

# SHAFTS OF LIFE AND SHAFTS OF DEATH IN DINARIC KARST, POPOVO POLJE CASE (BOSNIA & HERZEGOVINA)

## BREZNA ŽIVLJENJA IN BREZNA SMRTI NA DINARSKEM KRASU, PRIMER POPOVEGA POLJA (BOSNA IN HERCEGOVINA)

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### Abstract

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*Ivo Lučić: Shafts of life and shafts of death in Dinaric karst, Popovo polje case (Bosnia & Hercegovina)*

In literature, Popovo polje is considered as a distinctive phenomenon of Dinaric karst. It is situated in the south part of Dinaric karst, at the end of Trebišnjica watershed. Recorded within it are numerous other typical phenomena. Shafts, ponors and estavelle (all three are traditionally called jamas) played an important role in traditional life of people from Popovo polje. In the article, "jamas" are assessed based on whether they were a source of life and on the side of life or against it, i.e. were lethal for the lives of people of Popovo polje region. Included in the first category are shafts which were oasis of drinking water in summer time, shafts which were made suitable for fishing the endemic fish Popovo Minnows (*Delminichthys ghetaldii*) and shafts on top of which over 40 flour mills were built. On the other side, shafts of death are natural shafts which were used as mass graves in the World War II. Most literature deals precisely with these. Shafts were subject of comprehensive research of Popovo polje for the needs of Trebišnjica Hydro-system Project, and extremely important and interesting bio-speleological endeavors, but those aspects remained outside the perception of general public of Popovo polje.

**Key words:** Karst landscape, Dinaric Karst, Bosnia & Herzegovina, Herzegovina, Popovo polje, shafts, fishing, mills, mass graves.

### Izvleček

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*Ivo Lučić: Brezna življenja in brezna smrti na Dinarskem krasu, primer Popovega polja (Bosna in Hercegovina)*

V literaturi je Popovo polje omenjano kot ena izmed pomembnejših kraških oblik Dinarskega krasa. Leži v njegovem južnem delu, v skrajnem koncu porečja Trebišnjice. S polja so znani številni tipični kraški pojavi. Brezna, ponori in estavelle (vse tri ljudje imenujejo jame) igrajo pomembno vlogo v vsakdanjem življenju ljudi s Popovega polja. V prispevku so lahko te jame vir življenja in so na strani življenja, lahko mu pa nasprotujejo, so smrtne za prebivalstvo območja Popovega polja. V prvo skupino sodijo brezna, ki so poleti kot oaza vir pitne vode; brezna, v katerih je mogoče loviti endemične ribe *Delminichthys ghetaldii*; brezna, vrh katerih je bilo zgrajeno preko 40 mlinov. Na drugi strani pa so brezna smrti naravna brezna, ki so jih med II. svetovno vojno uporabljali za množična grobišča. Veliko literature se ukvarja prav s tem. Brezna so bila predmet podrobnega raziskovanja ob raziskavah Popovega polja za potrebe projekta Hidrosistem Trebišnjica, pri čemer je prišlo do zanimivih in pomembnih speleobioloških odkritij, medtem ko je drugi vidik, brezna smrti, ostal v širših krogih nezapažen.

**Ključne besede:** kras, Dinarski kras, Bosna in Hercegovina, Hercegovina, Popovo polje, brezna, ribolov, mlin, množično grobišče.

### POPOVO POLJE FEATURES

The karstologists (Groller 1889, Cvijić 1893, Katzer 1903, Richter 1905, Absolon 1916, Milojević 1938, Malez 1970, Milanović 1979, 2006, et. al.) describe Popovo polje as a typical karst phenomenon. It is located in the south part of Dinaric karst at the end of Trebišnjica river shed. Out

of the seven karst poljes, it is the nearest to the seacoast surging its waters to the three different sides of the world. Annual average precipitation is 1750 mm per square meter of the river shed. The shad's altitude amplitude is around 2000 meters, while the altitude of the polje varies

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from 250 to 225 meters. Popovo polje is developed in the area of bare karst and it is an area with great geo-dynamics. Furthermore, its main features are high purity of carbonate rocks, with calcite mineral contents reaching even 99, 98 percent (Raić & Papež 1982).

There are different geographic features of the Popovo polje area. The basic idea most commonly includes the area of floods and with alluvial deposits surrounded with hilly frame, and this is the area between the villages Poljice and Hutovo. However, Popovo polje, sometimes, also includes the area encompassing the entire flat part of the Trebišnjica valley. Namely, going upstream Popovo polje in the southeast direction is Trebinjska šuma, i.e. the area between Poljice and Trebinje, which is different because its bottom is not covered with alluvium. In addition, there is also this historical name - Popovo, which, in addition to the polje, encompasses a part of karst hills between the west edge of Popovo polje and the border with the Republic of Croatia at this point getting only a couple of kilometers away from the Adriatic Sea. For purpose like this, it would be opportune to include some other villages to this area of Popovo polje that are located on its north edge, which were left out in the previous descriptions of Popovo polje, because they are quite close to



Fig. 1. Lower, NW part of Popovo polje.

Popovo polje and their inhabitants have had continuous and active relations with it.

In addition to polje, there are many other karst phenomena: typical karst plains, karst hums (inselbergs, mogote), rivers, dry valleys, ponikvas, ponors, numerous caves and a number of smaller forms, such as: karrens, kamenicas, etc.

## SHAFTS IN POPOVO POLJE

The exact number of caves in Popovo polje is not known because there is no registry of such features. The Trebišnjica Hydro-system Project, which was the platform for many field research operations between fifties and seventies of the 20<sup>th</sup> Century, created a registry of ponors and estavellas that are located in the Trebišnjica riverbed and in its close proximity. According to this registry, there are more than 240 ponors and ponors area in the riverbed, 50 of them with one or more openings being located in Popovo polje. According to our list, outside the Trebišnjica riverbed area, on the broader area of Popovo polje there are around one hundred of all kinds of hole where human can enter. Typologically, in Popovo, there are semi-caves, caves, potholes, ponors, diffuse ponors, alluvial ponors, estavellas, springs and oduhas. Oduha is the shaft located above the surface of the underground canals that are used for drainage of Popovo polje, and sometimes, they strongly blow air.

Here, cave types are traditionally divided into large karrens (local called škrip), semi-caves, caves and shafts. The škrips are holes in rocks that are created from fractures and whose size varies from one to four meters. These type are often bigger in its lower part (Roglić 1974, 59). They are morphologically dominant in extreme karst

areas called “ljuti” (karren karst) by local people. They served as shelters for shepherds and hunters, and often, a small domestic animal would find itself in one of these. After the Second World War, the defeated army members would hide themselves in the karrens (škrips) where they would often stay for months, even years. They were popularly called “škripari” (men from karrens). The inhabitants of Popovo polje simply called all estavellas and ponors – jama (Ćurčić 1915, 67). “Jamas” in the polje are divided by their hydrological function on those “guzzling” and those “guzzling and throwing up” water. Regardless of the size of their “mouth”, their cave entrance or shaft entrance – they were called Jamas. (Ćurčić 1915, 67). That is how they called Crnulja ponor as well, which is located at the closing part of Popovo polje or Nova Baba near Strujići, Baba below Čvaljina and Gladulja near Zavalá, in spite of the fact that they all have horizontal cave-shaped entrances. In the life of the locals, “jamas” were very important. Estavellas used to bring huge quantities of water to Popovo polje, causing Trebišnjica to flood - in addition to her own shed, when it used to produce even 1400 cubic meters per second in its peak season (Milanović 2006, 124). In a short period of time, this spacious Popovo polje would be completely flooded.

The floods mainly came in autumn, while crops were still not harvested, and they would last until springtime. As polje was the main source of food for a dozen of villages

in its proximity, estavellas were observed with great attention.

## SHAFTS OF LIFE

### WATER SUPPLY

Until the 20<sup>th</sup> century, some “shafts” have served as water supply sources in extremely dry seasons. In summer time, all water-flows dry up; *kamenicas* used for cattle also become dry, as well as the local wells and the few springs, which made a good reason for the locals to seek water underground. Those were the shafts that were naturally accessible or some minor accessories were required to enter them and one of them was Srednja mlinica mill below Ravno. They usually had weak lighting – a torch, maybe – and therefore, they had been often afraid of going down, which resulted in their exaggerating the dimensions of the underground channels.



Fig. 2 North-East slopes of Popovo polje (straight ahead and on right) are rounded by many fish shafts.

### SHAFT WALL ENCLOSING

Estavellas that are located at the polje level used to be the places where floods would wash soil causing harm to the farmers. Therefore, the locals of Popovo used to enclose the shafts and grow bush around the openings to prevent “jamas from enlarging and taking away the fertile soil when swallowing the water” (Milošević 2004, 19). However, actions that are more complex used to be taken when dealing with so-called fish shafts.

### FISH SHAFTS

For fishermen, estavellas used to be passages with high population of endemic fish called Popovo minnow that

used to leave the underground in Autumn heading towards ground waters. These estavellas were called “fish jamas” (*jama ribarica*), while the fish used to be called – “jama fish” (*riba jamarica*) (Ćurčić 1915b). In summer-time, Popovo minnow (*Delminichthys ghetaldii* Steindachner 1882 – syn. *Phoxinellus* g., syn. *Paraphoxinus* g, Pisces, Cyprinidae) spend their days underground, while in the rain seasons, when Popovo polje becomes a huge lake, they live in ground waters. The taxonomic status of Popovo minnows changed several times. Based on modern molecular and morphological research, the status of Popovo minnows and similar fishes was organized in three genders. Popovo minnows was included in the newly established gender *Delminichthys*. (Freyhof

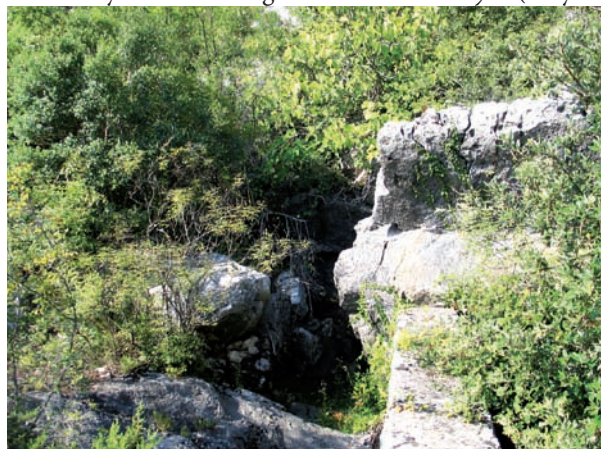


Fig. 3. Estavella Baba, wall adopted for traditionally type of fishing.

et al. 2006) This Popovo minnows inhabits east Herzegovina, from Dabarsko polje, over Fatničko polje and Ljubomirsko polje (Bosnia and Herzegovina) to Ombla river along the coast of Dubrovnik (Croatia). Although the renaissance zoologist, U. Aldrovandi (1522-1605), was engaged in the morphology of this species, when the famous paintings «Gobize raguseus» was made (Grmek & Balabanić 2000, 171), there is not much known about Popovo minnow. Accordingly, the textbooks do not provide an analysis of the information given by the fishermen from Popovo polje saying that Popovo minnow were different by their color depending on the shaft from which they emerged. For those coming from the area of village Strujići, they say that the fish is blue along their

backs; those from Ratac – green; in Mneč and Kravari – palke, and from Pečina – the greenest. (Ćurčić 1915b, 71) They say also this: “As soon as the water starts coming back, every fish stays in her shaft, not to be left on dry land”. Accordingly, every fish exclusively goes back to the estavella from which it came. Fish is thrown out only by those shafts that throwing up the water (Ćurčić 1915b, 70), i.e. that are thicker estavellas. While they are pretty rare on the left side of polje, on its right side it is even difficult to count them all. As an example, Ćurčić takes the area of the village Strujići in the middle of polje, listing 25 estavellas by their individual names “being only half an hour away from each other by foot”.

They distinguish by the moments when fish emerges in them: in some of them, fish emerges with the first streams of water, while in some of them, it takes at 2-4 meters of water for fish to come, and one of them is Bender mlinica below the village of Velja Međa. Almost all estavellas are suitable for fishing. The shaft neck is walled in circles with stone blocks, and from the opening, on the ground, there used to be many canals that widen at their end. The shaft opening used to be closed with a huge stone and coil baskets were put in wide parts of canals. These baskets served as water filters used for fishing. Apart from these, smaller baskets were also put in some estavellas, where the water levels were usually lower.

The third way was fishing with nets. The nets were made of silk that was produced by breeding silkworm. «One who wishes his silk-worm come out earlier should wrap up the seeds in a small tissue » (Mićević 1952, 61), where the temperature was obviously suitable for the silkworms. Shafts produced different quantities of Popovo minnows: in Mnetać jama, once, the locals caught 40 quintals<sup>1</sup> of fish with a small basket whose capacity was 50 kg, while in Rac, they caught only 8 quintals. (Ćurčić 1915b, 71)

#### SHAFT MILLS

On the estavella along Trebišnjica, at least 43 mills were built. These are the facilities built with hewed stone with a roof built from its bottom, while their one side is covered with sliced stone. Most of the mills was build from red soil (terra rossa) “mixed with limestone mortar, while there are also some more recent – made of cement” (Mićević 1952, 79). They are fenced with thick, high wall (*bent*) which kept the mill protected from flooding. The mill mechanism itself is placed in the neck of the shaft. After the millstone starts graining, the water starts running through the estavella to the underground increasing the power of the mill. Some mills also had the function of bastion, which was a mechanism for processing newly

woven blankets. Some of them in addition had fishing mechanism.

When built, the level of water, channel and mill were to be adjusted. Sometimes, it would come out that estavella where a mill was built did not have sufficient capacity of swallowing water, such as Vukićs' mill below Ravno, and therefore it had to be abandoned. These mills were attractive because of their specific architecture (Sandžaktar 1983, 199). High-quality building came as a result of highly skilled and competent builders who were locals, because the stone builders from Popovo are famous, especially in neighboring Dubrovnik, which is a masterpiece itself.

Most of mills are grouped between the villages Sedlari and Tulje, located on the south part of Popovo polje. There are 13 mills in this part, and in addition, in Popovo polje there are six other mills mostly scattered around the area.

The mills would be used for quite a short period of time when Trebišnjica was hydrologically active. When Trebišnjica dries out, or when polje floods, the mills would lose their function. This was the reason for the mills to be open and working day and night. When the mill was close to getting flooded, the cereals would be taken out quickly. Some of the mills would work in smaller capacities because of different hydrological changes in karst, blocking ponors, decreased flows, etc. The locals, therefore, would go into the ponors to clean the openings. Some ponors, allegedly, have channels that are accessible several hundreds meters in length. (Sandžaktar 1983, 201)

In late 70s of the 20<sup>th</sup> century, Trebišnjica was turned into a concrete channel, and only two mills remained outside the regulated flow. Only one of them still works, and others are covered with abundant vegetation, the walls and bents are ruining and ponors are covered with gravel. (Sandžaktar 1983, 201)

The mills stopped being part of the Popovo polje's day-to-day life, without any particular observation of their history. Mentioning the mills in the deeds of donation made by medieval rulers tells a lot about their age and their importance. (Petrović & Kovačina 1984, 475). The first known testimonial about them is in the deed of donation given to the Father Aleksandr of Dubrovnik by Hungarian-Croatian king - Matthias Corvinus dated November 2, 1465. People from Dubrovnik used to hold monopoly over mill building and using in the neighboring areas over certain periods. (Petrović & Kovačina 1984, 475).

Parenthetically, the mills remained in the memories of the locals as places where evil powers used to be coming, and they say that even the bravest man would not have the courage to spend a night in a mill. (Mićević

<sup>1</sup> *quintal* - a unit of weight equal to 100 kilograms

1952, 254). Namely, locals from Popovo polje believed that fairies and witches lived in the mills.

«Sometimes when the mill slows down or even stops completely because of the strong water flow, they believe that it was caused by an evil spirit. In Autumn 1932, I witnessed such a case in the mill between Zavala and Grmljani. More water than the shaft could hold was taken in and the mill started slowing down until it stopped completely. At that point, Milan Misita from Budim Do reached a big torch and threw it in the shaft, saying: ‘There you go, you dirty devil’. In the middle mill below Ravno, there is a mill stone called ‘*opačac*’, because it turns in the opposite direction. They say that this mill stone stops several times during the night, and when they through a large rock in it the stone starts spinning again. That is the reason that no one dares to spend a night alone there» (Mićević 1952, 254). This devilish environment is the place where the shafts of life turned into the shafts of death, where the locals from Popovo went through their



Fig. 4. Old mill covered by vegetation and the last miller Nikola Raič on it.

most horrifying experience, not only with in terms of the shafts, but generally.

## SHAFTS OF DEATH

During the Second World War and immediately after it, the Popovo polje shafts were used as a tool of poor political fate of this area – some of them became mass graves. Military forces were very revengeful towards the defeated ones and their community members by killing them and throwing them into these shafts, or even worse, they would throw them alive into these shafts. This is the point where several sentences should be said about the political history of Popovo polje. Since the second half of the 15<sup>th</sup> century until 1878, Bosnia and Herzegovina was a part of Turkish Empire, and subsequently, it became a part of Austro-Hungarian Monarchy. After this, the Kingdom of Serbs, Croats and Slovenians emerged 1918, whose name was soon changed into the Kingdom of Yugoslavia. Essentially, the main role in this establishment was played by the Serbian Crown, which resulted in strong political turbulences inside the country. This state fell apart at the beginning of the Second World War, and in the territory of Bosnia and Herzegovina and Croatia, supported by the fascists, a new Independent State of Croatia was established. It was divided into two zones of influence – German and Italian assuming the discriminating fascists laws. In these circumstances, the use of national issue was followed by emerging national and paramilitary forces. Apart from the regular army called «Domobrani», Croats had political army called «Ustasha», while Serbs were organized as «Cetnik» in military sense. There were also partisans, led by few local communists under a

strong influence of Russian communists and Stalin. Generally, the communists were tacitly getting closer to the opposition trying to get the name of people’s army for themselves, while their closely cooperated with Cetniks in the beginning in Popovo polje and south Herzegovina, and even some of them were members of both armies for a long period of time. After first bigger war crimes, Popovo polje was divided into two parts – west part mostly inhabited by Croats and controlled by Ustashas, and east part, inhabited by Serbs without any authority’s control. It lasted until the end of the War, 1945. Ustashas, in the ultimate battles, decided to evacuate a part of the population that is trying to escape the battles and running several hundreds of kilometers, until they were blocked in the area of the current Slovenia. They were captured there and a number of them were severely sentenced after they came back. The shafts were very much used in the first months of the war, less during the war, and their usage was intensified at the end or even after the war. In our bibliography, we found 12 shafts in Popovo polje that were used as single or mass graves.

**Jama Ržani do** is a shaft whose diameter is between 4 and 5 meters and depth 35 meters; it is located along the road Trebinje – Ljubinje, and it was the first one mentioned as a mass grave in Popovo polje. Ustashas, who were fascist-oriented military forces of the Independent State of Croatia, on the 23<sup>rd</sup> and 24<sup>th</sup> of June 1941, threw 187 people – Serbs from Popovo polje. (Čučković 2003,

I., 104) Some of the sufferers saved themselves by running away from the line near the shaft. According to some sources, several days before, a Croat from the neighboring village Ravno was thrown into this shaft (Puljić et al. 2001, p.p. 443). In the following months, people from Ljubinje, Stolac, Mostar, Čapljina and other places were brought here and thrown into this shaft. According to the official Yugoslav sources, there were allegations that more than 1000 people were thrown into this shaft, which is also mentioned on the memorial located on this shaft, or even 1200 people; however, the 1990 exhumation proved that “at least 236 victims” could be identified with certainty (Dožić 1995, 364). On October 27, 1990, there was a church service above this shaft, and the bones were transported to the village Veličani, where they were buried in the memorial charnel house.

**Male jame (Small shafts)** are located in Popovo polje, right below the village of Cavaš/Chavash/ itself. Morphologically, this is a hole whose diameter is between 3 and 5 meters and which is 4 meters deep. This shaft emerged in Autumn 1936. Due to abundant rain, the field was flooded “in a day”. On the orthodox holiday – Mitrovdan, around noon, underground roaring could be heard and above Male jame, a fountain, 30 meters high emerged, and people got quite anxious and interpreted this event in different ways. In spring, after the water (locally: blato) vanished, the hole emerged on the field. (Milošević 2004, 20).

On August 11, Usthas arrested all village inhabitants – Serbs; shot them all dead and through them in the shafts. (Čučković 2003, I 130) There were total of 101 people killed: among which there were entire families of nine, seven or less members, (Milošević 2004, 298) After the war the bones were exhumed from the shaft and buried in the memorial charnel house near the village Čavaš near Male jame. This memorial charnel house was destroyed on March 30 and 31, 1993. (Čučković 2003, I 136).

**Snobitac jama on Korlati:** A group consisting of 64 Croatian army “Domobrani” was brought near the shaft called Snobitac that is located on the mountain Bjelasnica, near the Drijenjansko brdo hill. This was a part of 140-domobran group who were captured by partisans in Plana near Bileća. They were “all killed with stakes and gunstocks, and then thrown in the shaft” (Čučković 2003, I 140). Allegedly, the partisans handed over these domobranci “to a group of armed people”, who were in fact Cetniks, led by some Nikola Drapić. There are indications that Drapić used to be a member of KPJ and became the commander of the Cetniks battalion, but allegedly, “he was not a criminal”. (Čučković, 2003 I 140)

**Jamas of Hutovo:** two shafts near the village Hutovo, where “total of 36 people – Serbs” were killed: Gra-

dina, which is 250 meters away from the railway station with around “4 persons” and Hadžibegov bunar on the hill, around 1200 meters away from the railway station with 32 people (Čučković 2003, II 51). They were killed from June to September 1941. the first group was taken away in the night between June 24 and 25. sixteen people escaped from the shaft Hadžibegov bunar. (Čučković 2003, II 51)



Fig. 5. Memorial place on mass grave Jama Ržani do.

**Jama Golubinka above Veličani village** – at least eight Croats from Popovo polje were killed here, and seven of them were members of “Croatian Way of the Cross”. This group was brought to the area of Popovo polje after the end of the war and thrown into the shaft above Veličani, and one was arrested in 1943 and thrown into this shaft. (Puljić et al. 2001, 416) The Way of the Cross or death marches in Croatian history are the lines of war military prisoners, and civilians that were following the former ones and that were found at the end of the Second World War in the area of Slovenia and Austria. They were transported by trains or by foot in different parts of Yugoslavia, where a number of them were killed after some kind of martial law proceedings, while others went through long-lasting prison sentences.

Croatian authors mention another seven shafts where executions of a smaller number of people took place, mainly individual cases: **Golubinka jama** between Zavala and Čvaljina, **Jama Ograđenica** near Kijev Dol, **Behramova jama** near Orašje, **Striježava** shaft near Čavaš village, **Jama kod Orašja**, **Jama kod Čavša** and **Jama kod Oraških staja**. Apart from these sites, Croats and Serbs from Herzegovina are related to several shafts in the wider region. The textbooks also mention sufferings in similar karst type, such as karrens, natural wells, karst fens, etc.

The first textbooks which dealt with shaft as mass graves published after the Second World War. The pub-

lishers were communist authorities of the time, who continued following partisans steps, and they used official archives. These official authorities offered the version according to which mostly Ustasha's quisling forces used these shafts as mass graves. Rarely, this role is given to Cetniks, such as the crime that took place on June 11, 1942, when Cetniks throw twelve distinguished soldiers after outrageous torturing into Viduška jama, not far from Popovo polje (Slavić 1986, 206). This was mainly connected to the beginning of the Second World War i.e. "genocide policy of the Independent State of Croatia". Only in the late 20th Century, after multi-party elections and political liberalization, the textbooks indicating that the shafts were used as mass graves by all local military and para-military forces. There is no proof that Italian and German forces performed such executions in Popovo polje.

In the book titled *Žrtve komunističkog terora u trebinjskom kraju (Victims of Communist Terror in the area of Trebinje)* which is declared to be a memorial for the Serbs who were killed by the hand of their brothers (partisans), the author burdens communists with killings that took place in the villages of Trebinjska šuma. Describing the attitude of the communists, he says that they have become beasts, that they are cutting heads off mostly for nothing, that they prosecute, judge, do whatever they like, desecrate – and commit crimes, which «are not weaker by their monstrousness than the ones done by Ustashes». (Merčep *et al.* 2005, 15) The shafts mentioned here are not located in Popovo polje; they are located upstream Trebišnjica. A bit earlier, certain information about partisans' crimes in the other part of Dinaric karst – in North Croatia (Jama Jazovka) and in Slovenia emerged. Until 2005, the research done in Slovenia resulted in 410 mass graves recorded, and the information that there are another 160 mass graves that are yet to be located. (Ferenc 2005, 102). Namely, after the war, in this area, without any legitimate proceedings, more than ten thousand people were killed, and the Yugoslav/Slovenian authorities, apart from taking their lives, took away their right to be buried. According to the available data, in 134 graves, there are corps of soldiers, in 79 – civilians, in 72 – both soldiers and civilians, and there are no available data for many of them. (Ferenc 2005, 52)

Certain descriptions where sufferers of the Catholic Church parishes, which are at least partly situated on the territory of Popovo Polje are mentioned, and according to some Croatian sources, in the Second World War, there were 1537 people killed and 59 of them were allegedly thrown into the shafts. The Croatian sources blame the "Serbian" ones that they "almost entirely recorded only Serbs, and that the Croatian victims were passed over in silence". They say that the official Yugoslav sources regis-

tered only 51 out of 613 victims in these villages, and that "the majority of villages was not recorded at all" (Puljić *et al.* 2001, p.p. 83). These victims who were passed over in silence, especially those whose grave is unknown, hover above the landscape, which is gradually becoming a huge field of sufferings. Many of those who disappeared, allegedly, ended up in some other shafts spreading from Slovenia to Monte Negro. Some data from Slovenia partly confirm these statements. Out of all identified mass graves in Slovenia, in 108 of them, the victim are mainly Slovenians; then Croatians – in 84 shafts, while in 59 of them, there are victims of different nationalities. (Ferenc 2005, 52)

The information about the earliest known execution that took place above a shaft, which had the flavor of group revenge, is related to the beginning of the First World War. The place of suffering is Koritska jama, which is 30 km northeast of the edge of Popovo polje, close to the border with Monte Negro. The sufferers are local Muslims, presently called Bosniaks, who were "brutally killed by hajduk [highway men] and threw them in the Jama on Korita". (Hasandedić 1990, 179) The exact number of the sufferers is not know, nor are the exact circumstances of this event; it is only known that almost entire families of Dizdarević's and Redžić's were killed. Since that time, the local Muslims call this shaft Dizdaruša. (Hasandedić 1990, 179)

However, the memorial at Koritska jama, which was erected a monument in 1962, lists the names of 133 victims, mostly Serbs, that Ustashes killed in early June 1941. According to the textbooks dealing with this topic, this number is even bigger, and it is "155 victims from this area" (Čučković 2003. I, 392). It gives the statements of the Exhumation and Memorial Board members who said that in the period between 1953 and 1956, 186 skulls were counted and taken out of the shaft and transported to the memorial; however, there were no mention of any Muslims. The memorial board which was placed at Koritska jama in 1962 read: "On this place, on June 3, 1941, the invader and its servants – Ustashes, brutally killed 130 patriots of this area". On the fiftieth anniversary of these sufferings, June 5, 1991, the old memorial with red star and red ribbon was removed (Čučković 2003. I, 392), while a new one with a cross was put and it reads: "KORIČKA JAMA / IN THIS SHAFT, ON JUNE 4/5, 1941, USTASHAS THREW 134 SERBS FROM THIS AREA. THE BONES OF THE BRUTALLY KILLED PEOPLE WERE EXHUMED FROM THE SHAFT IN 1953 AND IN 1956, THEY WERE BURIED IN A COMMON MEMORIAL CHARNEL HOUSE IN THE CENTER OF THE VILLAGE KORITA / FAMILIES OF THE VICTIMS AND THE BILEĆA MUNICIPAL ASSEMBLY". On the memorial board below this one, there

is a ten-syllabus poem about the suffering and the obligation of never forgetting what happened. There is also the list of eight names of the survivors.

The differences between the numbers of victims that were mentioned on this memorial boards at Koritska jama and the number of skulls taken out and buried in the charnel house confirms the questionability of the accurateness and objectivity of the victims treatment and the authenticity of the research boards. As we could see, this is also applicable to the shaft called Ržani do in Popovo polje, which is one of 14 shafts in Herzegovina that was exhumed by Serbs in the period between 1990 and 1991, and whose bones were transported in the memorial charnel house in Veličani (Popovo polje) and Prebilovci (Neretva basin). In one report, there is a reminder that this exhumation was not performed upon the order of investigating judge, because this request was left without any response. (Dožić 1995, 364). The revealed number of victims is five times smaller than the list on the memorial board. The exhumations were carried out at the down of a new war and they were used a sort of propaganda to stir it up. Many articles were published, such as the one published in the Belgrade's magazine *Ilustrovana politika* (1668, 23. X 1990) telling a story about the shafts, which was dated in 1941, when a Bosniak from some neighboring village, who was a member of Ustashas "one morning, came with a bracelet made of eye balls on a piece of wire". How disturbing and distracting these reports were for the families of sufferers tell the following sentence which could be found in many reports: (in the shaft) «The bones of a dog were also found there. No one knows if the dog was thrown down alive to worsen the horrible sufferings of the people by his bites or if this was just another sign of humiliation of Serbs" (Čučković 2003. I, 112). The speleologists know that animal bones are often found in Dinaric shafts, whether it is a corpse that was thrown down or an accidental falling into it. Moreover, there are many anecdotes and legends about a dog that fell into one shaft and emerged in some other downstream spring.

Exhumations are more or less protected with a dose of respect; however, sometimes they are being carried out in a series of prosaic actions, or even worse than that. Namely, over time, the bones of different military forces members and civilians, or even bones of the cattle from the neighboring villages are accumulated in a shaft. On one occasion, a certain amount of bones was taken from the top of the pile that was found in the shaft and which also included animal bones – all of them were put in the memorial charnel house. On some other occasion, also in the middle part of Dinaric area, speleologists were assigned to pull out a part of skulls (the organizer was happy with this symbolic part of a skeleton) out of many that were laying down. As they could not find "those who were ours", with a bullet hole, their next assignment was to make a hole in each accessible skull with a nail. (Božičević 1991, 53) Anything will do!

We will not explore further ethnological and sociological reasons of these sufferings, because it requires serious analysis and much more available space and time. We would only advise that it would be wrong and harmful to conclude that the locals solve their mutual problems and conflict through mutual executions. On the contrary, no author remembers that a peasant killed another peasant, save the wartimes. At the same time, social solidarity and respect are traditional values that are generally recognized in this area. The shaft-related crimes have certainly bigger time and space coordinates. It is enough to give only two recent examples: in late 20<sup>th</sup> century, the Special Forces of Serbia kidnapped the former Serbian Presidency member, I.S., and killed him and threw him in a limestone shaft in Fruška gora mountain. The other example: Portuguese public was horrified with the news released in February 2006, according to which a group of juveniles tortured a sick prostitute, and threw her in ten-meter deep shaft in Porto where she died. Also, literature works of Turkish Nobel-prize winner Orhan Pamuk, put this social experience into a context.

## BEYOND FRAMES

What is commonly called jamas by the locals from Popovo polje was the subject of extensive scientific research, particularly during the late 20<sup>th</sup> century. The results gave some element for the picture which makes Popovo polje a distinguishable karstological phenomenon globally. Numerous and different researches were conducted and unusually huge amounts of money were spent, when a number of methods was applied, some of them being completely new. In geo-morphological sense, many karst

phenomena, well-developed ones, were described. In hydro-geological and hydrological sense, there were many underground links and underground water flows, bifurcations and co-streams. Biologically, ponors in Popovo polje are the prime numerous sources of underground fauna. Accordingly in Crnulja, *Marifugia cavatica* was found – the first fresh water serpulid worm in the world. Special attention was caught by the discovery of *Congerina kusceri*, the only known underground shell in the world



(Sket 2003). This discovery was even more spectacular, because scientists mostly believed that this shell was a fossil organism. Only in Vjetrenica, which makes an integral part of the karst system in Popovo polje, there were at least 37 underground species found and discovered for the first time. In Popovo polje, so far, there is more than 20 underground species living only in this area, and this polje is considered one of the most abundant places of subterranean fauna in the world. (Sket 1983). Vjetrenica is a cave that has been attracting attention of many researches and adventurers, as well as common men throughout history because of the phenomenon related to the strong wind at its entrance. It lays foundations of research history on the east Adriatic coast. It was adapted for tourism before the Second World War, and after the War, a path almost 1000 m long with lightning was built. Non-biological research of shaft were stirred up after the construction of the hydro-power system on Trebišnjica, which resulted in complete isolation of ponors and estavellas from the hydrological and environmental cycles, and this was also followed by a similar perception of the events related to the shafts in the area of Popovo polje. The underground of Popovo polje has been deprived of four billions cubic meters of water per year (Milanović 1983), which led to destruction of the underground habi-



Fig. 6. Gape of ponor Crnulja in Popovo polje, locus typicus of tube-worm *Marifugia cavatica*.

tas. Although the consequences have not be explored, it was registered that abundant colonies of *Marifugia cavatica* were destroyed in their primary deposit, where this organism developed tens of meters long biogenic travertine stones. However, neither the emerging not the disappearing of *Marifugia* and ecologically similar species had not been registered in the perception of the Popovo polje locals.

## CONCLUSION

According to the presented literature, mass graves are most likely the most impressive experience of the “jamas” in Popovo polje in the 20<sup>th</sup> century. The shafts as friends of life – in their capacity of fish shafts, mills or fresh water oasis – have not been mentioned a lot. One of the most dedicated authors, the collector of ethnological substance about Popovo polje, Ljubo Mićević, was himself a victim of massacre at the Jama Ržani do, and his book was published after his death. Most detailed descriptions of fish shafts and their links with the locals were made by Vejsil Ćurčić in his paper dated in 1915, and nobody followed him at all. Public awareness has not still been raised enough to understand karstological or biospeleological image of the shafts. If this was not of practical use for the

people who led their life in these areas in pre-industrial and industrial age, nowadays, at the time of advocating sustainable development, this represents not only the obligation to preserve the environment, but also, it could be a big economic advantage. Generating negative views about environment, regardless of auto-destructive consequences, have connotations of social choice, and could be turned into better solution. The shafts of life are still being neglected, while the shafts of death are assigned an important role. This requires additional research which will enable a comprehensive analysis and re-evaluation of the karst landscape of Popovo polje and Dinaric karst at all.

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