

## The Early Holocene Occupation Of Caves In The Balkans

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### Introduction

The Balkan called landscape between the Alps and the Black Sea coast is stretching across the countries Bulgaria, Albania and the new states of former Yugoslavia. A large part of this region is covered with tertiary folded mountains, which are disrupted and margined by fluvial basins. The mountain ranges predominantly consisting of limestone from the Jurassic and Cretaceous period compose a transition zone between the Mediterranean and a sub continental climate. Notably the southern parts of the mountainous region, situated in the Mediterranean climate, have created karst formations with numberless caves, which most frequently occur in the Dinaric and Istrian karst alongside the Adriatic Sea. That is the reason why in these areas by far most of the caves have been investigated by archaeologists, whereas in the continental areas of the western Balkan and in Bulgaria only a couple of cave stations have been excavated. But the state of research is likewise dissatisfying because the excavations of cave sites are often not or insufficient published. The Mesolithic period representing the most ancient culture of man in the Holocene is sparsely found within the Balkan area. The bigger concentration of Mesolithic sites can be observed along the Adriatic coast, where settlements are frequently encountered in caves. This general pattern of occupation behavior continued up to the Neolithic period. The Early Neolithic Impresso culture is predominantly known from cave stations. Considerable stratigraphies revealing several cultural layers demonstrate sequences of long and dense occupations. Particularly caves close to the shore of the Adriatic Sea have been occupied intensively till the Late Neolithic Hvar culture. In contrast, caves in the inner Balkan area played a minor role as dwellings. The Early Neolithic Starčevo culture of the central Balkan area is nearly exclusive represented by open-land settlements. And for the Early Neolithic of Bulgaria multilayer settlements situated in lowlands can be regarded as the characteristic occupation pattern. In the developed Copper Age the importance of caves as permanent settlements decreased as well

in the Dinaric and Istrian zones. The frequent but short time occupation of caves in the mountain area seems to be connected with transhumant livestock husbandry. In the Bronze and Iron Ages occupation activities in caves must be regarded as exceptional. Different from the Alpine area and the low mountain ranges of central Europe, the Balkan area seems to lack caves, which can be identified as special places for sacrifice and burial. Likewise, the absence of a developed rock art in caves and abris is notable. Numerous rock paintings in the Magura Cave in Bulgaria seem to represent a long term but singular local tradition of Metal Ages.

### Methodology

This contribution is dealing with the socioeconomic function of caves in the Mesolithic and Neolithic periods of the Balkan area in its broader sense. In approaching this topic, it would be very helpful to compare the archaeological material of caves with that of open-air settlements in order to show their similarities and differences.

From the methodical point of view, a wide range of natural, topographical, and archaeological aspects can be analyzed, such as the wider natural settings of cave sites, access to special environments, local topography as well as sedimentary processes within the caves, various archaeological features and finds coming from settlement activity, burials, or ritual acts.

Unfortunately, the conditions for such investigations are far from optimal. The caves of our survey area are in the majority of cases prospected by thin layers - hardly approving a laminar observation of features. The archaeological finds are often selectively recorded, and topographic information about the surroundings of caves is scarce. The efforts of the excavators generally aim at the cultural classification of layers within the stratigraphies of caves and less at reconstructing their wider socioeconomic use and function. An aggravating circumstance is the fact that open-air sites are poorly preserved in the mountainous karst

landscape and therefore the original settlement pattern is at best partial reconstructible.

Albeit the subsequent inquest comprises 44 cave sites with traces of Mesolithic or Neolithic occupation, only a handful intensely investigated sites are yielding results of the required quality.

The well known Early Holocene cave sites between the eastern fringe of the Alps and the Black Sea are very unequally dispersed over different mountainous zones of the Balkan area. Just beyond the area of our consideration lies the Trieste karst in northeast Italy, where groundbreaking investigations of cave archaeology have been undertaken by Emanuela Montagnari Kokelj and her colleagues (see Kokelje 2002). A focus lies on the karst landscapes of Dalmatia and Istria in Croatia (Fig. 6.1). Particularly on the east Adriatic Islands, along the cliffy coasts, and in the coastal hinterland numerous caves have been investigated [1-25] (all numbers in square brackets refer to the catalogue of cave sites, see below). A smaller number of cave sites, and some of them of great importance, is situated in the low mountain range of Herzegovina [26-9] and Montenegro [30-4]. Likewise, some Neolithic cave sites are located in the mountainous zone of Albania [35-40]. From Bulgaria very few caves with Neolithic occupation [41-4] are known and they were barely investigated in recent times. From other regions of the Balkan area, which are likewise rich of caves, we miss evidence of a systematic occupation of caves in the Mesolithic and Neolithic periods.

### East Adriatic Zone

The east Adriatic zone is bordered by the Adriatic Sea in the west and by the ridges of the Dinarids in the east, which frame the watershed to the Danube area (Fig. 6.1). The Dinarids form a range of fold mountains comprising of limestones and dolomites with distinctive karst formations. While the karst mountains are falling steeply into the sea in southern Dalmatia, central and northern Dalmatia, and the Peninsula of Istria are featuring wide limestone plateaus and coastal plains of alluvial origin. Countless rocky islands are stretching offshore the east Adriatic coast. The karst islands and the coastal mountain range exhibit caves, rockshelters, and dolines delivering traces of occupation from the Palaeolithic up to the historical periods.

### Chronology

The Mesolithic of the Balkan and Adriatic areas emerged from the younger Palaeolithic cultural substrate as hunter gatherer groups adapting to the changed Post-Glacial environment.

Thereby the identification of the Mesolithic remains in most regions of the Balkans is problematical. Most frequently found are sites in the peri-Mediterranean area of the eastern Adria, where they range in Istria, Dalmatia, and Montenegro from the islands to the littoral and up to the hinterland (Malez 1979, 294-295; Müller 1994, fig. 78). Only a few Mesolithic sites could be detected in the inner mountainous zone of the Balkan area (Srejšović 1989, fig. 1, 485-490). From the chronological point of view an Early Mesolithic Sauveterrien is distinguished from a Late Mesolithic Castelnovien, characterized by microlithic industries (Müller 1994, 196-197). A concentration of Mesolithic open-air sites extends along the Serbian and Romanian banks of the Danube in the microregion of the Iron Gate (Srejšović 1989, 482-485; Boronéant 1996). Unfortunately, this zone is already situated at the periphery of our considerations.

Even if there are hardly any radiocarbon dates available for the Early Mesolithic, the Late Mesolithic in the east Adriatic hinterland can be limited by data gained in the Odmuť Cave site [33] between approximately 6500 and 5500 B.C. In the first half of the 6<sup>th</sup> millennium B.C. a broad overlapping between the indigenous Mesolithic culture of Castelnovien and the Early Neolithic Impresso culture can be presumed (Müller 1994, figs. 76, 197).

With the Early Neolithic Impresso culture a farming population appeared for the first time practising crop cultivation, livestock husbandry, and producing pottery. The Impresso culture is mainly spread along the coastal belt of the eastern Adriatic Sea and in its nearby hinterland (Batović 1979, map 7; Müller 1994, fig. 3). In particular Johannes Müller recently devoted a comprehensive study to the material, the chronology, and the economy of the Impresso culture (Müller 1994). Regardless of its inner development the Impresso culture is treated here as a chronological entity. According to the radiocarbon dates the absolute chronology of the culture ranges from ca. 6100 to 5500 B.C. (Müller 1994, 182-185, fig. 76).

The transition to the Middle Neolithic in the east Adriatic zone took place about the middle of the 6<sup>th</sup> millennium B.C. and is marked by the appearance of the Danilo culture. This culture evolved from the Impresso tradition, but shows some new cultural attributes (Batović 1979, 525-574, map 8; Müller

1994, 187-195). As the pottery shapes reveal, an uninterrupted development characterized the transition to the Late Neolithic Hvar culture, which could have extended from the late 6<sup>th</sup> millennium to the first half of the 5<sup>th</sup> millennium B.C. With the Hvar culture the indigenous genesis of the east Adriatic Neolithic comes to an end (Batović 1979, 633).

## Topography And Geography

The comparatively good state of research in the east Adriatic area permits a quantitative comparison of caves and open-air sites. Mirko Malez counted 15 Mesolithic sites from which seven (47%) are caves and eight (53%) are open-air sites (Malez 1979, 227-275, 278-279). According to Müller's catalogue in the Early Neolithic Impresso culture, 32 cave sites (64%) are facing only 18 (36%) open-air settlements (Müller 1994, 310-332, fig. 3). A similar tendency can be emphasized for the Middle Neolithic Danilo culture, which after Šime Batović has been identified in 24 (65%) caves and 13 (35%) open-air stations (Batović 1979, 525). In the Late Neolithic Hvar culture even 37 cave sites (75%) are facing only 12 (25%) open-air settlements (Batović 1979, 576).

The high proportion of cave sites in the Mesolithic is not a surprise due to the presumed non sedentary life pattern of the hunter gatherer groups. Also, since the Early Holocene, the climate, vegetation, relief in the coastal plains, and the karstic landscapes have experienced considerable changes, and that makes the preservation of temporary Mesolithic camp sites on the present day surface highly problematic (Chapman, Shiel and Batović 1996, 61-62).

Astonishingly, at the beginning of the Neolithic the share of cave sites is increasing, and this tendency is still enforcing in the course of the Middle and Late Neolithic development. Finally in the Hvar culture three-quarters of the known sites are situated in caves. In this regard, the Neolithic occupation pattern along the east Adriatic coast represents a special case within the Balkan area.

However it must be stressed that cave sites and flatland settlements show different *foci* of distribution. In the north Dalmatian coastal plain between the towns of Zadar and Šibenik there are found predominantly and in high density open settlements whereas the middle and south Dalmatian littoral bears nearly exclusively cave sites (Müller 1994, fig. 3).

Natural caves are abound in all altitudes in the karstic massifs. For this reason the position of occupied caves above sea level could yield clues about forms of land use in both the Mesolithic and the Neolithic periods. Cave sites are scattered across different altitudes starting from the sea level up to a height above 800 m, but two aggregations are roughly perceptible (Fig. 6.1). One focus lies on coastal caves with altitudes mostly beneath 100 m and sporadic up to 200 m ASL. The second and larger group of caves spans between 300 and 700 m ASL; here an intended connection to the mountainous subsistence area is obvious.

Even if the data base is small, cave sites of the Mesolithic seem to be situated predominantly in the mountainous zone (Klanjčeva Peć [2], Oporovina Pečina [3], Podosojna Peć [4], Vaganačka Peć [9], Medena Stijena [32], Odmuť Cave [33]). Cave settlements in low altitudes above the recent sea level are very exceptional (Vela Spila [21]). The apparent absence of Mesolithic camp sites in the present day littoral does not surprise, presumably because the main areas of the Mesolithic occupation would have been the coastal plains of the Early Holocene that is now submerged beneath the Adriatic Sea by the rising of the sea level (Chapman et al. 1996, 258).

On the other hand, similar positions are observable likewise at Neolithic cave sites, though in this period the sea level had nearly reached present day gage. Caves with continuous traces of the Impresso, Danilo, and Hvar culture (Oporovina Pečina [3], Vorganska Peć [5], Golubnjača Pečina [8], Vaganačka Peć [9], Gospodška Pečina [10], Tamnica [12], Gudnja Cave [25], Koronina Cave [31], Odmuť Cave [33], Spila Peć [34], Tradanj [13], Markova Špilja [17], Pokrivenik Pečina [20], Vela Spila [21], Žukovica Špilja [22], Jakasova Špilja [23], Rača Pečina [24]) predominantly are found in altitudes of several hundred meters ASL. In addition a group of cave sites in low altitudes is noticeable, and they are mainly situated on the eastern Adriatic Islands and mostly occupied of the Late Neolithic Hvar culture (Tradanj [13], Markova Špilja [17], Pokrivenik Pečina [20], Vela Spila [21], Žukovica Špilja [22], Jakasova Špilja [23], Rača Pečina [24]). Here the connection to the marine environment is, of course, obvious.

Another aspect of the cave use is offered by their occupation density, providing clues for the favor of specific locations. The cave sediments, normally several meters thick, reveal important cultural stratigraphies of the Mesolithic and Neolithic in this area. Only a couple of caves delivered frequent settlement residues running from

the Mesolithic to the Late Neolithic periods. Among these are Vaganačka Peć [9] in middle Dalmatia, Vela Spila [21] on the Island of Korčula, and Odmuť Cave [33] in the mountainous zone of Montenegro.

Vaganačka Peć [9] exhibits a stratigraphy with cultural layers of 4 m thickness running from Mesolithic to Early, Middle, and Late Neolithic, Eneolithic, Bronze Age, and Iron Age. The spacious hall cave with a 25 m wide entrance is situated in a distance of only 4 km from the present day coastline, but in an altitude of 700 m and lies next to a passage crossing the Velebit Mountains from the sea. This cave could have served as an appreciated shelter above all for mobile groups seasonally moving between the coast and the hinterland.

By contrast, Vela Spila [21] on the Island of Korčula is located on a hill slope in only 130 m ASL overlooking a natural protected branch of a large bay. In the vicinity are the accessible fertile Vela Luka depression and a silted up lake. The spacious hall cave with originally more than 1100 m<sup>2</sup> floor space shows a wide bent arch shaped entrance with a large terrasse like plateau in front (Fig. 6.2). Its particular topography and diverse subsistence areas available in the vicinity made this cave a suitable place for settlement. Therefore it is only consequential that the cave was occupied intensely and over longer time spans in the Mesolithic as well as in Early and Late Neolithic periods.

Another type of sites embodies the Odmuť Cave [33] in the mountainous midland of Montenegro (Fig. 6.3). The cave is placed at the bottom of the steep Kulina Hill slope in a convenient position near the junction of Vrbnica and Piva rivers. The 20 m wide and 14 m high entrance presented an inviting rockshelter, which was intensely occupied in the Mesolithic, Neolithic, Eneolithic, and Bronze Age.

These few examples may be enough to point out that the frequency and duration of cave occupation is basically depending on topographic and geographic factors. The preferred occupation were capacious and bright hall caves with wide entrances, lying next to natural routes or road junctions and thereby offering access to diverse economic domains. Otherwise the favorable natural conditions of caves are mostly universal in spite of iterated occupations during the Mesolithic and Neolithic periods and by all means different subsistence strategies could be supposed.

It can be asserted that in numerous caves the Earliest Holocene occupation began not until the period of Neolithisation. Most of the caves, yielding hints on activity of the Early Neolithic Impresso culture, were also occupied in the subsequent Middle

and Late Neolithic. These preferred caves often possess fertile plains or plateaus in their neighborhood that were potentially suitable as pasture or for crop cultivation such as Jamina Sredi [6], Gospodška Pećina [10], Škarin Samograd [14], Vela Spila [21], Gudnja Cave [25], and Zelena Pećina [28].

Furthermore we now have the knowledge of caves exclusively settled by the Early Neolithic Impresso culture, and all the caves are small, with a bottom surface of less than 100 m<sup>2</sup> and located in remote topographic niches (Oporovina Pećina [3], Zapadna Pećina [11], Koronina Cave [31]). The increased number of known sites of the Impresso culture indicates a more intense occupation and exploitation of the mountainous economic area in the Early Neolithic compared to the Middle Neolithic. In the time of the Danilo culture the settlement activities seem to have been reduced to the most favorable places and as a rule the occupied caves were already keeping Early Neolithic remains. Solely on the Islands Hvar (Grapčeva Špilja [19], Pokrivenik Pećina [20]) and Korčula (Žukovica Špilja [22]) the Danilo culture entered new shelters.

Similar observations can be seen in the case of the Late Neolithic. Most of the Late Neolithic cave settlements reveal residues of a preceding Neolithic occupation. Only on the Islands of Hvar (Vela Špilja [18]), Korčula (Jakasova Špilja [23]), and Lastova (Raća Pećina [24]) primary occupations of caves are attested by the Hvar culture. The marine zone of the Islands Hvar and Korčula was sporadically occupied in the Early Neolithic and experienced a continuous aggregation of settlement activities in the Middle and Late Neolithic periods.

## Environment And Subsistence

Evidence for the environment, patterns of life, and subsistence strategies are mainly provided, in the case of cave sites, by archaeological artifacts, ecofacts, and botanical and macrofaunal relicts.

In this way, the animal bones from the Mesolithic deposits of Loza Pećina [1] in Istria show a forest fauna typical of the Pre-Boreal and Boreal climatic phase. The archaeological evidence, characterized by the presence of several fireplaces together with the remarkable scarcity of artifacts, suggests a repeated but short term pattern of attendances of Mesolithic hunter gatherer groups.

In contrast, Kopačina Špilja [16] on the Island Brač delivered a huge amount of Epipalaeolithic and Early Mesolithic flint artifacts, implying a long term and intensely occupied

location. In the inner part of the cave a compact layer of snail shells with 10 to 30 cm thickness was found. It was radiocarbon dated to the Early Holocene. Obviously, the inner part of the cave served as a storage room for snails over a long time span. The numerous animal bones suggest that the inhabitants of the cave were basically game hunters, but they also hunted birds and collected snails. Fish remains were also found.

A similar feature was found in the Mesolithic stratum of Vaganačka Peč [9] at the western slope of the Velebit Mountains, which revealed three layers of snail shells, indicating their systematic collecting, storing, and consumption.

The cultural layers of the Palaeolithic and Mesolithic in Vela Spila [21] on Korčula Island impressively display the change from a terrestrial to a marine subsistence strategy. At the beginning of the Holocene the Adriatic sea level rose about 100 m, and consequently the distance from the shore to Vela Špila decreased from 15 km to a few hundred meters. As a result of these radical environmental changes red deer, wild horses, and wild cattle disappeared gradually and were replaced by marine food resources such as fish, shellfish, and seashells. Frequent finds of large fish bones such as tuna and swordfish indicate developed techniques of deep sea fishing. The emergences of numerous simple bone needles within the artifactual assemblages reflect also a common consumption of shells and snails.

On the other hand the Odmuť Cave [33] yielded information about environment and subsistence strategies in the midlands of Montenegro. The wild fauna of the Mesolithic layers testifies dense forests with abundant water in the neighborhood of the cave. A surprisingly high percentage of ibex bones indicate a specialized hunting of this particular animal. Besides the ibex, red deer and fish played a major role for the nutrition of the Mesolithic groups inhabiting the Rockshelter of Odmuť.

In addition, the Caves of Odmuť [33] and Crvena Stijena [30] reveal informations about the transition from Mesolithic to Neolithic economy in the hinterland of the Adriatic coast. Within the Mesolithic layer 1 of Odmuť Cave [30], bones of goat already have been observed. In layer 2 domestic cattle and sheep/goat occur together with pottery, while the flint industry maintains Mesolithic character (Müller 1994, 201).

Strata 4 and 3 in the Crvena Stijena Cave [30] (Fig. 6.4) revealed silex and bone tools of unmixed Mesolithic character as well as residues of an economy mainly based on hunting. Additionally, already in the anterior layer four bones of domestic

cattle and sheep/goat have been found. An even stronger contrast presents the subsequent layer 3. The material culture of Mesolithic habitus undoubtedly embodied a considerable amount of pottery assigned to the Impresso culture. But a complete break with Mesolithic traditions was not noticed until stratum 2, which is already belonging to the Middle Neolithic period.

Authors like Čedomir Marković considered these results as evidence for the formation of the Early Neolithic emerging directly out of an indigenous Mesolithic base (Marković 1985, 92; Mlekuž 2003). Meanwhile, Müller explained these mixed cultural complexes in Montenegro with the adoption of Neolithic elements in the Late Mesolithic setting (Müller 1994, 200-203). Firstly, the sheep/goat husbandry was adopted in a later stage followed by the technology of pottery. Müller's presumption that there was a contemporaneity between Late Mesolithic groups in the mountainous zone of Montenegro and an Early Neolithic population along the Adriatic coast is supported by radiocarbon dates, which also display an overlapping of ca. 4 centuries (Müller 1994, 200-201, fig. 76). Moreover, thanks to Müller, we now have a survey of the distribution of Early Neolithic cave sites and open-air settlements in regard to the environmental factors involved (Müller 1994, 42-64). The so called "site catchment analysis" as well as the "cluster analysis" of regional factors were adopted. A subsistence model of the Impresso culture emerged as a result of this analysis. According to Müller, open-air settlements are generally situated in areas of lower rainfall, in plains, or edges of karst plateaus, and always in the vicinity of fertile soil. In contrast, cave sites are located in varying forms of landscape reaching far into the Dinaric Mountains. Typical for cave settlements are karst areas with elevated precipitations with temperate winter temperatures, where nowadays livestock can be overwintered without stables and feeding (Müller 1994, 42-50). According to this model, the distribution of flatland settlements and cave sites reflect two complementary subsistence strategies, which, put together, present a mixed economy of the Early Neolithic. Since mainly crop cultivation was practised at the open settlements, caves served as temporary camp sites for pasture activities and perhaps for hunting too. The considerable distances between the temporary cave camps in the mountains and the sedentary flatland settlements point to a kind of seasonal transhumance (Müller 1994, 50-64).

This model is confirmed by the spectrum of excavated artifacts. In cave sites flint blades with

sickle gloss such as grinding stones as residues of harvesting and processing cereals are absent. Otherwise, the occurrence of seashells in considerable assemblages as occasional supplement of nutrition in the Gudnja Cave [25], Crvene Stijena Cave [30], and Gospodska Pećina [10] indicates an intense exchange of persons and commodities between the coast and the hinterland (Müller 1994, 67). Though the number of Early Neolithic cave sites with investigated faunal material is small, the results are significant. The animal bones of Gospodska Pećina [10] and Spila Peć [34] represent nearly exclusively domestic animals, predominantly sheep/goat, followed by domestic cattle, while domestic pigs are conspicuously under represented as it is the case of wild game. From this material, it can be concluded that caves served primarily as base camps for the practice of a transhumant pasture economy of ruminants, whereas hunting scarcely played a role in subsistence strategies.

For the Middle and Late Neolithic, much less data are available. On the basis of what was obtained from the multilayered open-air settlement of Smilčić in northern Dalmatia, Müller infers to a higher productivity of the Middle Neolithic settlement in comparison with the Early Neolithic occupation. Possibly, the decrease of the number of settlements together with an obvious retreat to convenient positions by the Danilo culture were associated with an increasing concentration of population in core settlements (Müller 1994, 195, fig. 79).

In the same direction point results of a regional survey in the plain of Ravni Kotari in northern Dalmatia accomplished by John C. Chapman and his colleagues. In the survey area the higher population density in the early farming periods led to smaller and more compact breeding networks. In the Middle and Late Neolithic settlement *foci* were so small that interaction networks appear poorly developed (Chapman, Shiel and Batović 1996, 66).

Comparing with the Early Neolithic, subsistence strategies in the Danilo culture continued without drastic alterations. As economic branches, plant cultivation, animal husbandry, fishing, hunting, and gathering subsisted, while the focus of the subsistence was determined by the microregional environment. For instance in the littoral, fishing and the occasional collecting of seafood played a certain role (Batović 1979, 551-554). In contrast, in the Middle Neolithic stratum 2 of Crvena Stijena Cave [30] intense hunting activities are proved, and of domestic animals only goat is detected in a

noteworthy number, which hints that crop cultivation is lacking (Batović 1979, 551).

In the Late Neolithic Hvar culture the subsistence strategies underwent at most a gradual change, where again flatland settlements and cave sites seem to be associated with different economic activities. Hatches of stone and antler such as grinding stones found in the sites of Smilčić and Lisičić indicate an extensive crop production in open-air settlements. The contemporary cave settlements are all missing remains of local crop production. In Markova Špilja [17] on Hvar Island the consumption of cereal can be proved by finds of grinding stones, but again this hints on the absence of crop cultivation as it is also the case of Grapčeva Špilja [19] (Batović 1979, 608). A strongly developed animal husbandry can be asserted in the coastal flatland settlement of Lisičić, while hunting was intensely practised in the mountainous open-air settlement Smilčić (Batović 1979, 608, 610-611).

The economic function of cave sites belonging to the Hvar culture is not well known. In Hateljska Pećina [26], situated in the hinterland of the Adriatic coast, considerable amounts of animal bones of wild and domestic species were found. Sheep or goat bones dominated, while the number of cattle bones was small. Snail shells and freshwater shells were commonly found, but there is an obvious lack of cereal remains or rather hints for consuming cereal products.

Similar to the Early Neolithic, a complementary organisation of subsistence strategies is looming. The observable relative increase of cave sites in the Late Neolithic could reflect an intensification of animal husbandry, in particular a seasonal transhumance practice between the littoral and the mountains. However, the verification of this assumption will for now have to be reserved to archaeological investigations of the future.

## Albania

Although Albania, situated at the southeastern Adriatic coast, is geographically connected to Dalmatia and Montenegro, it reveals differing coastal landscapes. The northern and central sections of the Albanian coast show a broad plain with a shallow decline into the Adriatic Sea. The hinterland is composed of fold mountain ranges with abrupt differences in elevation, karst formations, plateaus, and fertile valleys. Conspicuous is the absence of Neolithic settlements in the coastal plains, instead, sites are known from the river valleys and basins of the mountainous zone.

In the Albanian Neolithic period, fertile basins, tableland, elevated riverbanks, and karst caves were preferred for occupation. As a rule of thumb, open-air settlements are multilayered and usually reveal cultural stratigraphies of at least some meters in thickness.

Recently, thanks to Muzafer Korkuti, we now have a comprehensive description and analysis of the Neolithic in Albania (Korkuti 1995). The Early, Middle, and Late Neolithic stages are used by Korkuti synchronous to the terminology in Dalmatia, Montenegro, and Herzegovina. In particular in the Korça Basin, situated in southeast Albania, a complete sequence of the Neolithic development has been recorded. The Early Neolithic is characterized by the Podgori 1 group, the Middle Neolithic corresponds with the phases Dunavec 1 and 2, and finally the Late Neolithic is defined according to the settlement phase Maliq 1a (Korkuti 1995, 253-259, fig. 26). Hitherto, the existence of a Mesolithic in Albania could not definitely be detected (Müller 1994, 332; Korkuti 1995, 82-83). Therefore, the primary Holocene occupation of caves seems to have taken place in the Early Neolithic period.

Scarcely reliable conclusions about the proportion of open-air sites and cave sites can be made or rather proposed, even though the number of Neolithic settlements is very small. Remarkably, in the Early Neolithic the investigated flatland settlements (8 sites) are clearly prevailing in comparison to cave settlements (3 sites). In contrast, in the Middle Neolithic (4 open-air sites, 5 cave sites) and Late Neolithic (6 open-air sites, 4 cave sites) the numerical proportion seems to be more balanced.

The three known caves revealing Early Neolithic layers, Blaz Cave [35], Katundas Cave [36], and Nezir Cave [38], were also occupied in the Middle Neolithic. In Katundas Cave [36] remains of all phases of the Neolithic period were detected as well as of the Bronze and Iron Ages. The intensive settlement activities reflected in a comprehensive archaeological material are due to the fact that the specific small karst cave is situated at the cross point of two overland routes. In contrast to this, the favorable situated hall Nezir Cave [38] has provided only small amounts of Early to Middle Neolithic finds. Therefore, repeated but intermittent occupations can be reconstructed.

Due to mostly small scale excavations conducted thus far, the Albanian caves have revealed less archaeological material than the multilayered settlements. Nevertheless, the material of the Katundas Cave [36] should be more or less

representative of the Neolithic occupation. Even if implements made of stone, flint, and bone are frequent in the Katundas Cave [36], the spectrum of artifact types seems to be restricted. This explains the absence of grinding stones in Katundas Cave [36] and other caves. Not less conspicuous is the missing ritual accessory including miniature altars as well as anthropomorphic and zoomorphic terracotta idols, which are abundant in the flatland settlements in all phases of the Neolithic period (Korkuti 1995, pls. 8, 14, 15, 21, 40-42, 48, 82).

Even if data about subsistence strategies in the cave sites are lacking in default of zoological and botanical surveys, the restricted spectrum of artifacts points to selective and subsidiary functions of the Albanian cave settlements within the Neolithic economy.

## Bulgaria

The investigation of the Neolithic occupation of caves in Bulgaria is still in its early stages. All of the few investigated cave sites with traces of Neolithic occupation are situated at the northern fringe of Stara Planina. These Balkan Mountains in their original sense embrace a ridge of fold mountains bordering the peri-Mediterranean zone of central Bulgaria to the continental Danube area.

It is in the same microregion that the Loveč Cave [42] and Devetaki Cave [41] are located. The karst cave system of Loveč Cave [42] revealed settlement finds of the Early Neolithic with pottery yielding features of the Starčevo culture. The macrofaunal remains are represented by domestic cattle and sheep/goat as well as wild game. In the large hall Devetaki Cave [41] a rich settlement layer of the Late Neolithic, in superposition of a stratum of the Starčevo culture, was found. Within the cave hall domestic installations such as hearths and ovens were discovered, which resembled features of Late Neolithic tell settlements in northeastern Bulgaria. Also the comprehensive assemblages of pottery, tools of stone, flint, bone, and copper as well as ritual objects conform to the material culture of contemporary multilayered settlements (Todorova 1982).

In the karst area around the town of Trnovo with the adjacent caves of Malkata podlisža [43] and Golāmata Peštera [44] two sites with relicts of a Neolithic occupation are known. The knowledge of Neolithic activities in the Malkata podlisža Cave [44] is very limited, but Golāmata Peštera Cave [44]

provided a considerable amount of cultural material dating to the Late Neolithic.

Compared to the regularly occupied caves of the Impresso culture in the eastern Adriatic area, the Early Neolithic cave sites in Bulgaria seem to be exceptional. Since the Early Neolithic Starčevo culture mainly spread in the central Balkans and middle Danube area, it is almost exclusively known from open-air settlements (Garašanin 1979, 120-122). Not accidentally, cave finds of the Starčevo culture solely appear at the periphery of its distribution, for instance in Odmuť Cave [33], and in Montenegro like Loveč Caves [42] and finally Devetaki Cave [41] in Bulgaria.

For the Late Neolithic and Chalcolithic of northern Bulgaria the rule are highly developed tell settlements situated at the fringes of fertile plains. Cave camps obviously were no integral part of this settlement pattern (Todorova 1982, 1-15, 44-58; Todorova 1995, 83-87). Perhaps due to the fact that caves did not fulfil a complementary function in the economy of tell settlements, irregular caves sites in the Balkan range present nearly a standard subsistence and pattern of living.

## Catalogue Of Cave Sites

Registered are all regarded cave sites including details about their Early Holocene occupation, altitude above sea level, and dimensions so far made available.

### Abbreviations:

M = Mesolithic, EN = Early Neolithic, MN = Middle Neolithic, LN = Late Neolithic

ASL = above sea level

L = length, W = width

### Croatia

#### 1. Loza, Šapjane

Occupation: M; dimensions: L 45 m

Reference: Malez 1971, 215-227; 1974, 17-49; 1979, 242

#### 2. Klanjčeva Peć, Čičarija

Occupation: M; altitude: 828 m ASL; dimensions: 29 x 10 m

Reference: Malez 1974, 17-49; 1979, 234-235

#### 3. Oporovina Pećina, Medveja

Occupation: M, EN; altitude: 325 m ASL; dimensions: 10 x 6, 12 x 6 m

Reference: Malez 1979, 244; Müller 1994, 312

#### 4. Podosojna Peć; Mošćenice

Occupation: M; altitude: 335 m ASL; dimensions: 16 x 4-7 m

Reference: Malez 1974, 17-49; 1979, 249

#### 5. Vorganska Peć; Krk Island

Occupation: EN; altitude: 380 m ASL

Reference: Miroslavljević 1962, 178-179; Batović 1979, 482

#### 6. Jamina Sredi, Cres Island

Occupation: EN, MN, LN

Reference: Miroslavljević 1959, 131-174; 1962, 172-212; 1971, 102-105; Batović 1979, 481; Müller 1994, 313

#### 7. Vela Špilja, Lošinja Island

Occupation: EN, MN, LN; dimensions: 35 x 10 m

Reference: Miroslavljević 1968; Batović 1979, 481-482; Müller 1994, 314-316

#### 8. Golubnjača Pećina, Kosinja

Occupation: LN; altitude: 558 m ASL; dimensions: 14 x 13 m

Reference: Drechsler-Bižić 1970, 111-113; Batović 1979, 482

#### 9. Vaganačka Peć, Starigrad

Occupation: M, EN, MN, LN; altitude: 700 m ASL; dimensions: 25 x 15 m

Reference: Forenbacher and Vranjican 1985; Müller 1994, 316-317

#### 10. Gospodška Pećina, Vrlika

Occupation: EN, MN, LN; altitude: 430 m ASL; dimensions: L 32 m

Reference: Marović 1976; Müller 1994, 325-326.

#### 11. Zapadna Pećina, Drniš

Occupation: M; dimensions: 20 x 3-4 m

Reference: Malez 1975, 121-153; Müller 1994, 323

#### 12. Tamnica, Bitelica

Occupation: M; altitude: 355 m ASL

Reference: Müller 1994, 326

#### 13. Tradanj, Krka River

Occupation: EN, LN; altitude: 40 m ASL

Reference: Batović 1979, 477; Müller 1994, 325

#### 14. Škarin Samograd, Mideno Mountain

Occupation: EN, MN, LN; dimensions: 49 x 28 m

Reference: Müller 1988, 1994, 324-325

#### 15. Krcina Jama, Grlo

Occupation: M; dimensions: 50 x 19 m

Reference: Zekan 1977, 137-147; Müller 1994, 326

#### 16. Kopačina špilja, Brač Island

Occupation: M

Reference: Čečuk 1996, 13-30

#### 17. Markova Špilja, Hvar Island

Occupation: EN, MN, LN; altitude: 57 m ASL; dimensions: 31 x 12 m

Reference: Novak 1974, 75-220; Batović 1979, 496-501, 508-513, 571-578, 584-592, 598-628; Čečuk 1982, 35-62; Novak and Čečuk 1982, 11-34; Müller 1994, 326-327

#### 18. Vela Špilja, Hvar Island

Occupation: LN; dimensions: 14 x 3 m

Reference: Čečuk 1970, 23; Batović 1979, 482-483

19. Grapčeva Špilja, Hvar Island

Occupation: MN, LN

Reference: Benac 1979, 371

20. Pokrivenik Pećina, Hvar Island

Occupation: MN, LN; altitude: 50 m ASL; dimensions: 27 x 11 m

Reference: Novak 1949, 150-157; Batović 1979, 478-479

21. Vela Špila, Korčula Island

Occupation: M, EN, MN, LN; altitude 130 m ASL; dimensions: 50 x 30 m

Reference: Müller 1994, 330; Čečuk and Radić 2005

22. Žukovica Špilja, Korčula Island

Occupation: MN, LN; altitude: 100 m ASL; dimensions: 17 x 8 m

Reference: Radić 2002, 55-69

23. Jakasova Špilja, Korčula Island

Occupation: LN; altitude 50 m ASL; dimensions: L 70 m

Reference: Novak 1954, 44-45; Batović 1979, 479

24. Rača Pećina, Lastova Island

Occupation: LN; altitude: 50 m ASL; dimensions: 35 x 15 m

Reference: Novak 1955, 227-229; Batović 1979, 479

25. Gudnja Cave, Pelješac Island

Occupation: EN, MN, LN; altitude: 406 m ASL; dimensions: L 20 m

Reference: Batović 1966, 96-98; 1979, 482; Müller 1994, 330-331

### Herzegovina

26. Hateljska Pećina; Stolac

Occupation: EN, LN; dimension: 28 x 20 m

Reference: Müller 1994, 329; Marijanović 2000, 207-228

27. Ravlića Pećina, Imotski

Occupation: EN, MN, LN; altitude: 210 m ASL

Reference: Marijanović 1981; Müller 1994, 328

28. Zelena Pećina, Mostar

Occupation: EN, MN, LN; altitude: 600 m ASL

Reference: Benac 1957; Batović 1979, 481; Müller 1994, 328-329

29. Žukovičk Pećina, Posušja

Occupation: EN, MN, LN

Reference: Marijanović 1978, 5-10; Müller 1994, 328

### Montenegro

30. Crvena Stijena Cave, Petrovici

Occupation: M, EN, MN

Reference: Benac 1957, 1958, 21-64; Basler et al. 1975; Basler 1979, 383-384; Batović 1979, 480-481; Müller 1994, 331.

31. Koronina, Cetinje

Occupation: EN

Reference: Marković 1985, 27-28; Müller 1994, 332

32. Medena Stijena, Čehotina River

Occupation: M; altitude: 558 m ASL; dimensions: 14 x 11 m

Reference: Srejšović 1989, 485-490

33. Odmut Cave, Piva River

Occupation: M, EN, MN, LN; altitude: 700 m ASL; W 26 m

Reference: Marković 1974; Srejšović 1977; Basler 1979, 384-386; Batović 1979, 483; Marković 1985, 93-94; Müller 1994, 329-330

34. Špila Peć, Sveti Ilja Mountain

Occupation: EN, LN; altitude: 320 m ASL

Reference: Marković 1985, 15-27; Müller 1994, 331-332

### Albania

35. Blaz Cave, Blaz

Occupation: EN, MN

Reference: Müller 1994, 332; Korkuti 1995, 82-83, 169-170.

36. Katundas Cave, Katundas

Occupation: EN, MN, LN

Reference: Korkuti 1995, 85-89, 162-166, 196-197

37. Konispol Cave, Konispol

Occupation: MN, LN

Reference: Korkuti 1995, 173-174, 199

38. Nezir Cave, Koder Laç

Occupation: EN, MN, LN; altitude: 400 m ASL

Reference: Korkuti 1995, 84, 170-171

39. Tren cave, Lake Prespa

Occupation: MN; 856 m ASL; dimensions: L 12 m

Reference: Korkuti 1995, 166-167

40. Velča Cave, Velča

Occupation: LN

Reference: Korkuti 1995, 198-199

### Bulgaria

41. Devetaki Cave, Devetaki

Occupation: EN, LN

Reference: Mikov and Džjambazov 1960; Stojanov 1993, 20

42. Loveč Caves, Loveč

Occupation: EN, MN

Reference: Džjambazov 1963

43. Malkata podlisža, Beljakovež

Occupation: EN(?)

Reference: Popov 1913, 1938

44. Golāmata Peštera, Beljakovež

Occupation: MN, LN

Reference: Popov 1938

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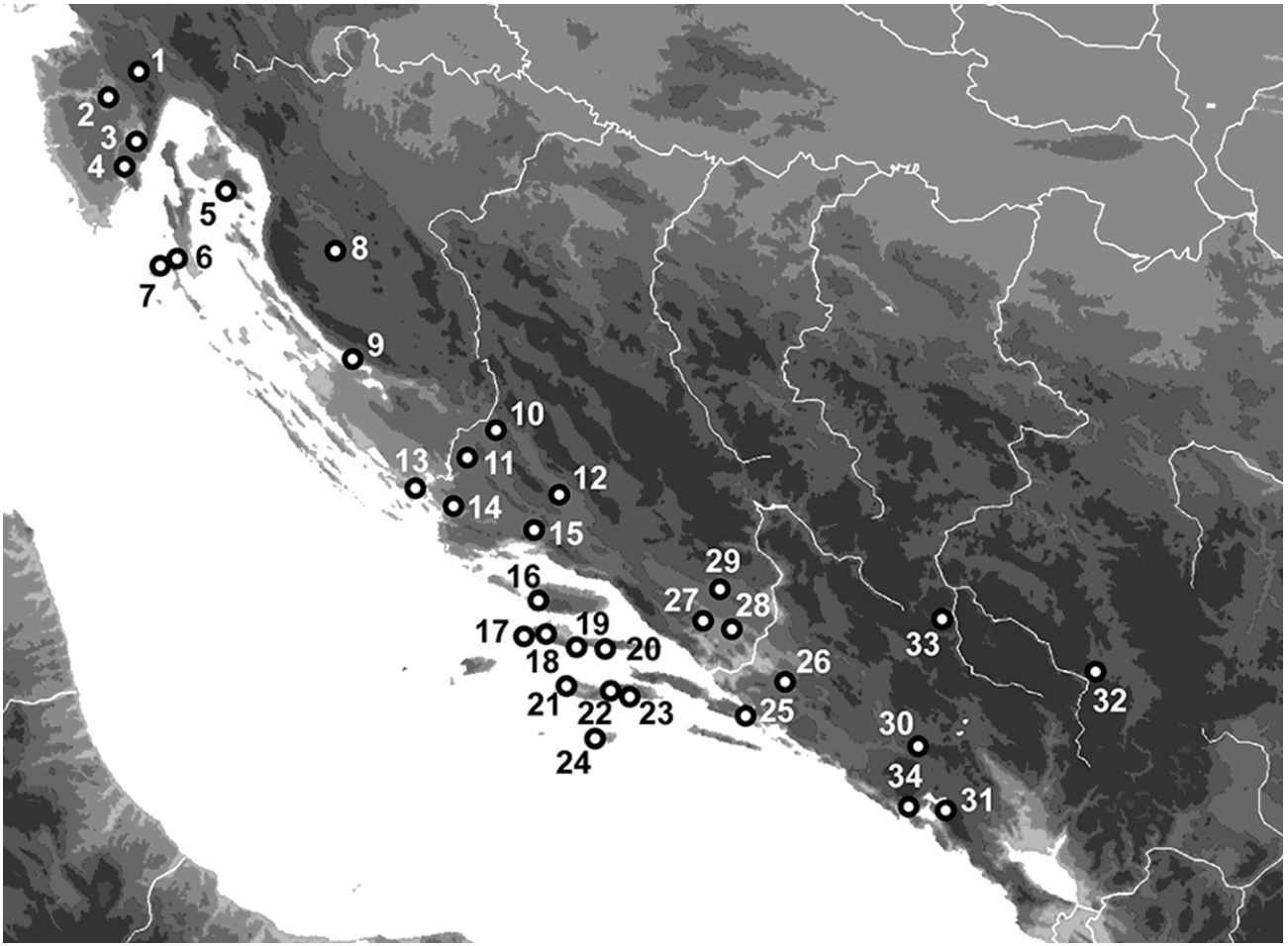


Figure 6.1. Mesolithic and Neolithic cave sites in the east Adriatic area (Croatia, Herzegovina, Montenegro). Numbers refer to the cave site register at the end of the paper.



Figure 6.2. The Interior of Vela spila [21] on the Island of Korčula (Čečuk & Radić 2005, Fig. 14).

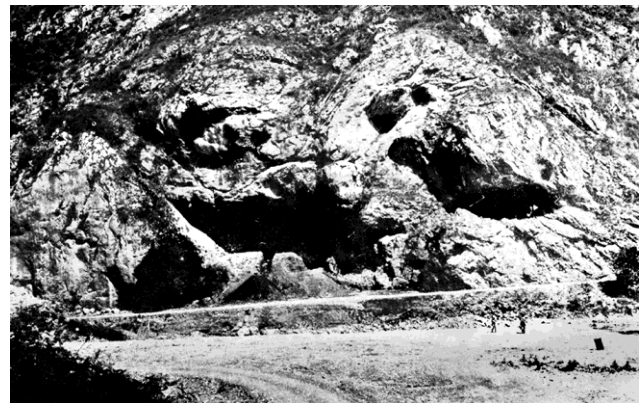


Figure 6.3. View of the Odmut rockshelter [33] in Montenegro (Marković 1974, Fig. 1).



Figure 6.4. View of Crvena stijena [30] in Montenegro (Benac 1957a, Fig. B).

