



Holocene Distribution of Common Crane *Grus grus* (Linnaeus, 1758) (Gruidae) in Bulgaria

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Abstract: The first summary of the past distribution (8000 to 1000 BP) of the common crane in Bulgaria is presented. It is based on the bone remains collected from 14 prehistoric and later archaeological sites. All bone remains were found in the vast lowlands and plains (mostly up to 200 m a.s.l.), often close to large rivers and lakes, which were also the species' breeding habitats until its extinction in the 1950s as a breeding species in Bulgaria.

Key words: Subfossil birds, Ornithoarchaeology, Quaternary fauna, Cranes, Birds of Balkans, Rare birds

Introduction

Common Crane *Grus grus* (Linnaeus, 1758) is a Least Concern species after the IUCN Red List (BIRDLIFE INTERNATIONAL 2016). In the Bulgarian Red Data Book, it is included in the category "Extinct" (BOEV N. 1985, BOEV Z. 2011). In the early 20th Century, about 30 pairs were breeding in the country (BOEV N. 1985). The last nesting common cranes were registered in 1950 in the Batashko Marsh (now Batak Reservoir) and Shablensko Lake (BOEV N. 1985). In the past, it was resident and migratory (transient) (MICHEV 1990). Today, the species is a rare migrant from its nesting grounds in Poland, Baltic States, Ukraine, Belarus and Western Russia (MARKIN 2013). Since c. 1957, it is transient (passaging) and, as exception, wintering. The spring migration along the Bulgarian Black Sea coast (Via Pontica Flyway) lasts from the end of February to the beginning of April (MICHEV 1990). During the autumn migration in 1979, the largest number of common cranes for Bulgaria was registered, i.e. 4181 birds (MICHEV 1990). Until 1950, the species was still considered a game bird (PETROV 1950).

The past distribution of common crane in Bulgaria has never been a subject of research. This study presents the first summary data on its sub-recent distribution based on the collected evidence (bone remains) from dated archaeological sites throughout the country.

Materials and Methods

All available information on the past distribution of the common crane on the territory of Bulgaria was compiled. It was based on skeletal remains from deposits at various archaeological sites throughout the country. For each site, brief data on the location, approximate altitude, age (dating) of the finds, years, and leaders of the excavations as well as the source of the published data are presented (Table 1).

Results

The past (subfossil/subrecent) distribution of the bone remains (Fig. 1) and the observed (recent) distribution of the species (Fig. 2) in Bulgaria showed similarity concerning the landscape location. From

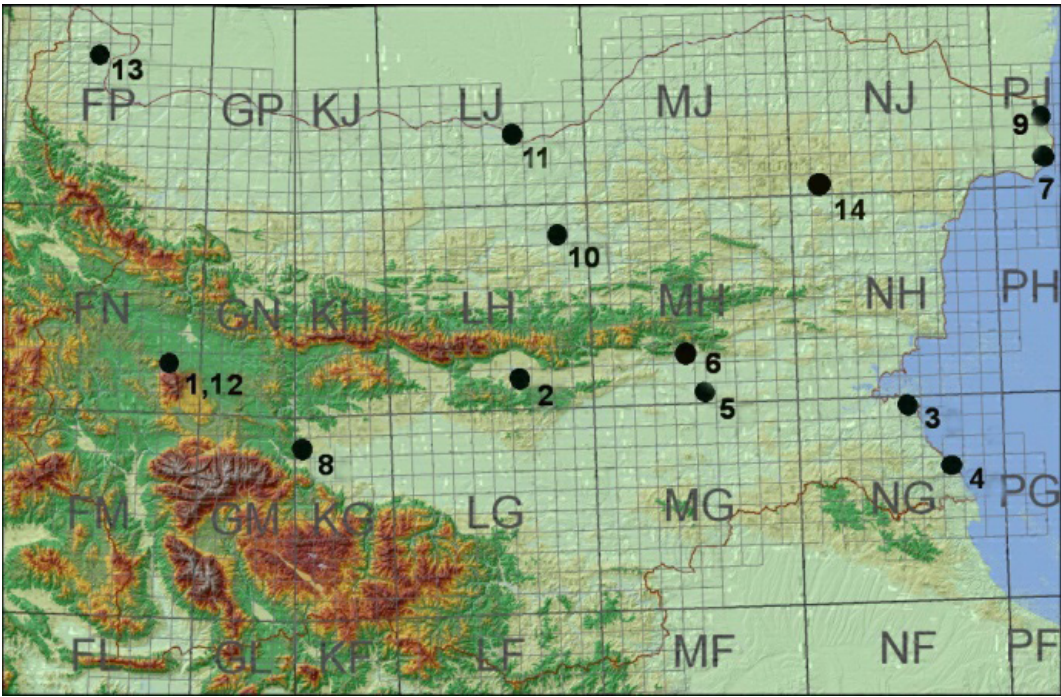


Fig. 1. Quaternary (8000 to 1000 BP) distribution of the common crane *Grus grus* in Bulgaria. For references, see Table 1.

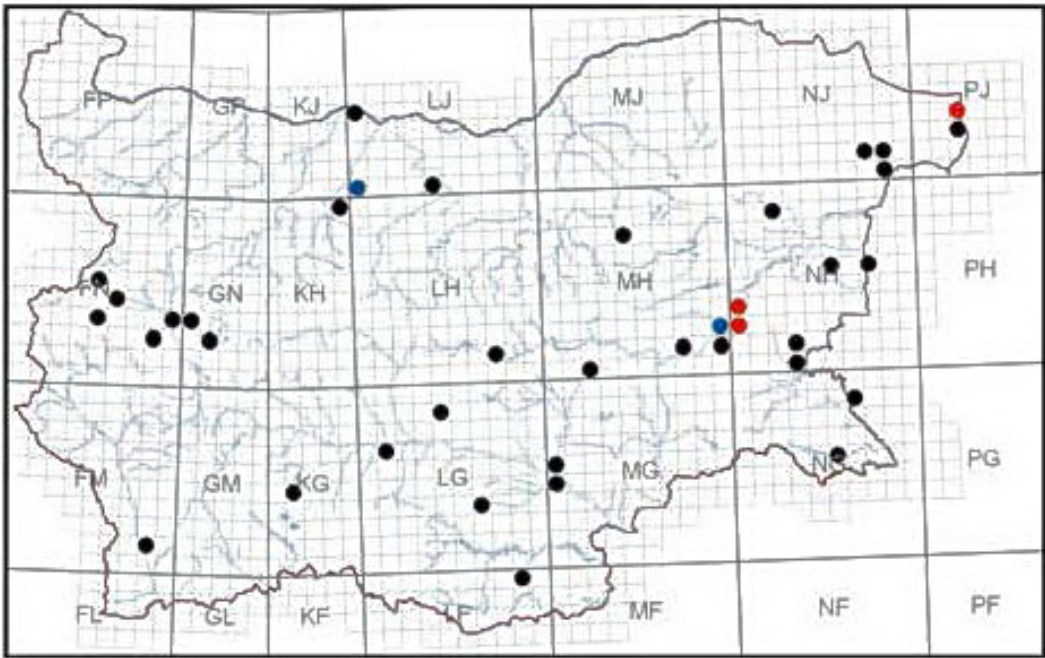


Fig. 2. Subrecent and recent (1888 to 2010) distribution of the common crane *Grus grus* in Bulgaria (see BOEV 2011).

the Holocene, bone remains of the species were recorded only in the vast plains and lowlands in both Northern and Southern Bulgaria, i.e. the Danubian Plain, Upper Thracian Plain, Sofia Valley, Kazanlak (Rose) Valley, Stara Zagora Field and Black Sea Coast. According to bone findings, the species has never been established in mountainous areas, both as subfossil and subrecent/recent. On the other hand, no fossil (Pleistocene) records have been es-

tablished, and all data from Bulgarian territory came from subfossil records (Holocene localities).

All the recorded localities represented human settlements. Their altitudinal distribution covered from –12 m to 575 m. Two localities (Nos 3 and 4) were below the sea level. Nowadays, they have sunk and the materials have been unearthed from the sea bottom through underwater archaeological excavations at 5 and 12 m depth.

Table 1. Localities of fossil/subfossil bone remains of *Grus grus* in Bulgaria (see also Fig. 1)

No	Locality	Location (Province)	Altitude (m)	Age	Years and leaders of excavations	References
1	Slatina	Sofia City (Sofia City)	575	8000 BP	1985-1989, 1991, 1993-1997, 2004 – Vassil Nikolov	BOEV (2009)
2	Kazanlak	Town of Kazanlak (Stara Zagora)	300	6000–5000 BC	1970-1981 – Georgi Georgiev, Rumen Katincharov	KOVACHEV (1988), BOEV (1993, 1996a, 1996b, 1997)
3	Sozopol	Near town of Sozopol (Burgas)	-12	5000–4000 BC	1987-1990 - Mihail Lazarov	BOEV (1999)
4	Urdoviza	Near town of Kiten (Burgas)	-5	3000-2000 BC	1989-1990 – Mihail Lazarov	BOEV & RIBAROV (1990)
5	Kabile	Near Kabile Village (Yambol)	150	2700 BC – 6 c.AD	1972-1989 – Velizar Velkov	BOEV & RIBAROV (1993); BOEV (1996a, 1996b, 1997)
6	Yassa-Tepe	Near Yambol City (Yambol)	155	1st millennium BC	1979-1989 – Diana Gergova, Iliya Iliev	RIBAROV & BOEV (1990)
7	Yaylata	Near Kamen Bryag Village (Dobrich)	100	6 c. BC – 5 c. AD	1985 – Vassil Popov	BOEV (1999)
8	Pistiros	Near town of Vetren (Pazardzhik)	360	5–2 c. BC	1988 – Mieczyslaw Domaradzki; 2004-2007 – Sue Stallibrass	BOEV & STALLIBRASS (2020)
9	Durankulak	Near Durankulak Village (Dobrich)	20	3 c. BC – 10 c.AD	1990-1995 – Henrieta Todorova	MANHART (1998), BOEV (1996a, 1996b, 1999, 2018)
10	Nicopolis-ad-Istrum	Near Nikyup Village (Veliko Tarnovo)	135	1–6 c. AD	1984-1989 – Andrew Poulter, Teofil Ivanov	BOEV (1991), BOEV & BEECH (2007)
11	Novae	Near town of Svishtov (Veliko Tarnovo)	90	1–7 c. AD	1987-1989 – Georgi Riboarov	Bartosiewicz & Choyke (1991)
12	Forum Serdica	Sofia City (Sofia City)	555	3–6 c. AD	2018-2020 – Polina Stoyanova	BOEV (2019, 2020)
13	Baba Vida Fortress	Vidin City (Vidin)	34	4–9 c. AD	1989 – Valo Valev	BOEV (1995, 1996a, 1996b, 1999)
14	Pliska	Town of Pliska (Shumen)	145	10 c. AD	2017 – Konstantin Konstantinov	BOEV (1996a, 1996b, 2022)

Discussion

Fossil and subfossil finds of the common crane in the Palaearctic mark its extremely wide distribution in the past, covering vast territories, including many that are far from its present breeding range: Azerbaijan, China, Croatia, Egypt, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Malta, Poland, Romania, Spain, United Kingdom and Syria (TYRBERG 1998, 2008). Some of these territories lie on the way of the main migration routes between breeding and wintering grounds. During 20th century, the second most important migration route in Europe (CRAMP & SIMMONS 1980) passes through the Balkans, Turkey and East Mediterranean to the Middle East. In last decades, the migration routes through Pyrenees and Apennines have become more intensive (PRANGE & ILYASHENKO 2019).

As indicated by the literature data on the distribution of the common crane in the country, its nesting sites were always located adjacent to marshes or extensive river swamps. In the past, such habitats existed mainly along the rivers Danube, Maritsa, Tundzha, Yantra and Kamchia (Fig. 2) (BOEV N. 1985, MICHEV 1990, BOEV Z. 2011).

Although the skeletal remains of the cranes harvested as a hunting object for food by the ancient inhabitants could be transported far from the place of capture (as can be seen from Fig. 1), there is a clear correlation of the landscape location of the deposits (sites) with the presence of extensive water bodies (rivers and lakes).

The common crane has been considered, almost universally, as one of the most valuable game birds, along with bustards and geese. Therefore, the presence of bone remains of cranes in prehistoric and more recent archaeological sites is fully explainable. Most of its Holocene deposits in Europe have also shown that remains of this species have been belonging to birds caught as a game.

In conclusion, the Holocene distribution of the common crane in Bulgaria is similar to its subrecent or recent distribution, following the location of lowlands and vast riversides. All recorded subfossil Holocene localities of the species are located in the extensive plains and lowlands, often near large rivers. The records are most often from places with altitude up to 200 m. During the covered period of about 7000 years, the common crane had everywhere been a valuable hunting object for the ancient inhabitants.

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