

PAST DISTRIBUTION OF THE WHITE-TAILED EAGLE  
(*HALIAEETUS ALBICILLA* (LINNAEUS, 1758)) IN  
BULGARIA – SUBFOSSIL RECORD

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**Abstract**

The oldest remains of the White-tailed eagle in Bulgaria came from the Neolithic-Chalcolithic (6000–4000 BC). Five Holocene localities of the species have been established in the country, in which a total of 24 bone finds of at least 10 individuals have been found. It is thought that, as in other countries in Europe, from at least the Iron Age to the late Middle Ages, large primaries and rectrices of these eagles were used to produce stabilizers for the hunting arrows of ancient hunters. All localities are located in North Bulgaria along the Danube and Black Sea coasts, but always adjacent to another water body (lake, marsh or river).

**Key words:** Holocene avifauna, Accipitridae, Quaternary raptors, Balkan fossil/subfossil avifauna, Bulgarian Holocene environment, bird utilization

**Introduction.** The global conservation status of the White-tailed eagle (*Haliaeetus albicilla* (Linnaeus, 1758), Fig. 1) is “Least Concern” [1]. In Bulgaria the species is categorized as “Vulnerable” [2]. In 1979 only one breeding pair survived in the country [3]. In the last decades the national population is estimated at 10–14 breeding pairs (b. p.) [4], over 15 b. p. [5], 15–20 b. p. [6], 23 b. p. [7], and over 100 b. p. [8].

In the early 2010s eleven nesting sites were recorded along the Bulgarian sector of Danube River and three sites were along the Bulgarian Black Sea Coast.

The remaining nests are inland [7]. The species is increasingly found inland as well, including around larger dams [9]. Although the general trend in population development is positive, the species remains extremely rare. The number of the wintering individuals is between 17 and 34 individuals [5].

The present study does not aim to present and analyze the data on the past (19th-20th century) distribution of the species, which was presented by [2, 3, 6]. Here we present the available information on the distribution of the White-tailed eagle in the more distant past, based on the subfossil and subrecent bone remains of the species found in the country.

**Subfossil record of the White-tailed eagle in Bulgaria.** Findings of eagles in the archaeological and prehistoric sites in Bulgaria are not numerous. Eagles are also few in the nature as they occupy the tops of the food pyramids. Although this species is the largest eagle in the European avifauna and its bones are relatively large, it is poorly represented in the subfossil record all over the continent, where its stratigraphic range is defined as Late Pliocene/Early Pleistocene (MN 18) – present [10, 11].



Fig. 1. Adult White-tailed eagle (*Haliaeetus albicilla*), Bozalan (Bakardere) Reservoir, near the town of Ihtiman (CS Bulgaria), 26.08.2022. Photograph: Zlatozar Z. Boev

Ornithological and paleornithological research in Bulgaria has been carried out since the 1980s. Almost 20 000 bone remains of birds from over 130 sites in the country have been studied so far. The White-tailed eagle has been found in only five localities (Fig. 2).

1. Durankulak. The locality near Durankulak village (Dobrich Region) is a Neolithic-Chalcolithic settlement (6000–4000 BC) on the Golemiya Island in the Durankulashko Lake. Archaeological excavations (1985–1995) were carried out by a team under the leadership of Prof. Dr. Henrieta Todorova (National

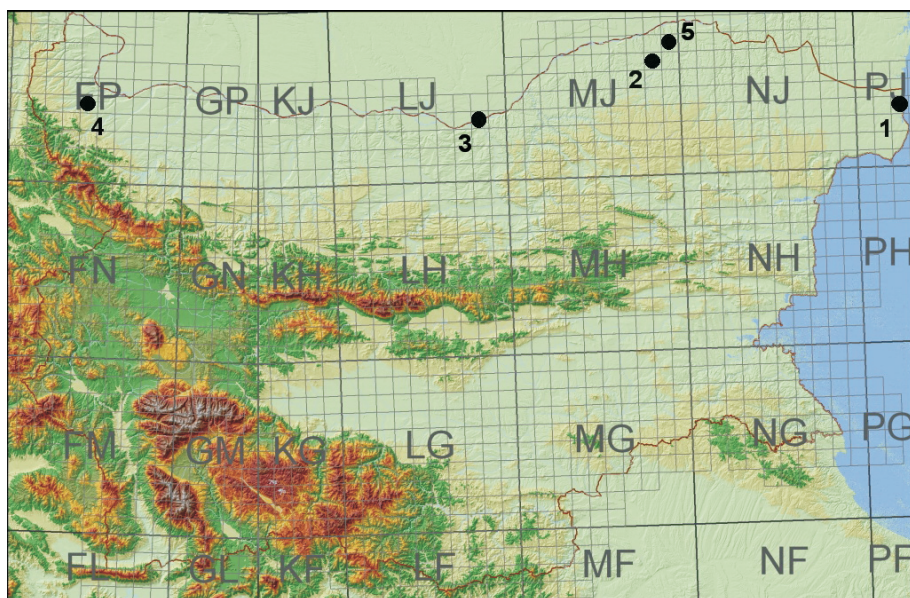


Fig. 2. Holocene localities of the White-tailed eagle (*Haliaeetus albicilla*) in Bulgaria: Durankulak (1); Malak Preslavets (2); Iatrus (3); Shipot (4); Garvan (5)

Archaeological Institute and Museum of the BAS, NAIM-BAS). A total of 20 bones of 6 individuals have been collected [12].

2. Malak Preslavets. Malak Preslavets is a locality of a Roman settlement (3–4 c. AD) near the Malak Preslavets village (Silistra Region). Archaeological excavations (1985–1986) were carried out by a team under the leadership of Dr. Ivan Panayotov (NAIM-BAS). Only one bone find has been collected from the site [13].

3. Iatrus. Iatrus is a Roman fort of 3–6 c. AD, a part of the Danubian Limes near Krivina village (Ruse Region) on Yantra River. Archaeological excavations (1970–1972) were carried out by a Polish team [14]. These authors report two bones found of one individual.

4. Shipot. Shipot is a Late Antique fortified site (4–6 century AD) near Shipot village (Vidin Region, NW Bulgaria). Archaeological excavations (2021–2023) were carried out by a team of the NAIM-BAS of Dr. Aleksandar Manev. Only one bone find has been collected from the site (Fig. 3) [15].

5. Garvan. The locality near Garvan village (Silistra Region) is an early-medieval settlement of 6th–11th c. AD. Archaeological excavations (1964–1980) were carried out by a team under the leadership of Dr. Zhivka Vazharova (NAIM-BAS). Only one bone (ulna dex.) has been found [13]. In the vicinity of the village, three swamps still survive (Leshtava, Momchila and Garvan).

**Results and discussion.** We should take into account the fact that the location of *H. albicilla* bone localities are ancient human settlements. Therefore,



Fig. 3. *Haliaeetus albicilla* – carpometacarpus sin. dist. Late Antique fortified site (4–6 century AD) near Shipot village (Vidin Region, NW Bulgaria). Photograph: Z. Boev

they do not reflect the exact nesting sites of the eagles. However, taking into account the peculiarities of the location of the settlements (near large bodies of water), we can assume with a great deal of credibility that these areas around the settlements were inhabited by the White-tailed eagles in the past. Even today these areas are inhabited or until recently were inhabited by these eagles, despite the distance of time.

All five established localities are located in northern Bulgaria. All of them are located in places traditional for the species from the recent past – the Danube River (Malak Preslavets, Garvan, Iatrus and Shipot) or the Bulgarian Black Sea coast (Durankulak). All five deposits are also located next to a second water body (besides the Danube or the Black Sea). Next to the locality near Durankulak is the lake of Durankulak. Next to the locality near Malak Preslavets is the Malopreslavsko Marsh. Next to the locality of Iatrus is the Yantra River. Next to the Shipot locality is the Skomlya River. Next to the Garvan are the Leshtava, Momchila and Garvan marshes. Millennia ago, these water bodies were significantly high-watered, which determined the presence of richer and more accessible food resources for the species.

The bone from the village of Garvan bears traces of cutmarks in the area of distal epiphysis [13]. It is likely that the cutting in the region of the joint was necessitated by the removing of the distal end of the wing. There are numerous accounts of the use of *H. albicilla* feathers in antiquity and the Middle Ages to

make hunting arrows. The large size of these birds and their large primary flight feathers made them particularly valuable in making hunting arrows.

There are strong grounds to believe that a number of large raptors such as *H. albicilla* disappeared from some local avifaunas during the Palaeolithic and Neolithic due to overhunting by humans [16, 17]. PRUMMEL [18] made the same assumptions about the species becoming rare during the Roman era. According to this author, in even more ancient times, *H. albicilla* was hunted by man for its wing and tail feathers. The stabilizers of hunting arrows were prepared from the tail feathers [19].

According to Prummel [18], the wings of the captured birds were cut off at the place of hunting and only they were brought to the settlement, where their feathers were further processed and used. Quantitative analysis of sea eagle bone remains from ancient settlements in Western Europe shows that it cannot be conclusively determined that the species was hunted primarily for its wing feathers. Therefore, it is suggested that *H. albicilla* as a large necrophagous species was available game, and its meat was used for food in the past. BURCHAK-ABRAMOVICH and LAKERBAY [20] believed that in the Late Paleolithic-Mesolithic of western Georgia, the sea eagle was hunted, used for food in periods of scarce game. Burchak-Abramovich came to such a conclusion after the study of the archaeozoological material from the ancient city of Volkovisk in Belarus from the 10th century AD. VOINSTVENSKYI [21] explained the large quantity of *H. albicilla* bones at the ancient city of Olvia on the Ukrainian Black Sea coast in the same way. According to him, the sea eagle was hunted for the feathers needed in the manufacture of arrows. It is possible that the reasons for the hunting of this species in Bulgaria were also similar.

**Conclusions.** The oldest remains of *H. albicilla* in Bulgaria came from the Neolithic-Chalcolithic (6000–4000 BC). Five Holocene localities of the species have been established in the country, in which a total of 24 bone finds of at least 10 individuals have been found. It is thought that, as in other countries in Europe, from at least the Iron Age to the late Middle Ages, large primaries and rectrices of these eagles were used to produce stabilizers for the hunting arrows of ancient hunters. All localities are located in North Bulgaria along the Danube and Black Sea coasts, but always adjacent to another water body (lake, marsh or river).

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