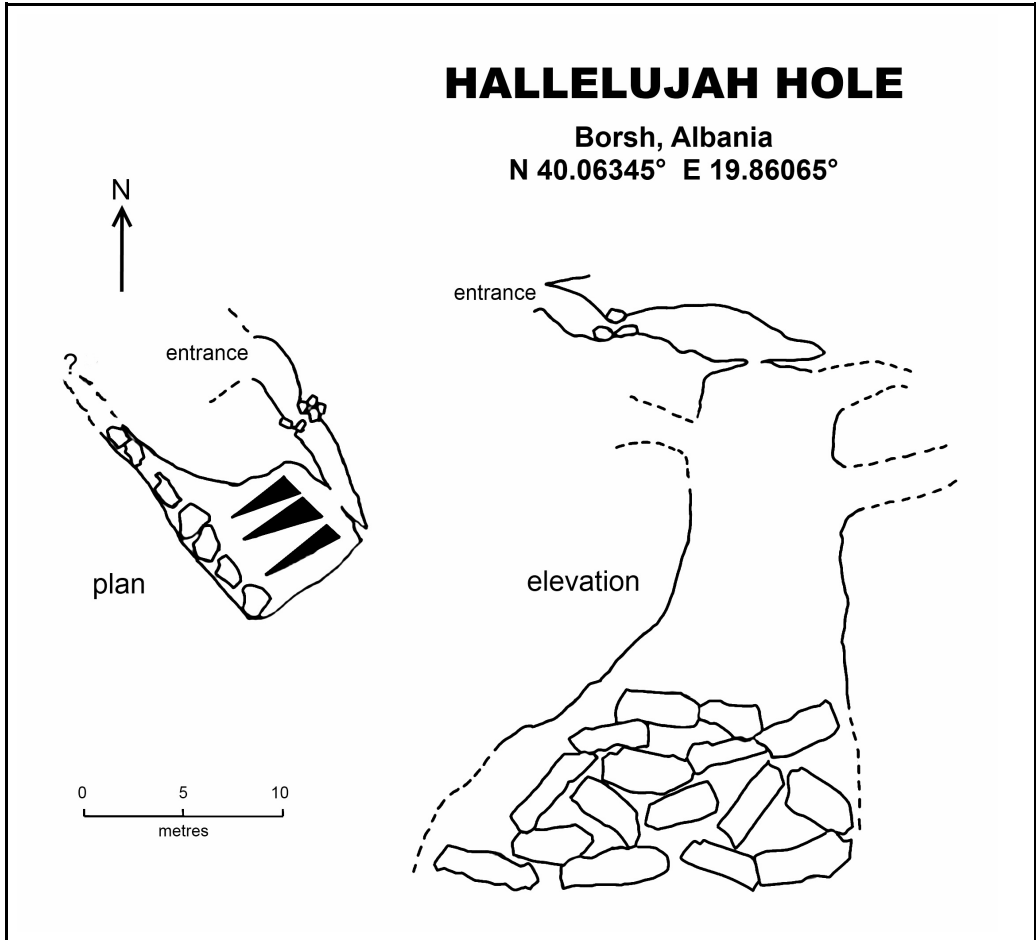


Figure 2. Sketch survey of Hallelujah Hole.

This discovery certainly proves the presence of caves within the area but does not prove the case for interconnected large scale cave systems at least in the context of modern drainage.

Stubborn Bloody Boulder Hole (N40.06671° E19.86038°)

This is a narrow rift in the side of an escarpment at an altitude of 324 m. The cave had a good outwards draft but was blocked by a large boulder.

Resurgence (N40.06196° E19.85816°)

This was located at an altitude of 114 m where a large quantity of water emerged from the base of a small cliff. Unfortunately any passage that may have existed here had been obliterated.



Figure 3. *Entrance of Hallelujah Hole.*

Photo: R. Hemsley

ated during the construction of a road. A slight draft was detected at the base of the cliff. The volume of water emerging at this site would suggest that it has a fairly significant catchment, probably greater than the area that was investigated.

CONCLUSIONS

Although very few entrances were located, it is still thought that the area has some potential for further exploration. Hallelujah Hole proved that there have certainly been significant cave systems in the area at some point in the past. Parts of the study area had reasonably well developed epikarst which makes the existence of cave systems likely. However the whole area showed signs of extensive surface run off during wet periods which suggests that the subsurface drainage is very easily overwhelmed and therefore likely to be quite immature. The lack of surface shafts suggests that the resurgence must gather its water either from distant sinks that were not observed or from percolation.

With this in mind it is fair to say that while there is the potential to find more fossil fragments, large interconnected cave systems are not likely to be discovered in this area.



Figure 4. *Hallelujah Hole, the head of the pitch.*

Photo: R. Hemsley

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