

Review

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Review

History of the Archaeozoology in Bulgaria – Fields, Researchers and Achievements for 120 Years

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Abstract

A first attempt has been made to systematically present the achievements of several archaeozoological fields in Bulgaria: archaeomalacology, archaeoichthyology, archaeoherpetology, archaeornithology, archaeomammalogy. The main results and some of the more significant studies in each of these fields are presented. It is summarized that archaeozoological studies began in the first decade of the 20th century. A list of established authors of archaeozoological publications in Bulgaria has been compiled. Of the identified species, four species of birds and six species of mammals have disappeared from the modern fauna of the country. Two species have completely disappeared globally.

Keywords: archaeology; human-animal interactions; fishing; hunting; gathering; game; domestic animals

Introduction

The archaeozoology is a relatively new field in zoological and archaeological research. It can be considered that in Bulgaria the first archaeozoological studies were carried out in prehistoric sites (mainly in caves). We must undoubtedly accept the prehistoricist Prof. Rafail Popov (1876-1940) as the founder of Bulgarian archaeozoology. Already in the first decade of the 20th century he began to publish one after another his archaeozoological studies in prehistoric settlements in Bulgaria. Among the first is that on caves near Veliko Tarnovo [1]. In it, as in almost all his works, R. Popov provides lists of the established animal species (mainly large mammals), and often short descriptions of some of the more diagnostic species finds. Bony fish, amphibians, reptiles and birds are almost completely absent from these lists.

The first studies of animal bone remains in the historic (Early antiquity to subrecent) archaeological sites in Bulgaria appeared in the 1950s [2–4]. In the 1960s and 1970s, archaeozoological studies in Bulgaria were not published.

Over the past decade or so (after 2010), the number of archaeozoological studies has increased sharply. With a few exceptions [5–7], no generalizing studies on the development of this type of research in the country have been published so far. These three publications are thematically restricted: the first two concern only data on bird bone remains, and the second concerns only medieval monuments in Bulgaria. It is estimated that there are about 400,000 archaeological sites (settlements, fortresses, military camps, monasteries, churches, etc.) within the modern borders of Bulgaria. After Greece and Italy, Bulgaria is the country in Europe with the richest cultural heritage [8]. This clearly shows the scope that a summary with a title like the present one should have.

For a more concise presentation of the abundant information on this topic, grouping the data according to the objects of study seems most appropriate.

Main Directions in Archaeozoology Developed in Bulgaria

Archaeomalacology

Not all mollusks are beneficial in terms of their taphonomy. In this respect, shelled mollusks (mostly Gastropoda and Bivalvia) are relatively common among the discovered animal remains in ancient human settlements. The geographical location of the territory of modern Bulgaria allows, based on the mollusks, to establish respectively Mediterranean or Black Sea contacts according to the peculiarities of the distribution of individual species.

It is difficult to accept that archaeomalacology is a developed scientific discipline in Bulgaria. However, it should be noted that there are published studies in the country on subfossil conchological finds from Mollusca – both marine and terrestrial representatives of Gastropoda, as well as those of Bivalvia.

Popov [1] lists 4 taxa: *Margaritifera margaritifera*, *Helix pomatia*, *Helix* sp., and *Dentalium* sp. from the Paleolithic layers of Golyamata Peshtera Cave (near Veliko Tarnovo). In other paper [9] he reports *Helix pomatia*, *Margaritifera margaritifera*, *Mytilus edulis*, and *Cardium* sp. from the Neolithic settlement mound Bakadzhi near Salmanovo village. Four taxa - *Helix* sp., *Helix pomatia*, *Unio* sp., and *Cardium* sp., were established in the Kodzhadermen Neolithic settlement mound by Popov [10].

Ribarov [11] reported 11 taxa - *Anodonta cygnaea*, *Planorbis* *corneus*, *Helix pomatia*, *Mytilus edulis*, *Cerastoderma glaucum*, *Ostrea* sp., *Cardium* sp., *Tritia reticulata*, *Nana donovana*, *Volutilithes* sp., *Surrea* sp. from the ancient city of Kabyle. In other publication [12] he reported: *Surrea* sp. from the Hallstatt period in Yambol and from a Neolithic settlement near the village of Blatets (Sliven Region), sea snails of the genus *Murex* from the ancient town of Kabile, in the medieval fortress near the village of Karavelovo (Yambol Region) and in the medieval settlement near the village of Dyadovo (Sliven Region), snails of the genus *Volutilithes* from ancient Kabile, *Mytilus* sp., *Helix pomatia*, *Planorbis* sp., *Unio* sp. and *Anodonta* sp. from medieval Yambol. The same author reported 884 mollusk finds of 19 species from 10 archaeological sites of SE Bulgaria: *Unio pictorum* from Kabile, Yasatepe, Yambol, Karavelovo, Sliven, and Dyadovo; *Anodonta cygnaea* from Yasatepe and Hisarlaka; *Mytilus galloprovincialis* from Kabile, Yasatepe, Urdoviza, Yambol, and Hisarlaka; *Ostrea edulis* from Kabile, Urdoviza, Yambol, and Hisarlaka; *Cardium edule* from Kabile and Yambol; *Pecten ponticus* from Yambol; *Sphaerium corneum* from Kabile, Urdoviza, Yambol; *Bolinus brandaris* from Kabile, Karavelovo, and Dyadovo; *Glycymeris glycymeris* from Yasatepe; *Glycymeris albolineata* from Hisarlaka; *Spondylus gaederopus* from Yasatepe; *Helix pomatia* from Kabile, Urdoviza, Yambol, and Hisarlaka; *Cypraea tigris* from Kabile and Yasatepe; *Caucasocressa vindobonensis*, *Planorbis planorbis*, *Tritia pellucida*, *Tritia reticulata*, *Charonia tritonis*, *Columbella rustica* from Kabile [13]. We might consider this research to fall entirely within the field of archaeomalacology.

Incidentally, data on found mollusk shells are also contained in a number of archaeozoological studies. Here we mention only those with more species or specimens. Stoianov [14] reports on Pleolithic finds of *Unio* sp., *Helix pomatia* and *Dentalium* sp. from Toplya cave near Golyama Zhelezna village (Lovech Region). According to [15], this is the first comprehensive study of a cave in Bulgaria.

Vasilev [16] found *Mytilus edulis* and *Unio crassus* in the middle Chalcolithic settlement mound near Ovcharovo village (Targovishte Region). Ribarov [17] reported 5 species of Mollusca in ancient Kabile: *Cardium* sp., *Murex* sp., *Unio pictorum*, *Planorbis comeus*, *Helix pomatia*. Boev et al. [18] reported 5 snail taxa with 185 specimens: *Caucasocressa vindobonensis*, *Euomphalia strigella strigella*, *Fruticicola fruticum*, *Helix pomatia*, and *Oxychilidae* gen. indet. from the late antique settlement near the town of Dimovo. *Unio crassus* and *Ostrea edulis* were established in Sofia from 3-5th c. AD by [19]. *Helix lucorum* was found in the medieval monastery near Veliki Preslav [20] and *Unio* sp. in Neolithic settlement of Slatina [21] and in Early Neolithic settlement near Kapitan-Dimitriev village (Pazardzhik Region) [22]. *Unio pictorum* was established in the Byzantine settlement Bela Voda (Pernik Region) [23], *Anodonta cygnaea* was found in Kabile [11], and *Unio* sp. in the Roman town of Ratiaria [24]. In the late Neolithic ritual complex near Sarnevo village (Stara Zagora Region) [25] lists *Mytilus galloprovincialis*, *Unio pictorum*, and *Helix pomatia*. Vasilev [26] reports on the medieval settlement near the village of Durankulak (Dobrich region) *Mytilus galloprovincialis*, *Ostrea edulis* and

“snails”. In the Late Chalcolithic mound near the village of Bazovets (Montana region) [27] also found shells of *Unio crassus*, *Unio* sp. and *Helix pomatia*. *Unio* sp. is published by [28] for the Early Neolithic settlement near Kapitan-Dimitriev village (Pazardzhik Region). *Spondylus* finds were found in the Chalcolithic mound near Ivanovo village (Shumen Region, [29].

Although extremely rare, archaeomalacological studies in Bulgaria have also been conducted by foreign archaeozoologists. The molluscs at Nicopolis ad Istrum have been studied in detail by [30].

In some archaeozoological studies, mollusc remains have been neglected and left unidentified. For example, in the Late Chalcolithic settlement near the village of Hotnitsa (Veliko Tarnovo region), 411 mussels were identified as “River clam”.

In almost all of these publications, the findings of mollusk shells are mentioned as accompanying the other numerous bone and dental remains, mainly of large domestic mammals. In most cases, the remains of mollusks are single or few in number. In rare cases, their number reaches 100 or more. In all the archaeological monuments mentioned so far, the remains of mollusks have not been determined by specialist malacologists. The only exception is the study by [18]. Therefore, it can be summarized that despite the available data, archaeomalacology in Bulgaria is an emerging direction in archaeozoological research.

Archaeoichthyology

The modern Bulgarian ichthyofauna numbers 207 species of freshwater and marine fish [30]. Most species of bony fish in Bulgaria are relatively small in size. In Bulgaria, in almost all archaeological sites, the excavated soil is not sieved and washed. Therefore, usually, the bony remains of fish rarely fall into the hands of archaeozoologists. We can assume that fish remains are everywhere underrepresented in archaeozoological materials.

Twenty-one freshwater and marine species of fish from the ancient town of Nicopolis-ad-Istrum (CN Bulgaria) have been found by [32–34]: *Acipenser ruthenus*, *Esox lucius*, *Salmo trutta*, *Cyprinus carpio*, *Carassius carassius*, *Tinca tinca*, *Abramis brama*, *Alburnus alburnus*, *Aspius aspius*, *Barbus barbus*, *Chondrostoma nasus*, *Leuciscus idus*, *Leuciscus cephalus*, *Phoxinus phoxinus*, *Rutilus rutilus mariza*, *Silurus glanis*, *Perea fluviatilis*, *Sander lucioperca*, *Anguilla anguilla*, *Platichthys flesus*, and *Scomber scombrus*. Without exaggeration, we can consider that the study [34], although by foreign researchers, is the first archaeoichthyological study in Bulgaria.

Seven species of fish (*Acipenser stellatus*, *Acipenser gueldenstaedti*, *Sarda sarda*, *Carassius carassius*, *Cyprinus carpio*, *Silurus glanis*, and *Sander lucioperca*) from the medieval castell Rusokastro (SE Bulgaria) are reported after data of by [35] and [36]. *Cyprinus carpio* is reported by [37] from the Iron Age deposits of Yasatepe. *Thunnus thynnus* is reported by [38] from Eneolithic settlement near Sozopol. *Silurus glanis* has been found in several locations in ancient and medieval Serdica [39–42]. *Silurus glanis* and *Cyprinus carpio* were established in the Byzantine settlement Bela Voda (Pernik Region) [23], the Roman town of Ratiaria [24] and the Late Chalcolithic settlement near the village of Hotnitsa [43]. *Cyprinus carpio*, *Lucioperca lucioperca*, *Silurus glanis*, and *Esox lucius* were reported by [17], and *Esox lucius* was recorded in ancient Kabile [44]. *Abramis brama* was identified among the faunal remains in Serdica from 16th -18th c. AD [39]. Usually, single vertebrae are found in the excavated soil, and even more rarely, gill covers (operculum) and pharyngeal teeth. Most often, these remain undetermined.

Archaeoherpetology

We should clarify that this traditionally includes information about finds from two classes of vertebrates – amphibians (Amphibia) and reptiles (Reptilia). The term archaeobatrachology for amphibians is practically not used.

The modern herpetofauna (amphibians and reptiles) of Bulgaria is one of the richest in Europe, but so far, archaeological sites in the country have mainly found and reported finds of the two species of land tortoises of the genus *Testudo*. Due to their anatomical features (compact and thick flat bones

of the carapace and plastron), tortoises are often present in archaeozoological materials almost throughout the country.

Popov [1] reports of carapax fragments of *Testudo graeca* from Golyamata Peshtera Cave near Veliko Tarnovo. Two species of land tortoises (*Testudo graeca* and *Testudo hermanni*) are reported by [35] for the medieval castell Rusokastro. *Emys orbicularis* and *Testudo graeca* are reported by [38] from Eneolithic settlement near Sozopol. *Testudo* sp. in the Early Neolithic settlement near Malak Preslavets village (Silistra Region) was mentioned by [40]. *Emys orbicularis* was found in the Roman town of Ratiaria [24]. Although it is assumed that sea turtles (*Caretta caretta* until the 16th century and *Chelonyx mydas* until the 19th century) were found on the Bulgarian Black Sea coast, their bone remains have not been found in the coastal ancient settlements in the country [45].

Boev [46] numbered 93 bone finds of *Testudo graeca* and *Testudo graeca/ hermanni* from the Late Antique fortified site near Shipot village (Vidin Region). From the same site [18] published 109 finds of *Emys orbicularis* and *Testudo graeca/ hermanni*. Ribarov [11] reported *Lacerta* sp. from Kabile. Bone of *Testudo graeca/ hermanni* was found in the medieval settlement near Petarch village (Sofia region) [47]. *Testudo hermanni* was found in the late Antiquity of Serdica [42]. In the medieval settlement (9th-10th century A. D.) near Nedan village (Veliko Tarnovo Region) [48] found remains of 5 taxa of reptiles: Lacertidae gen. indet., *Natrix natrix* / *Natrix tessellata*, *Dolichophis caspius*, Colubridae gen. indet., *Vipera* sp. (cf. *ammodytes*), and Serpentes fam. indet. Remains of *Rana* / *Pelophylax* were found by [42]. All the mentioned finds of reptiles and the even rarer ones of amphibians are accidental in nature and they are definitely underrepresented among the materials from archaeozoological studies in the country.

Archaeoornithology

The modern avifauna of Bulgaria is among the richest in Europe. 417 species of natural distribution have been identified in the country [49]. Birds from prehistoric and historical settlements in Bulgaria have been relatively well studied. Over the years, several summaries of their species composition have been made [5,50,51].

There are also published summaries for individual groups of birds in the country - waterfowl [52], synanthropic birds [53], game birds [54], birds from medieval settlements [51,55], diurnal and nocturnal birds of prey [56], birds from Pleistocene deposits [57], grouse birds [58], bustards [59], birds from Roman settlements [60], shrikes [61], owls [62], eagles [63], vultures [64]. Detailed summaries of individual species have also been published – *Lyrurus tetrrix* [65], *Tetrao urogallus* [66], *Grus grus* [67], and *Haliaeetus albicilla* [68].

In very rare isolated cases, bird remains have been examined by foreign specialists: Bacho Kiro Cave [69]; Novae [70–74].

Through archaeoornithological studies, it was established for the first time that some birds that are now extinct in the country, such as the Pleistocene grey partridge (*Perdix palaeoperdix*) [75], black grouse (*Lyrurus tetrrix*) [76], snow owl (*Bubo scandiacus*) [77] and Great grey owl (*Strix nebulosa*) [78], were present in the former avifauna of Bulgaria.

In Bulgaria, numerous remains of all domestic birds traditionally bred in Europe have been found – chicken, duck, goose, pigeon, turkey and peacock. No remains of guinea fowl and musk duck have been found. The remains of (domestic) turkey are particularly interesting because they are dated to the 17th century – just one century after the last (fourth) expedition of Christopher Columbus (1502-1504) [51]. The domestic chicken is the most widespread domestic bird everywhere. It is represented by the largest number of bone finds and in most of the studied settlements. Unfortunately, however, it turns out that some of the materials were not correctly dated by archaeologists. This was shown by the data from the study by [79]. The oldest chickens in Bulgaria were radiocarbon dated 215-338 AD, while their estimated age according to archaeologists was 3550 BC.

It is worth noting that in publications about a significant proportion of archaeological sites, when the material is not directed to competent archaeozoologists, the bird remains are only stated as “There are single bird bones” without them being identified, as is the case with [75], for example.

The abundant archaeornithological information on a significant number of species and groups of birds makes its repeated presentation in this review unnecessary. The archaeornithological branch of Bulgarian archaeozoology is definitely the best represented both in terms of species composition and the number of archaeological monuments studied. In Bulgaria, it was established in the 1980s-1990s. In fact, the only center in which it is developed is NMNHS-BAS, where the largest comparative osteological collection of birds is also kept. Today it is the richest collection of this kind on the Balkan Peninsula and in Southeast Europe. Along with the osteological collection, this museum also houses the richest collection of subfossil birds in Southeast Europe – bone remains of birds from Holocene deposits (prehistoric and historical times).

Bulgarian specialists have also studied archaeornithological sites in neighboring countries: Greece [80] and Serbia [81,82].

Archaeomammalogy

Both terms - Archaetheriology and Archaeomammalogy, are not used. The use of this title here is only to indicate that we are talking about the study of mammalian remains in archaeological monuments in Bulgaria. Due to the size of domestic mammals, as well as most game species of mammals, the presence of their bone and tooth remains is incomparably more strongly represented than that of all other groups of vertebrates. Until the beginning of the 21st century, animal bones from archaeological sites in Bulgaria were very rarely studied. Only in the last 20 years or so have archaeozoological studies become an obligatory part of the complex study of archaeological monuments. Therefore, our information about stock-breeding and hunting (mainly of large mammals) of the inhabitants of the ancient and medieval settlements in Bulgaria has also grown rapidly.

Some archaeozoological studies in Bulgaria have been carried out by foreign scientists. Such are the cases of the Paleolithic caves Temnata Dupka [83], Suhi Pech (Kozarnika) Cave [84], ancient cities of Nove [85,86], Koprivec and Durankulak [87] and Nicopolis ad Istrum [88–90]. In these studies, the main part of the analyzed finds are of large mammals (mainly herbivores and carnivores).

Paleolithic and later finds of large mammals from Suhata caves near the r/w station Lakatnik, Temnata Dupka near Karlukovo village, Magurata near Rabisha village, Suhi Pech (Kozarnika) near Dolni Lom village and Emenscka near Emen village were studied by [91]. The remains of an entire ancient city (Seutopolis) have been extensively studied by [92].

Archaeozoological data on marine mammals in Bulgaria are extremely scarce. [38] reported Eneolithic remains of Common Dolphin (*Delphinus delphis*) and Common Bottlenose Dolphin (*Tursiops truncatus*) from a sunken settlement in the Sozopol Bay of the Black Sea. A lower jaw and teeth of a Mediterranean Monk Seal (*Monachus monachus*) were found in the sunken Chalcolithic settlement of Urdoviza in the Kiten Bay [93]. Bronze Age leg bones were also found at Cape Sabla (Dobrich Region) [94].

For some mammal species, generalizing studies on their past distribution based on archaeological studies in ancient settlements have already been published. Such are the publications of [95] for cave bear (*Ursus spelaeus*), [96] for aurochs (*Bos primigenius*), [97] for camels (*Camelus dromedarius* and *C. bactrianus*), [98] for beaver (*Castor fiber*), [99] for Western cave hyaena (*Crocuta crocuta (spelaea)*), [100] for fallow deer (*Dama dama*), [101] for wisent (*Bos bonasus*), [102] for red deer (*Cervus elaphus*), [103] for European badger (*Meles meles*), etc.

As it was mentioned above, the published data in the Bulgarian archaeozoological literature almost exclusively concern large mammals. Very rarely have small mammals been the subject of special studies. One such exception is the study on black rat (*Rattus rattus*) of [104]. Bones and skulls of the Lesser Blind Mole-rat (*Nannospalax leucodon*) are also relatively common in the materials, but

they have so far remained unexplored. It is possible that some of them do not belong to the relevant archaeological contexts.

Of interest is the discovery of remains of some species of large mammals that have already disappeared in the country and on the Balkan Peninsula or in the world in general, such as the European leopard (*Panthera pardus spelaea*) [105], the European lion (*Panthera leo europaea*) [106], saiga antelope (*Saiga tatarica*) [107], the wild European donkey (*Equus hemionis hydruntinus*) [108], the beaver [98], the aurochs [96,109], etc.

Conclusions

Archaeozoology is a relatively young interdisciplinary field of scientific research in Bulgaria. The first studies in this field appeared in the first decade of the 20th century. The Bulgarian archaeologist Prof. Rafail Popov can be considered its founder. After him, similar studies were published by Prof. Stefan Ivanov. In the 1970s, foreign specialists (mainly from Poland) were also involved, in the 1980s - from Great Britain and Germany, and in the 1990 - from France. Until 2000, animal bones were rarely studied in most archaeological studies. Over the past two decades, their study has become a widespread practice and archaeozoological information in the country has grown sharply. Of all the fields, archaeornithology is the most highly developed. So far, the composition of bird remains has been studied in over 120 prehistoric and later archaeological sites, and over 300 species of birds (ca. 72 % of the contemporary avianfauna of the country) have been identified in them. Data on amphibians and reptiles (except for land tortoises) are still very scarce. Of the bony fish, the most frequently reported are wels catfish and European carp. Ten species of birds and mammals have been disappeared from the modern fauna of Bulgaria, two species of which have completely extinct on a global scale. Due to its southern and crossroads geographical location (between Europe, Asia and Africa), the diverse relief, numerous caves (over 5500) and the proximity to two seas (the Black Sea and the Aegean Sea), the territory of Bulgaria is extremely interesting for archaeozoological research. Undoubtedly, many more new discoveries are yet to be made here.

List of Authors of Archaeozoological Publications About Localities in Bulgaria

Daniel Makowiecki (Figure 1)
Georgi Kovachev (1936-2020) (Figure 2)
Georgi Markov (1912-1988) (Figure 3)
Georgi Ribarov (Figure 4)
Iliya Stoyanov (1875-1920)
Lazar Ninov
Mark Beech (Figure 5)
Nadezhda Karastoyanova (Figure 6)
Nikolay Iliev (1929-2024) (Figure 7)
Nikolay Spassov (Figure 8)
Rafail Popov (1876-1940) (Figure 9)
Stefan Ivanov (1908-1983)
Stella Nikolova (Figure 10)
Vasil Vasilev (1929-1982) (Figure 11)
Zlatozar Boev (Figure 12)



Figure 1. Daniel Makowiecki. Photo: <https://www.wprost.pl/nauka-sladami-kopernika/11830473/prof-daniel-makowiecki-jedyny-taki-naukowiec-w-polsce-wypelnil-nietypowa-nisze.htm>.



Figure 2. Georgi Kovachev. Photo: <https://www.facebook.com/100034441783812/posts/in-memoriām%0BF%0BE%D1%87%D0%B8%D0BD%D0%B0-%D0BF%D1%80%D0BE%D1%84-%D0%B4-%D1%80-%D0%B3%D0%B5%D0BE%D1%80%D0%B3%D0%B8-%D0%BA%D0BE%D0%B2%D0%B0%D1%87%D0%B5%D0%B2%D1%81%D0BB%D0%B5%D0%B4-%D0%BA%D1%80%D0%B0%D1%82%D0%BA%D0BE-%D0%B1%D0BE%D0BB%D0%B5%D0%B4%D1%83%D0%B2%D0%B0%D0BD%D0%B5-%D0BD%D0%B0-84-%D0%B3%D0BE%D0%B4%D0%B8%D1%88%D0BD%D0%B0-%D0%B2%D1%8A/1793445757446680/>.



Figure 3. Georgi Markov. Ca. 1968.



Figure 4. Georgi Ribarov. Ca. 2015.



Figure 5. Mark Beech. 01.10.2024. Photo: Z. Boev.



Figure 6. Nadezhda Karastoyanova. Ca. 2023.



Figure 7. Nikolay Iliev. 08.04.2017. Photo: Z. Boev.



Figure 8. Nikolay Spassov. 20.12.2009. Photo: Z. Boev.



Figure 9. Rafail Popov. Photo: <https://betatest.bgdnes.bg/neveroyatni-istorii/article/15157356>.



Figure 10. Stella Nikolova. Ca. 2022.



Figure 11. Vasil Vasilev. Ca. 1985. Photo: After Todorova (1989).

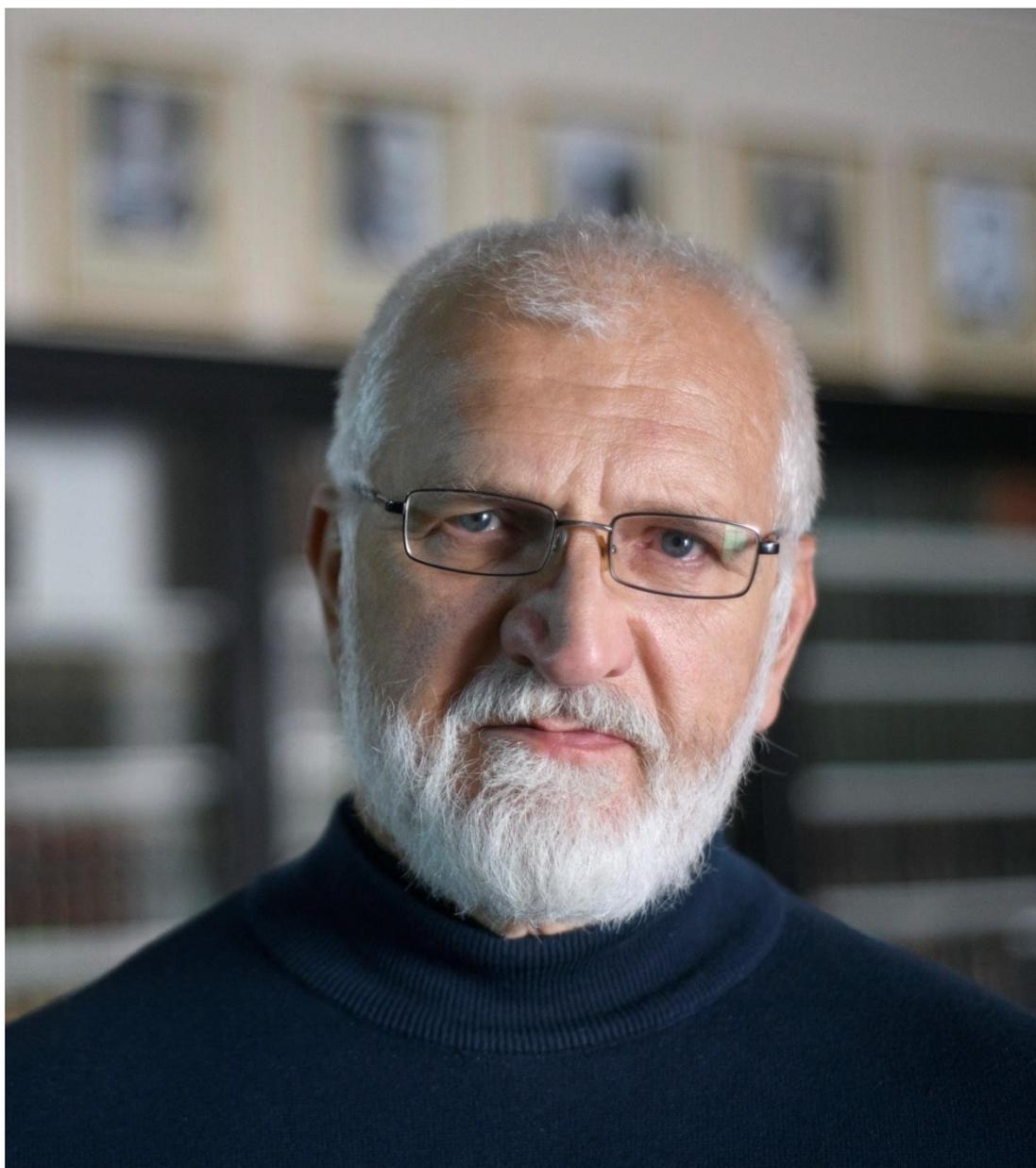


Figure 12. Zlatozar Boev. 22.10.2021. Photo: D. Kashavelov.

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