ORNITOFAUNA FROM THE ARCHAEOLOGICAL SITES IN VOJVODINA (SERBIA)

ABSTRACT: After decades-long vertebrate fauna research, out of 42 archaeological sites in Vojvodina (Serbia) from different periods ranging from the Neolithic to the Middle Ages, remains of birds were registered at 17 sites (4 from the Neolithic, 1 from the Early Iron Age, 7 from the Late Iron Age, 5 from the Roman Period, 1 from the Migration Period, and 4 from the Middle Ages). A total of 14 species and 4 genera were registered for this vertebrate class. The richest ornithofauna is from the Neolithic, where 9 species and 3 genera were registered. The Migration and Medieval periods are next with 4 registered species and one genus each. There were 3 species registered from the Roman Period, and 2 species from the Late Iron Age. The poorest ornithofauna was registered from the Early Iron Age, only one species.

KEYWORDS: Archaeological Sites, Ornitofauna, Vojvodina (Serbia)

INTRODUCTION

Osteological material from the archaeological sites of different periods in Vojvodina is being collected since 1930s, but the more intensive fauna research has been done in the last forty years. Bird remains were found at many sites. First of all, the Neolithic site Starčevo should be mentioned. At this site, research began in 1932, and continued between 1969 and 1970 (Clason, 1980). Nosa–Biserna obala is the site that belongs to the same period. The research at this site was conducted in 1957 (Bökőnyi, 1974). Research at Donja Branjevina site, near Deronje, was done in 1987 (Blažić, 1992 a). Systematic collecting

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of osteological material at the multilayered archaeological site Gomolava near Hrtkovci began in 1971, although digging at this site began in 1953 (Petrović, 1984).

Bird bones were also found at many sites from the Early and Late Iron Ages: Gradina–Vašica, Čarnok–Vrbas (Blažić, 1992b, 1993-1994), Bare–Voganj, Mitrovačke livade–Sremska Mitrovica and Bregovi Atovac–Kuzmin (Blažić, 1992 c), and also at Židovar (Blažić, unpublished). Ornithofauna remains have also been found at sites from the Roman Period: Malo Kuvalovo–Krnješevci, Kudoš–Šašinci, Prosine–Prhovo (Blažić, 1992 c), Sirmium site no. 85–Sremska Mitrovica (Nedeljković, 2008) and Vranj (Blažić, 1993). From the Migration Period, bird remains were found only at Sirmium site no. 85 (Nedeljković, 2008). Concerning the Middle Ages, bird remains were found at 4 sites: Malo Kuvalovo, Gajić and Vračić–Adaševeci (Blažić, 1992 c), and at Sirmium site no. 85 (Nedeljković, 2008).

**MATERIAL AND METHODS**

This paper features both published and unpublished results of the ornithofauna research from 17 archaeological sites of different periods in Vojvodina (Map 1). Material originates from the settlements and necropoleis from the Neolithic to the Middle Ages. Determination of vertebrates was done using the keys Driesch, (1976) and Schmid, (1972) and comparative osteological collections.

Map 1. Map of Vojvodina with marked archaeological sites

1. Nosa–Biserna obala (I); 2. Donja Branjevina (I); 3. Čarnok (III); 4. Starčevo (I); 5. Židovar (III); 6. Malo Kuvalovo (IV, VI); 7. Kudoš (IV); 8. Bare (III); 9. Sirmijum 85 (IV,VI); 10. Mitrovačke livade (III); 11. Bregovi (III); 12. Gradina (III); 13. Gajić (VI); 14. Vračić (VI); 15. Prosine (IV); 16. Gomolava (I, II i III); 17. Vranj (IV)

I – Neolit; II – Early Iron Ages; III – Late Iron Ages; IV – Roman period; V – Migration period; VI – Middle ages
RESULTS AND DISCUSSION

Period from which originates the collected and analysed osteological material from the archaeological sites in Vojvodina is divided into the following phases: Neolithic Age – New Stone Age (6000–3200 BC); Eneolithic Age – Copper Age (3200–2000 BC); Bronze Age (2000–950 BC); Early Iron Age (950–300 BC); Later Iron Age (4th century BC – 1st century AD); Roman Period (1st–4th century AD), Migration Period (4th–9th century AD) and Middle Ages (9th century – 1526 AD) (Cerović et al., 1997).

The most important archaeological site in Vojvodina is Gomolava-Hrtkovci, where 8 cultural layers were recorded (Petrović, 1984). Its stratigraphy is as follows: Late Neolithic Age – Early Eneolithic Age (3800–3400 BC); Middle Eneolithic Age (3400–2800 BC); Late Eneolithic Age (2800–2000 BC); Bronze Age (2000–900 BC); Early Iron Age (900–300 BC); Later Iron Age (1st century BC–1st century AD); Roman Period (1st–4th century AD), and Middle Ages. It should be noted that the osteological material from this site originates from the first, second, third, fifth and sixth layer.

At archaeological sites in Vojvodina, representatives of 7 bird orders were registered: Anseriformes, Accipitriformes, Galliformes, Gruiformes, Charadriiformes, Columbiformes and Passeriformes, of which the first order is the richest in terms of species (7), orders Galliformes and Gruiformes are represented by two species each, orders Charadriiformes, Columbiformes and Accipitriformes with one species each, taking into consideration that the last of the mentioned orders is also represented by 3 genera, while order Passeriformes is represented by only one genus (Table 1) (Blažić, 1986; 1988; 1992 a, b, c; 1993–1994; 1993; unpublished; Bőkőnyi, 1974; Clason, 1979; 1980; Nedeljković, 2008).

After comparing data from the territory of Vojvodina with those from the neighbouring countries, it can be concluded that the ornithofauna in Vojvodina is by far poorest, because at 23 sites in Bulgaria of the same period, 64 bird species which are representatives of 13 orders were registered (Boev, 1993). Gal et Kessler (2002) have researched orhnithofauna of the Eneolithic Age in south-eastern Romania and they have registered 32 species from 9 orders. At the territory of Vojvodina, there have not been found any ornithological remains from this period.

The above mentioned differences can be explained by the span of archaeological research, characteristics of sites, and by settlements’ distinctiveness.

Based on the research results collected so far, at the Neolithic sites in Vojvodina (Serbia), 9 bird species classified into 4 orders have been registered, while from the Accipitriformes order determination could be done only to the genus. The greatest diversity of this vertebrate class, from the Neolithic (9 species), was recorded at Starčevo site, while at Gomolava, Donja Branjevina and Nosa – Biserna obala only one species was registered at each site (Gomolava Anser anser; Donja Branjevina and Nosa – Otis tarda) (Clason, 1979; Blažić, 1986, 1992 a, 2005; Bőkőnyi, 1974). At Starčevo site, 5 species from the Anseriformes order were found (Anas clypeata, Anser anser, Anser fabalis, Cygnus olor and Cygnus cygnus), while for the Accipitriformes order
determination could be done up to the genera Aquilla sp., Milvus sp. and Circus sp.; the Galliformes order was represented by only one species *Gallus domesticus*; two representatives of the Gruiformes were also recorded (*Grus grus* and *Otis tarda*), while the Charadriiformes order was represented by *Numenius arquata* (Clason, 1980).

When comparing the ornitofauna among the sites in Vojvodina, other regions in Serbia, and the neighbouring countries, it can be concluded that there are certain differences. In Hungary, at Polgar-Csőszhalom site, apart from the species registered in Serbia, Bőkönyi (1974) also lists findings of *Ardea purpurea* and *Bubo bubo*, and at Röszke-Lődvár site there are 9 more bird species that were not registered in Vojvodina. In comparison with Neolithic sites of Crkvine and Belež in Kolubara basin in Serbia (Blažić and Radmanović, 2011), Divostin near Kragujevac, also in Serbia (Bőkönyi, 1988),

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Anza near Štip in FYR Macedonia (Bőkőnyi, 1976), Obre I and Obre II near Kakanj in Bosnia (Bőkőnyi, 1977) and Sitagroi in Greece (Bőkőnyi, 1986), greater diversity of vertebrate fauna was registered at sites in Vojvodina from the same period, although it should be stated that, in comparison with the last mentioned site, Anas platyrhynchos, Mergus merganser and Coturnix coturnix were not registered in Vojvodina. Absence of Gyps fulvus in Vojvodina is in relation with zoogeographical distribution of this species. Greater number of bird species was also registered at Padina (Clason, 1980).

The above mentioned differences were caused by geographical location, habitat conditions and span of archaeological research.

From the period of the Early Iron Age (Hallstatt culture), the remains of only one bird species – Gallus domesticus – were found at Gomolava site (Blažić, 1986, 1988), while from the Late Iron Age (La Tène culture), apart from the above mentioned species, Anser anser was registered, also at Gomolava (Clason, 1979; Blažić, 1986, 1993–1994). Apart from the Gomolava site, Gallus domesticus was also found at Gradina and Čarnok (Blažić, 1992 b, 1993–1994); then at Bare, Mitrovačke livade and Bregovi Atovac (Blažić, 1992 c, 1993–1994), as well as at Židovar (Blažić, unpublished).

After comparing data on vertebrate fauna at archaeological sites from the Late Iron Age in Vojvodina with those in the neighbouring countries, it can be concluded that at one site in south-eastern Romania there were 13 bird species from 6 orders registered (Gal et Kessler, 2002), and that 3 sites in Bulgaria of the same period have much richer ornitofauna diversity (Boev, 1993).

From the Roman Period, 3 bird species were registered: Anas domestica, Aquilla heliaca and Gallus domesticus. The first one was recorded at Sirmium site no. 85 (Nedeljković, 2008), the second at Vranj site (Blažić, 1993), and the third was found at both of these sites, and also at Malo Kuvalovo, Kudoš and Prosine sites (Blažić, 1992 c).

The above mentioned differences can be explained by the span of archaeological research and differences between settlements.

From the Migration Period and Middle Ages, the presence of the same species was also registered: Anas domestica, Anser domestica, Gallus domesticus, Columba domestica, as well as the Corvus sp. genus. All of them were found at Sirmium site no. 85 (Nedeljković, 2008), and Gallus domesticus was also found at Malo Kuvalovo, Gajić and Vračić sites (Blažić, 1992 c).

For one bird species – Meleagris gallopavo—turkey from the site no. 85 Sirmium, it could not have been determined whether it originates from the Roman Period, Migration Period, or Middle Ages (Nedeljković, 2008).

As it was mentioned above, at the sites in Vojvodina from the Roman Period, Migration Period and Middle Ages, 6 bird species and one genus were registered, unlike the territory of Bulgaria where, at 18 sites from the Roman Period and Middle Ages, 57 species were registered (Boev, 1993). Domestic hen Gallus domesticus was registered in Vojvodina at 5 sites from the Roman Period and at 4 sites from the Middle Ages. Presence of this bird species at sites in Hungary and Romania, also from the Roman Period, Migration Period and Middle Ages, is discussed by Gal (2008).
Nonetheless, the largest amount of data on fauna diversity at archaeological sites from all research periods, therefore from the Roman Period and Middle Ages also, was given in Bőkönyi (1974) for the territory of Hungary. Concerning the Roman Period, differences in the composition of vertebrate fauna between Vojvodina and Hungary, according to the data of this author, exist for 12 sites in Hungary. Bőkönyi, (1974) states that, at Tokod-Erzébetakna site, *Grus grus* was the recorded member of bird species, while at Tác archaeological site, 14 wild and 2 domestic bird species were registered. Nineteen archaeological sites from the Middle Ages at the territory of Hungary are also characterised by richer vertebrate fauna, because, apart from the species registered in Vojvodina, the presence of 16 bird species (*Ciconia ciconia, Buteo buteo, Haliaeetus albicilla, Milvus migrans, Pavao cristatus, Perdix perdix, Phasianus colchicus, Grus grus, Otis tarda, Bubo bubo, Strix aluco, Columba palumbus, Corvus frugilegus, Turdus pilaris, Turdus viscivorus, Upupa epops*) was also registered.

The identified differences among the archaeological sites from the Roman Period, Migration Period and Middle Ages in Vojvodina and sites of the same dating in neighbouring countries can be explained by the span of archaeological research.

**CONCLUSION**

At 17 archaeological sites in Vojvodina (4 from the Neolithic, 1 from the Early iron Age, 7 from the Late Iron Age, 5 from the Roman Period, 1 from the Migration Period, and 4 from the Middle Ages), the total of 14 species and 4 genera of birds have been registered. They belong to the following orders: Anseriformes, Accipitriformes, Galliformes, Gruiformes, Charadriiformes, Columbiformes and Passeriformes.

Ornithofauna is the richest in the Neolithic, where 9 species (*Anas clypeata, Anser anser, Anser fabalis, Cygnus olor, Cygnus cygnus, Gallus domesticus, Grus grus, Otis tarda* and *Numenius arquata*) and 3 genera (Aquilla, Milvus and Circus) were registered.

**REFERENCES**


ОРНИТОФАУНА АРХЕОЛОШКИХ ЛОКАЛИТЕТА У ВОЈВОДИНИ (СРБИЈА)

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РЕЗИМЕ: Током вишедеценијских истраживања фауне кичмењака на 42 археолошка локалитета у Војводини (Србија) различитих датовања од неолита до средњег века, остаци птица су констатовани на 17 локалитета (четири из периода неолита, један из старијег гвозденог доба, седам из млађег гвозденог доба, пет из римског периода, један из периода сеобе народа и четири из средњовековног периода). У оквиру ове класе кичмењака укупно је детерминисано 14 врста и четири рода припадника редова Anseriformes, Accipitriformes, Galliformes, Gruiformes, Charadriiformes, Columbiformes и Passeriformes. Орнитофауна је најбогатија у неолиту, у коме је регистровано девет врста и три рода, а затим, са четири констатоване врсте и једним родом следе период сеобе народа и средњовековни период, у римској епохи забележене су три врсте, у млађем гвозденом добу две, док је орнитофауна најсиромашнија у старијем гвозденом добу у коме је регистрована само једна врста.

КЉУЧНЕ РЕЧИ: археолошки локалитети, орнитофауна, Војводина (Србија)