

Past distribution of *Ursus arctos* in Bulgaria: fossil and subfossil records (Carnivora: Ursidae)

Минало разпространение на кафявата мечка (*Ursus arctos*) в България: фосилни и субфосилни данни (Carnivora: Ursidae)

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Abstract. The paper summarizes numerous scattered data from the last 120 years on the former distribution of the brown bear (*Ursus arctos*) in Bulgaria. Data from 52 (13 fossil and 39 subfossil) sites (from the Middle Pleistocene to the 19th century AD) are presented. The brown bear former distribution was much wider than the present occurrence. The species range covered the whole territory of the country, including mountain regions, as well as vast lowland and plain landscapes. The geographical, altitudinal and chronological distribution are presented and analyzed. The record from the Kozarnika Cave (1,000,000–700,000 years BP) is one of the earliest records of this species in Europe. About 73% of the localities are situated between 100 and 500 m a. s. l. Twelve sites contain Paleolithic finds, one Mesolithic, 14 Neolithic, six Chalcolithic, five from the Bronze Age, and two from the Iron Age. The remaining 12 subrecent sites are dated to the last ca. 2,400 years. Most of the species findings came from archeological sites – prehistoric and ancient settlements. The distribution of *Ursus arctos* once covered the entire territory of the country, including the vast regions such as Ludogorie, Dobruja, the Danube Lowland, the Upper Thracian Lowland, as well as the Sakar, Strandja, Sredna Gora, and the Predbalkan Mts.

Key words. Brown bear, large carnivores, endangered mammals, history of wildlife, Balkans.

INTRODUCTION

Being the second largest European terrestrial carnivore, the brown bear (*Ursus arctos* Linnaeus, 1758) left very abundant record in all regions of the continent. Due to its massive bones, it is a taphonomically significant animal. However, in contrast to *Ursus spelaeus* Rossemüller, 1794, the fossil/subfossil record of *U. arctos* is surprisingly scarce in Bulgaria. Moreover, it has not been subject of a special research so far.

The former wide distribution of *Ursus arctos* in Europe contrasts with the present-day highly shrunk range. At present, the territory of Bulgaria is considered one of the most important parts of the range (SPASOV 2007) for the conservation of this impressive species in Europe. The current national population numbers around 415–555 individuals and the species status in Bulgaria is reported as “endangered” (SPASOV 2007, SPIRIDONOV & SPASSOV 2015). Its recent range in Bulgaria is split into three separated parts (Fig. 1) in the Rila-Rhodopes Mountains, Central Stara Planina Mts., and Western Stara Planina Mts. (SPIRIDONOV & SPASSOV 2015).

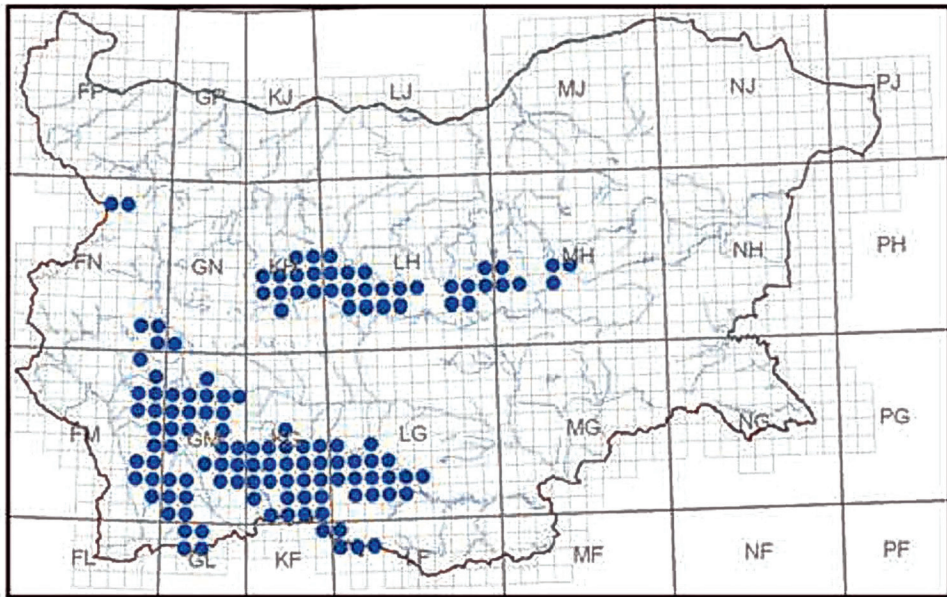


Fig. 1. Present range of *U. arctos* in Bulgaria (after SPIRIDONOV & SPASSOV 2015).
 Фиг. 1. Съвременно разпространение на *U. arctos* в България (по SPIRIDONOV & SPASSOV 2015).

Although some publications deal with the origin, past dispersal and distribution of *Ursus arctos* in Bulgaria and the Balkan Peninsula as well, none of them has presented summary data on its past distribution so far. This paper aims to gather scattered data (some of them in less accessible sources) on the former distribution of the brown bear in Bulgaria for the first time, based on its fossil/subfossil record. The abundant historical records since medieval ages till the subrecent times remain beyond its scope. Some of the finds were published in some less accessible archaeological editions which remained unknown to the zoological community. They thus represent a valuable source for elucidating the former distribution of one of the most popular wild animals in the Balkans.

NOTE. Until 2020, records of the total of eight species of the genus *Ursus* Linnaeus, 1758 have been reported from Bulgaria. Along with *Ursus arctos*, remains of *U. savini* Andrews, 1922 (GUROVA et al. 2016, 2017, 2018, GUADELLI et al. 2014), *U. etruscus* Cuvier, 1823 (GUADELLI et al. 2005), *U. deningeri* von Reichenau, 1904 (GUADELLI et al. 2005, TANEVA et al. 2005), *U. ingressus* Rabeder, Hofreiter, Nagel et Withalm, 2004 (GEORGIEV et al. 2010, IVANOVA et al. 2016), *U. minimus* Devèze et Bouillet, 1827 / *U. etruscus* (SPASSOV 1997a, 2003), *U. minimus* / *U. thibetanus* Cuvier, 1823 (SPASSOV 2000), *U. cf. thibetanus* (GUROVA et al., 2017), the most numerous *U. spelaeus* (BERON et al. 2006, GUADELLI et al. 2005), and even *Ursus* sp. (STOĀNOV 1904, POPOV 1933, GUADELLI & DELPECH 2000) have been identified from excavations all over the country. In addition, POPOV (1931, 1936) reported on occurrence of the ninth species of a bear, *Ursus arctoideus* Reichenau, 1904 (now a synonym of *U. deningeri*), from the Toplá Cave. It should be mentioned that most of the Pleistocene remains of *U. spelaeus* from Bulgaria are now referred to *U. ingressus* (N. SPASSOV – in litt.).

MATERIAL AND METHODS

I tried to gather all scattered published and unpublished data on the former distribution of the brown bear in the present day territory of Bulgaria. For each site I present as complete data as possible on the age, excavations, and the reference to the original published information. The great majority of bear bone/teeth finds (Fig. 2) came from the excavated archeological sites of ancient and medieval human settlements. The site No. 41 (Serdika) represents in fact two different localities – Forum Serdika (3th–19th century AD) and the Northern Wall of the Serdika Citadel (3rd–6th century AD), both situated in the present city centre of Sofia.

The chronostratigraphy (Table 1) follows COHEN et al. (2013): (1) Chibanian (Middle Pleistocene, 770,000–129,000 years BP); (2) Late Pleistocene (129,000–11,700 years BP); (3) Holocene (11,700 years BP – Recent) – Greenlandian (Early Holocene, 11,700–8,200 years BP), Northgrippian (Middle Holocene, 8,200–4,200 years BP), Meghalayan (Late Holocene, 4,200 years BP – present). The archaeological periodization follows VLADIKOV (1992): Early Paleolithic (400,000–100,000 years BP), Middle Paleolithic (100,000–40,000 years BP), Late Paleolithic (40,000–10,000 years BP), Mesolithic (10,000–7,000 years BP), Neolithic (7,000–5,500 years BP), Chalcolithic (5,500–3,500 years BP), Bronze Age (3,500–1,200 years BP), Iron Age (1,200–900 years BP). The historical epoch is divided into the Hellenic period, Roman period, Byzantine period, and Medieval period (Table 1).

Abbreviations used: AD – Anno Domini, BC – before Christ; BP – before present, c. – century.



Fig. 2. Subfossil bone remains of *Ursus arctos* from some archeological sites in Bulgaria: (a) mandibula dex. – Serdika, Sofiâ; (b) mandibula sin. – Serdika, Sofiâ; (c) maxilla dex. and maxilla sin. – Mursalevo; (d) mandibula dex. – Mursalevo; (e) metacarpalia 1 dex. – Mursalevo; (f) humerus dex. – Sedica, Sofiâ; (g) radius sin. – Serdika, Sofiâ; (h) femur dex. and ulna dex. – Serdika, Sofiâ. Photos by Z. BOEV.

Фиг. 2. Субфосилни костни останки от *Ursus arctos* от някои археологични находища в България: (a) mandibula dex. – Сердика, София; (b) mandibula sin. – Сердика, София; (c) maxilla dex. и maxilla sin. – Мурсалево; (d) mandibula dex. – Мурсалево; (e) metacarpalia 1 dex. – Мурсалево; (f) humerus dex. – Сердика, София; (g) radius sin. – Сердика, София; (h) femur dex. и ulna dex. – Сердика, София. Снимки З. БОЕВ.

Table 1. Localities of fossil and subfossil remains of the brown bear (*Ursus arctos*) in Bulgaria
 Таблица 1. Находнища на фосилни и субфосилни костни останки на кафява мечка (*Ursus arctos*) в България

No site	localisation (province)	altitude [m a. s. l.]	age	excavation (year/leader)	reference
№ находище	локализация (област)	височина (м. н. в.)	възраст	разкопките (година/ръководител)	източник
Middle Pleistocene: Chibanian					
1	Kozarnika Cave (Suhli Peč)	nr. Belogradčik (Vidin)	375	1996–2005 / N. SIRAKOV & J.-L. GUADELLI	BOEV 1999, GUADELLI et al. 2005, FERNANDEZ 2009
Late Pleistocene: Late Paleolithic					
2	Bačo Kiro Cave	nr. Drănovo (Gabrovo)	335	1938 / D. GAROD & R. POPOV; 1971–1975 / B. GINTER & J. KOZLOWSKI	WISZNIOWSKA 1982
3	Magura Cave	nr. Rabiša (Vidin)	371	2011–2012 / S. IVANOVA	BERON et al. 2006, IVANOVA et al. 2016
4	Orlova Čuka Cave	nr. Pepelina (Ruse)	115	1956–1957	МИТЕВ 2016
5	Temnata Dupka Cave	nr. Karlukovo (Loveč)	250	1938 / R. POPOV; 1982 / N. SIRAKOV	BERON et al. 2006, POPOV 1931, 1994, LAVILLE 1994, BERON et al. 2006
6	Borikovska Cave	Borikovo (Smolán)	1250	1981 / D. Rajčev	BERON et al. 2006
7	Bajovica Cave	nr. Černi Vít (Loveč)	480	–	NIKOLOV 1983
8	Popin Pčelin Cave	nr. Belăkovec (Veliko Tarnovo)	370	1906–1907 / R. POPOV	BERON et al. 2006
9	Mirizlivka Cave	nr. Orešec (Vidin)	750	1924, 1929 / V. ATANASOV & L. FILKOV; 1931 / R. POPOV & V. ATANASOV; 1993 / Z. BOEV	POPOV 1933, 1936, BERON et al. 2006, BOEV 2015
10	Malikata Pešera Cave	nr. Belăkovec (Veliko Tarnovo)	355	1899–1909 / R. POPOV	POPOV 1908a, 1911, 1925, BERON et al. 2006
11	Peš Cave	nr. Staro Selo (Vraca)	325	1951–1953 / N. DŽAMBAZOV	BERON et al. 2006

No site	localisation (province)	altitude [m a. s. l.]	age	excavation (year/leader)	reference
№ находилце	локализация (област)	височина (м. н. в.)	възраст	разкопките (година/ръководител)	източник
12	Ražiškata Cave	nr. Lakatnik (Sofia)	460	Pleistocene-Holocene trans.	BERON et al. 2006
Late Pleistocene – Holocene: Mesolithic (13,000–5,000 BP)					
13	Agodinska Cave	nr. Agodina (Smolán)	1120	1970s	RAJČEV & RAJČEV 1983
Holocene: Greenlandian: Neolithic					
14	Širokovo	nr. Širokovo (Ruse)	150	Early Holocene	МПЕВ 2016
15	Masovec	nr. Ilindenci (Blagoevgrad)	440	Early Neolithic, 1st half of 6th millennium BC	GREBSKA-KULOVA et al. 2015
16	Kovačevo I	(Blagoevgrad)	307	Early Neolithic	SPASOV 1988
17	Malo Pole	nr. Gradešnica (Vraca)	190	Early Neolithic	NIKOLOV 1974, SPASOV 2007
18	Ovčarovo	(Targoviše)	294	Early Neolithic	VASILEV 1985
19	Deneva mound	nr. Salmanovo (Šumen)	83	Neolithic	POPOV 1915
20	Madara	nr. Madara (Šumen)	205	Neolithic	POPOV 1904, 1908b, NIKOLOV 1983
21	Durankulak	(Dobrič)	26	Neolithic-Chalcolithic	SPASSOV & LIJEV 2002
Middle Holocene: Northgrippian					
22	Mečata Dupka Cave	nr. Leárovo (Burgas)	280	Early Holocene	–
23	Kočerino	nr. Kočerino (Küstendil)	395	Early Neolithic to Medieval	–
24	Ása-Tepe	Plovdiv (Plovdiv)	175	Late Neolithic, 8,000–7,000 BP	IVANOV 1959
25	Topolnica	(Blagoevgrad)	84	Late Neolithic, 6,900 BP	SPASOV 2007
26	Sozopol	(Burgas)	–5	Late Neolithic	KLASNAKOV et al. 2011 & P. LESAKOV

Table 1. (continued)
Таблица 1. (продължение)

No site № находище	localisation (province) локализация (област)	altitude [m a. s. l.] височина (м. н. в.)	age възраст	excavation (year/leader) разкопките (година/ръководител)	reference източник
27	Golámo Delčevo (Varna)	185	Late Neolithic – Chalcolithic, 8,000–6,000 BP	1931 / D. ZLATARSKI; 1968–1970 / H. TODOROVA	IVANOV & VASILEV 1975
Chalcolithic					
28	Urdovoza nr. Kiten (Burgas)	–10	Chalcolithic – Early Bronze Age, 5,000–4000 BP	1989–1990 / M. LAZAROV	BOEV 1999, 2018
29	Kodžadermen mound nr. Salmanovo (Šumen)	83	Late Chalcolithic, 6,000 BC	1907 / R. POPOV	POPOV 1929
30	Ruse mound nr. Ruse (Ruse)	45	Chalcolithic, 5,000–4,000 BP	1921–1922 / D. KOSTOV & R. POPOV	DIMOVA 1956
31	Dolnoslav nr. Dolnoslav (Plovdiv)	370	Chalcolithic, 3,530–3,480 BP	1983–1991 / B. KOLEVA; 1992–1999 / A. RADUNČEVA	SPASOV et al., 2001
32	Hotnica nr. Hotnica (Veliko Tărnovo)	101	Late Chalcolithic, 7,000 BP	1956–2006 / N. ANGELOV	KARASTOANOVA 2018
33	Teliš-Redutite nr. Teliš (Pleven)	450	Neolithic – Early Bronze Age, 3,450–3,320 BP	1980s / V. GERGOV	BOEV & RIBAROV 1997
Bronze Age					
34	Topčii (Razgrad)	150	Late Holocene	1990 / I. MITEV	MITEV 2016
35	Nisovo (Ruse)	100	Late Holocene	1990 / I. MITEV	MITEV 2016
36	Ispertih (Razgrad)	150	Late Holocene	2001–2002 / I. MITEV	MITEV 2016
37	Ezero (Stara Zagora)	130	Early Bronze Age	1952–1958 / V. MIKOV & N. KOJČEV; 1961, 1963–1971 / MERPERT	IVANOV & VASILEV 1979
38	Gálábovo (Stara Zagora)	350	Chalcolithic – Bronze Age	1989 / G. RIBAROV	BOEV 1999

No site	localisation (province)	altitude [m a. s. l.]	age	excavation (year/leader)	reference
№ находище	локализация (област)	височина (м. н. в.)	възраст	разкопките (година/ръководител)	източник
Late Holocene. Meghalayan: Iron Age					
39	Snežanka Cave	nr. Pešera (Pazardžik)	470	Early Iron Age, 600 BC	
40	Adžijska Vodenica	nr. Vetren (Pazardžik)	360	Iron Age	CHIVERRELL & ARCHIBALD 2009
Hellenic period					
41	Ruen	nr. Ruen (Burgas)	290	400–100 BC	BOEV 1999
Roman period					
42	Serdika	Sofiã (Sofiã)	595	200–1900 AD; 1500–1800 AD	BOEV 2016, 2017, 2020 2017–2019 / P. STOANOVA
43	Nikopolis -ad-Istrum	nr. Nikôp (Veliko Tãrnovo)	135	Roman and Byzantine periods (250–600 AD)	BECH 1997b, 2007
44	Kovačevo 2	(Stara Zagora)	133	Thracian/Roman period	– SPASOV 2007
45	Heracleã Sintika	nr. Rupite (Blagoevgrad)	147	Late Roman period (450–350 AD)	VAGALINSKI 2019
Byzantine period					
46	Gradišeto	nr. Tvardica (Sliven)	400	5500–600 AD	VELKOV & GOSPODINOV 2015
47	Sveti Spas	Pernik (Pernik)	710	500–1500 AD	PAUNOVA 2015
48	Tuida	Sliven (Sliven)	245	400–1200 AD	1984–1987 / I. ŠEREVA RIBAROV 1990
Medieval period					
49	Mursalevo	nr. Mursalevo (Küstendil)	434	600–1100 AD	VANDOVA et al. 2015 & Ū. MESEKOV
50	Bresto	nr. Banã (Blagoevgrad)	775	600–700 BC	ATANASOV et al. 2014
51	Iskrica	nr. Iskrica (Stara Zagora)	140	1000–1200 AD	BOEV 1999
52	Propast Cave	in Baŭvi Dupki (Blagoevgrad)	2250	Subrecent	BERON 2015

RESULTS AND DISCUSSION

Ursus arctos appeared as a species in the Middle Pleistocene, its range covered most of Eurasia, Northern Africa and North America (GROMOVA et al. 1962, GROMOV & BARANOVA 1981). The Balkan brown bears are assigned to the nominate subspecies *U. a. arctos* Linnaeus, 1758. After GENOV (2017) results of the molecular genetic analyses joined the Balkan brown bears with the bears of the eastern Alps, Apennines, and the Pyrenees (ERSMARK et al. 2019). The Bulgarian and all south-European bears are considered as relicts of the late Pleistocene (SPASSOV 1997b). They are adapted to mountain landscapes in contrast to bears of northeastern Europe, inhabiting vast taiga plains since the end of the Pleistocene (SPASSOV 1997a). ERSMARK et al. (2019) state that the “Bulgarian” (Balkan) brown bears were widely spread over Europe in the Late Pleistocene.

There are two important factors determining the representativeness of the former bear distribution – movement capability of the animals and the possibility of human transportation of bear body remains. Tracked bears from Bulgaria traveled a distance of 73 km in eight months, covering a range of ca. 90 km²; an average range of juvenile males in Bulgaria is 266 km² (GENOV 2017). Having in mind that adult brown bears are large animals with heavy body (adult males from Bulgaria weigh up to 350 kg; SPASSOV 2007), we may conclude that almost all sites of the excavated bone remains – but not teeth – reflect relatively exactly the real former distribution of the bears. There is no reason for the ancient hunters to transfer the heavy carcasses or body parts (legs, heads) far from the sites of the killing of animals and utilization of their body parts. It is also inconsistent to assume that bears traveled further away from their natural home ranges than now. Presumably, their natural environment was much richer than the present one.

So far only one Bulgarian site revealed record of *Ursus arctos* of the Middle Pleistocene age. These oldest finds came from the Kozarnika Cave, dated to the “limit between the Early and the Middle Pleistocene” (1,000,000–700,000 years BP; FERNANDEZ 2009: 59). This is one of the oldest European records of the brown bear at all.

A total of 12 sites of the bear fossils are of the Late Pleistocene age. Eleven of them are of the Late Paleolithic and one of the Mesolithic period. Seven Early Holocene sites revealed bone remains of *Ursus arctos* from the Neolithic and only one site (Širokovo) is of a non-anthropogenic origin. A total of twelve sites yielded finds of brown bears dated to the Neolithic (1), Chalcolithic (6), and from the Bronze Age (5), see Table 1.

A total of 14 sites revealed finds of brown bears dated to the period covering the Iron Age to the subrecent time. Two of them are of the Iron Age, three are from the Byzantine (and medieval) settlements, and four are medieval; i.e. of the post-Byzantine (7–12 century AD), Hellenic, and Roman/Thracian sites (Table 1). Only one site (Propast Cave) is a natural bone accumulation. Four sites (Mursalevo, Kočerinovo, and Serdika I and II) are here reported for the first time, they were excavated in the last six years.

The altitudinal distribution of the fossil and subfossil brown bear in Bulgaria is surprisingly wide – from –10 m to 2,250 m a. s. l. (Table 1). Only three sites are situated above 1000 m a. s. l., while the great majority of localities (n=45; 73.1%) lie below 500 m a. s. l. and only four sites are situated at 500–1,000 m a. s. l. Most of the documented sites of the brown bear in the Holocene were located at 100–400 m a. s. l. (n=31; 65.4 %). The Holocene range of *Ursus arctos* included the whole territory of the country (Fig. 3). Two Holocene sites (Sozopol and Urdoviza) are nowadays sunk in the Black Sea (–5 and –10 m below sea level, respectively).

The Pleistocene localities of *Ursus arctos* in Bulgaria are concentrated in two main mountain massifs – the Stara Planina Mts. and Western Rhodopes Mts. The only exception is the Orlova

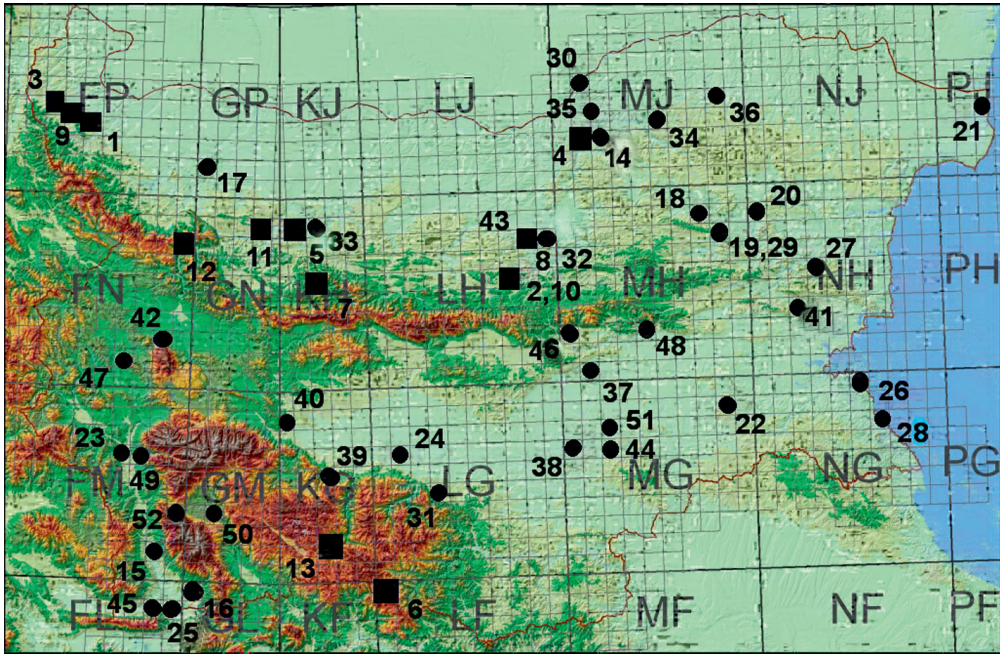


Fig. 3. Former distribution of *Ursus arctos* in Bulgaria. Numbers correspond to the list of localities in the text: **Pleistocene** (squares): (1) Kozarnika (Suhi Peč) Cave, (2) Bačo Kiro Cave, (3) Magura Cave, (4) Orlova Čuka Cave, (5) Temnata Dupka Cave, (6) Borikovska Cave, (7) Bajovica Cave, (8) Popin Pčelin Cave, (9) Mirizlivka Cave, (10) Malkata Pešera Cave, (11) Peš Cave, (12) Ražiškata Cave, (13) Āgodinska Cave; **Holocene** (circles): (14) Širokovo, (15) Masovec, (16) Kovačevo 1, (17) Malo Pole, (18) Ovčarovo, (19) Deneva mound, (20) Madara, (21) Durankulak, (22) Mečata Dupka Cave, (23) Kočerino, Āsa-Tepe (24), (25) Topolnica, (26) Sozopol, (27) Golāmo Delčevo, (28) Urdovoza, (29) Kodžadermen settlement mound, (30) Ruse mound, (31) Dolnoslav, (32) Hotnica, (33) Teliš-Redutite, (34) Topčii, (35) Nisovo, (36) Ispcrih, (37) Ezero, (38) Gālābovo, (39) Snežanka Cave, (40) Adžijska Vodenica, (41) Ruen, (42) Serdika, (43) Nikopolis-ad-Istrum, (44) Kovačevo 2, (45) Herakleā-Sintika, (46) Gradišet, (47) Sveti Spas, (48) Tuida, (49) Mursalevo, (50) Bresto, (51) Iskrica, (52) Propast Cave.

Фиг. 3. Минало разпространение на *Ursus arctos* в България. Номерацията отговаря на находичата в текста: **Плейстоцен** (квадратчета): (1) Пещера Козарника (Сухи Печ), (2) Пещера Бачо Киро Cave, (3) Пещера Магурата, (4) Пещера Орлова Чука, (5) Пещера Темната Дупка, (6) Бориковска пещера, (7) Пещера Байовица, (8) Пещера Попин Пчелин, (9) Пещера Миризлипка, (10) Малката пещера, (11) Пещера Пещ, (12) Ражийска пещера, (13) Ягодинска пещера; **Холоцен** (кръгчета): (14) Широково, (15) Масовец, (16) Ковачево 1, (17) Мало Поле, (18) Овчарово, (19) Денева селищна могила, (20) Мадара, (21) Дуранкулак, (22) Пещера Мечата дупка, (23) Кочериново, (24) Ясь-Тепе, (25) Тополница, (26) Созопол, (27) Голямо Делчево, (28) Урдовиза, (29) Коджадерменска селищна могила, (30) Русенска селищна могила, (31) Долнослав, (32) Хотница, (33) Телиш-Редутите, (34) Топчии, (35) Нисово, (36) Исперих, (37) Езеро, (38) Гълъбово, (39) Пещера Снежанка, (40) Аджийска воденица, (41) Руен, (42) Сердика, (43) Никополис ад Иструм, (44) Ковачево 2, (45) Градището, (46) Хераклея Синтика, (47) Свети Спас, (48) Туида, (49) Мурсалево, (50) Бресто, (51) Искрица, (52) Пещера Пропасть.

Čuka Cave in north-eastern Bulgaria. The fossil and subfossil record of the brown bear clearly proves a much wider former distribution of the species, not only in the mountain regions, but also in the vast lowland and plain landscapes as the Upper Thracian Lowland, Ludogorie, and Dobruja. Also three other mountain ranges, Sredna Gora, Sakar, and Strandja, as well as the Predbalkan Mts. were parts of the former species range. This review thus confirms the earlier SPASOV's (2007) conclusion that the brown bear was widespread over most of the country in the Neolithic to the Iron Age. Until the 19th century AD, the brown bear still inhabited the large regions of the Ludogorie and Strandja Mts. in the east of the country, and the Stara Planina population was connected through the Ihtimanska Sredna Gora Mts. with the Rila-Rodopes bear population.

The fossil/subfossil record of the brown bear confirmed its former distribution in 22 provinces of the total of 28 in the country, while at present the species range encompasses parts of only nine provinces (SPIRIDONOV & SPASSOV 2015), ca. a quarter of the former range.

SUMMARY

Статията обобщава множество разпръснати данни за миналото разпространение на кафявата мечка в България от последните 120 години, част от които са непубликувани. Представени са данни от 52 находища (13 фосилни и 39 субфосилни) от среден плейстоцен до 19 век н. е. от 22 от общо 28-те области в страната. Представени и анализирани са географското, височинното и хронологичното разпространение. Около 73 % от находищата са разположени между 100 и 500 м. н. в. 12 находища съдържат палеолитни находки, 1 мезолитни, 14 неолитни, 6 халколитни, 5 от бронзовата епоха, и 2 от желязната епоха. Останалите 12 субрецентни находища са датирани от последните ок. 2400 години. Находките от пещерата Козарника (1,000.000–700.000 г.) са едни от най-древните свидетелства за вида в Европа. Повечето от установените находки на вида произлизат от археологически обекти – праисторически и древни селища. Разпространението на вида някога обхващало цялата територия на страната, вкл. и обширни райони като Лудогорието, Добруджа, Дунавската равнина, Горно-Тракийската низина, както и планините Сакар, Странджа и Средна гора и Предбалкана.

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