NICOPOLIS AD ISTRUM
A LATE ROMAN AND EARLY BYZANTINE CITY

THE FINDS AND BIOLOGICAL REMAINS

A. G. POULTER
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with contributions from

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A. Roberts and C. Salter

Oxbow Books

on behalf of

The Society of Antiquaries of London
THE BIRD BONES

by

Zlatozar Boev and Mark J. Beech

Introduction

Until recently, bird bone remains recovered from archaeological excavations in Bulgaria have not received the attention they deserve. Publications by Ivanov (1956, 1959) represent the first attempts to study the evidence for domestic birds from archaeological excavations. Moreover, the full publication of bird bones from archaeological sites in Bulgaria has only begun a few years ago (Boev 1986a, b, 1988, 1991a,b,c, 1993a,b, 1996a,b; Boev and Iliev 1989,1991, Boev and Ribarov 1989, 1990, 1993, Iliev et al 1992, 1993, Ribarov and Boev 1990). Consequently, very little is known about birds and their relative importance to the local economy in the Roman period. A preliminary survey of the bird bones from the excavations at Nicopolis has already been published (Boev 1991c), but this was written before the full analysis of the results had been completed and a dated stratigraphic sequence established. The following final report includes a comparison of the Nicopolis material with what is known from other Bulgarian sites dating to broadly to the same period.

Material and Methods

Bird bones were recovered by hand retrieval, on-site dry sieving (using c 5mm mesh), and by wet-sieving of bulk samples to 500 microns. The majority of the bird remains were identified by comparing them with the osteological collection of birds in the Department of Zoology in the National Museum of Natural History, Sofia. The remainder were identified by consulting the reference collections in the Palaeontological Institute of the Russian Academy of Sciences in Moscow. The first author made all the identifications and was responsible for the quantification of the assemblage which used conventional fragment counts (NISP values). An attempt was made to identify all fragments and, so as to reduce the likelihood of counting the same bone twice the material from each context was checked for conjoining pieces. The second author assisted with the phasing and sorting of the material into chronological periods, was responsible for the first editing of the manuscript as well as writing the final section which compares the Nicopolis assemblage with data from other archaeological sites in the region.

Results and Discussion: Species Composition

A total of 1,997 bird bones were recovered from the excavations, of which 1,675 were identifiable to the level of species (Table 13. 1). The majority belonged to domestic species, in particular, domestic fowl (Gallus gallus domestica) and goose (Anser anser domestica) and only 16% belonged to wild birds (Fig 13.1). A peacock (Pavo cristatus) was also identified and was presumably kept for its decorative appearance, rather than being reared for food. Of the wild species, partridge and quail were the most common birds found on the site.

A total of 55 bird taxa were identified, of which 42 could be identified to species level. Eleven orders of the modern Bulgarian avifauna were present; Podicipediformes, Pelecaniformes, Anseriformes, Falconiformes, Galliformes, Charadriiformes, Gruiformes, Strigiformes, Columbiformes, Caprimulgiformes and Passeriformes.
Six types of birds can be distinguished according to their ecological classification, that is their natural habitat (Harrison 1975). These comprise: domestic species (4%), open country species (17%), petrophyllous species (13%), synanthropic species (13%), water species (28%) and woodland species (25%) (Fig 13.2).

The species composition established for Nicopolis represents 14% of the modern avifauna found in Bulgaria. Several of the species recorded are ‘synanthropic,’ that is bird species which today live in urban environments. These include the rock/feral pigeon (*Columbia livia/Columba livia domestica*), little owl (*Athene noctua*), tawny owl (*Strix aluco*), house sparrow (*Passer domesticus*), chaffinch (*Fringilla coelebs*), starling (*Sturnus vulgaris*), magpie (*Pica pica*), carrion crow (*Corvus corone*), and jackdaw (*Corvus monedula*).

Although, in most periods, domestic fowl dominated the assemblages, it is notable that it was during the first occupation period (100–175) that the situation was reversed and over 70% of the finds were from wild species (Fig 13.3). At this time, the most common wild species represented in the finds was partridge (*Perdix perdix*), followed by quail (*Coturnix coturnix*). The ratio of domestic to wild species, according to the number of identified fragments, appears to have remained fairly constant in all later periods. The range of wild birds exploited during the Late Roman and early Byzantine periods appears markedly greater between 250 and 600, although this may appear so simply because the majority of all deposits excavated belong to the late Roman and early Byzantine periods (above, pp. 4–5, Poulter 1999, 28–29). Inevitably, the larger the assemblage, the greater the range of species identified.

**The natural environment around the city**

Birds from water and woodland habitats dominate the assemblage, accounting for 53% of all species represented (Fig 13.2 and Table 13. 2). There must have been extensive areas of shallow water in the vicinity, such as swamps, lakes or wide, marshy river floodplains. It also follows that, unlike today when deforestation has substantially modified the landscape, the river valleys of the Rositsa, Yantra, Bohot, Negovanka, and Lefedja still contained extensive tracts of woodland in Antiquity (Fig 1.6). The numerous meanders and the marshland within the river valleys would have provided an excellent habitat for a variety of avifauna, a rich resource which must have been exploited for the wide range of wildfowl it would have provided. Species recorded include the great crested grebe (*Podiceps cristatus*),
### Table 13.1 Quantification of the bird bones by period (NISP values)

<table>
<thead>
<tr>
<th>TAXON</th>
<th>100–175</th>
<th>175–250</th>
<th>250–450</th>
<th>450–600</th>
<th>800–1000</th>
<th>1750–1850</th>
<th>TOTAL</th>
</tr>
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<td>-</td>
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<td>-</td>
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<tr>
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<tr>
<td>Pelican, <em>Pelecanus</em> sp.</td>
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</tr>
<tr>
<td>Mute swan, <em>Cygnus olor</em> (Gmelin, 1789)</td>
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<td>1</td>
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<td>Great crested grebe, <em>Podiceps cristatus</em> (Linnaeus, 1758)</td>
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<td>30</td>
<td>16</td>
<td>-</td>
<td>11</td>
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<td>Bean goose, <em>Anser fabalis</em> (Latham, 1787)</td>
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<td>White fronted goose, <em>Anser alibifrons</em> (Scopoli, 1769)</td>
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<td>-</td>
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<td>3</td>
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<tr>
<td>Garganey, <em>Anas querquedula</em> (Linnaeus, 1758)</td>
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<td>Duck, <em>Anas</em> sp.</td>
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<td>Sparrowhawk, <em>Accipiter nisus</em> (Linnaeus, 1758)</td>
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<td>-</td>
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<td>Lammergeier, <em>Gypaetus barbatus</em> (Linnaeus, 1758)</td>
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<td>Hawks, <em>Accipitridae</em> gen.</td>
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<tr>
<td>Rock partridge, <em>Alectoris graeca</em> (Meisner, 1804)</td>
<td>-</td>
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<td>1</td>
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<td>-</td>
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<td>Quail, <em>Coturnix coturnix</em> (Linnaeus, 1758)</td>
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<td>-</td>
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<td>11</td>
<td>-</td>
<td>4</td>
<td>20</td>
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<tr>
<td>Domestic fowl, <em>Gallus gallus</em> dom. (Linnaeus, 1758)</td>
<td>24</td>
<td>76</td>
<td>657</td>
<td>359</td>
<td>3</td>
<td>224</td>
<td>1343</td>
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<td>Domestic fowl/Pheasant, <em>Gallus/Phasianus</em></td>
<td>21</td>
<td>10</td>
<td>61</td>
<td>44</td>
<td>-</td>
<td>23</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
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<tr>
<td>Great bustard, <em>Otis tarda</em> (Linnaeus, 1758)</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>

*Continued over the page*
pelicans (*Pelecanus sp.*), cormorants (*Phalacrocorax carbo*) and a number of geese, ducks and diving ducks. These species could not have been hunted unless extensive tracts of open water existed in the region. Of particular interest is the appearance of the crested grebe. The great crested grebe does not normally leave open water and its nests are built in marshes or in lakes on rafts of driftwood and decaying plants, far from dry land. Its appearance suggests that fowling was practiced, probably from boats, using lassos, nets or dogs to hunt game. Mute swans are usually found on open expanses of water, up to two metres deep, where, in shallow stretches near the margins, they could reach down to the riverbed for food. Gulls suggest that there were open stretches of sandy beach close to Nicopolis. They no doubt supplemented their diet by feeding on rubbish dumps outside the city.

The discovery of birds commonly found in woodland habitats points to the existence close by of old deciduous mixed woodland. The preferred habitat of the pheasant (*Phasianus colchicus*) is woodland on floodplains which occur on the lower reaches of large rivers. The goshawk (*Accipter gentilis*) and the sparrow hawk (*Accipter nisus*) hunt their prey in woodland clearings or in open country, where bush and tree cover is limited. The wood pigeon (*Columba palumbus*), the stock dove (*Columba oenas*), the little owl (*Athene noctua*), the tawny owl (*Strix aluco*), the little bustard (*Otis tetrax*), the rook (*Corvus frugilegus*), and the carrion crow (*Corvus corone*) are all birds that are often associated with woodland habitats.

### The Bird Bones

<table>
<thead>
<tr>
<th>TAXON</th>
<th>100–175</th>
<th>175–250</th>
<th>250–450</th>
<th>450–600</th>
<th>800–1000</th>
<th>1750–1850</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little bustard, <em>Otis tetrax</em> (Linnaeus, 1758)</td>
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<td>-</td>
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<td>-</td>
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</tr>
<tr>
<td>Gull, <em>Larus</em> sp.</td>
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<td>-</td>
<td>1</td>
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<td>Charadriiformes fam.</td>
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<td>Rock dove, <em>Columbia livia</em> Gmelin, 1789</td>
<td>-</td>
<td>-</td>
<td>14</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>18</td>
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<tr>
<td>Stock dove, <em>Columba oenas</em> (Linnaeus, 1758)</td>
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<td>-</td>
<td>2</td>
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<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Wood pigeon, <em>Columba palumbus</em> (Linnaeus, 1758)</td>
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<td>-</td>
<td>3</td>
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<td>-</td>
<td>2</td>
<td>7</td>
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<tr>
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<td>-</td>
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<td>7</td>
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<tr>
<td>Little owl, <em>Athene noctua</em> (Scopoli, 1769)</td>
<td>-</td>
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<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Tawny owl, <em>Strix aluco</em> (Linnaeus, 1758)</td>
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<td>Thrush, <em>Turdus</em> sp.</td>
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<td>Sparrow/Finch, <em>Passer/Fringilla</em></td>
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<tr>
<td>Chaffinch, <em>Fringilla coelebs</em> (Linnaeus, 1758)</td>
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<td>?Linnet, <em>Acanthis cf. cannabina</em> (Linnaeus, 1758)</td>
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<td>Nutcracker, <em>Nucifraga caryocatactes</em> (Linnaeus, 1758)</td>
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<td>Magpie, <em>Pica pica</em> (Linnaeus, 1758)</td>
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<tr>
<td>Alpine chough, <em>Pyrrhocorax graculus</em> (Linnaeus, 1766)</td>
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<td>-</td>
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<tr>
<td>Rook, <em>Corvus frugilegus</em> (Linnaeus, 1758)</td>
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<tr>
<td>Aves indet.</td>
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<td>33</td>
<td>55</td>
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<td>12</td>
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<td>TOTAL</td>
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<td>100</td>
<td>867</td>
<td>519</td>
<td>4</td>
<td>306</td>
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### Table 13.2 Habitats of birds present at Nicopolis

**TAXON**

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<tr>
<th>GREAT CRESTED GREBE</th>
<th><strong>HABITAT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Podiceps cristatus</em> (Linnaeus, 1758)</td>
<td>Breeds on lakes, gravel pits, reservoirs and slow moving rivers. Winters on estuaries, lakes and reservoirs. Inshore waters on all types of coast, also on lakes inland.</td>
</tr>
</tbody>
</table>

| CORMORANT | Fresh and brackish lakes and marshes, shallow coastal water. |
| *Phalacrocorax carbo* (Linnaeus, 1758) |

| PELICAN | Still and slow-moving freshwater, estuaries, sheltered coastal water, sometimes breeding in swamps. |
| *Pelecanus sp.* |

| MUTE SWAN | Breeds in lowland moors and marshes. The farmyard goose (A.a.dom.) is its domestic derivative. |
| *Cygnus olor* (Gmelin, 1789) |

| GREYLAG GOOSE | Breeds in marshy places and by freshwater on tundra and in taiga. |
| *Anser anser* (Linnaeus, 1758) |

| BEAN GOOSE | Breeds on marshy tundra. |
| *Anser fabalis* (Latham, 1787) |

| WHITE FRONTED GOOSE | By brackish or more rarely freshwater lakes and inland seas. |
| *Anser albifrons* (Scopoli, 1769) |

| SHELDFULK | Breeds not far from all kinds of still and slow-moving water and marshes. In winter also estuaries and seashores. |
| *Tadorna tadorna* (Linnaeus, 1758) |

| MALLARD | Breeds by freshwater on moors and tundra, rarely in coastal marshes. In winter on lakes, reservoirs, estuaries and shallow coastal waters, flocks often grazing on fields. |
| *Anas platyrhynchos* (Linnaeus, 1758) |

| WIGEON | Breeds on still and slow moving freshwater with dense fringes of vegetation, also marshes, fens and bogs. In winter on lakes, reservoirs, estuaries and coastal water. As for teal. |
| *Anas penelope* (Linnaeus, 1758) |

| TEAL | Still and slow-moving freshwater with vegetated margins. In winter also on reservoirs and other bare-banked waters. Breeds also on brackish lakes. |
| *Anas crecca* (Linnaeus, 1758) |

| GARGANEY | Wooded country, sometimes penetrating villages and town suburbs. |
| *Anas querquedula* (Linnaeus, 1758) |

| POCHARD | Forests, both coniferous and broad-leaved. |
| *Aythya ferina* (Linnaeus, 1758) |

| SPARROWHAWK | High and usually remote mountains, nesting on rock ledges. |
| *Accipiter nisus* (Linnaeus, 1758) |

| GOSSHAWK | Forests and areas with scattered woods. In winter in more open country. |
| *Accipiter gentilis* (Linnaeus, 1758) |

| LAMMERGEIER | Nest in trees. Specialists in catching smaller birds in woodland and scrub. |
| *Gypaetus barbatus* (Linnaeus, 1758) |

| BLOODED | Open country, with crags or scattered trees, sea cliffs, towns and villages. Nest on rock-ledge, building or tree. |
| *Perdix perdix* (Linnaeus, 1758) |

| PEACOCK | Open country, including farmland, especially arable, moorland, steppes, and semi-deserts. |
| *Pavo cristatus* (Linnaeus, 1758) |

| ROCK PARTRIDGE | The peacock is an ornamental bird originating in India. It is found widely in the Indian sub-continent from the south and east of the Indus river, Jammu and Kashmir, east Assam, south Mizoram and the whole of the Indian peninsula. |
| *Alectoris graeca* (Meisner, 1804) |

| QUAIL | Rocky, stony and thinly grassy hill and mountain slopes. Also found in vineyards. |
| *Coturnix coturnix* (Linnaeus, 1758) |

| PHEASANT | Farmland, especially among growing crops, open grassland, steppes, and semi-deserts. |
| *Phasianus colchicus* (Linnaeus, 1758) |

| DOMESTIC FOWL | Open country with scattered woods, copses or riverine belts of trees or shrubs, marshes, extensive reed-beds, often feeding on cultivated land. In villages and towns. |
| *Gallus gallus* dom. (Linnaeus, 1758) |

| GREAT BUSTARD | Treeless plains, steppes and extensive cultivations. |
| *Otis tarda* (Linnaeus, 1758) |

| LITTLE BUSTARD | Grassy and cultivated plains, sometimes with scattered trees and bushes. |
| *Otis tetrax* (Linnaeus, 1758) |

| GULL | Nesting grounds on cliffs or flat ground by the sea, also inland by freshwater. |
| *Larus sp.* |

| CHARADRIIFORMES FAM. | Various including fresh and brackish water, sand and mud flats. |

Continued over the page
Rock dove, *Columba livia* Gmelin, 1789

Stock dove, *Columba oenas* (Linnaeus, 1758)

Wood pigeon, *Columba palumbus* (Linnaeus, 1758)

Turtle dove, *Streptopelia turtur* (Linnaeus, 1758)

Little owl, *Athene noctua* (Scopoli, 1769)

Tawny owl, *Strix aluco* (Linnaeus, 1758)

Nightjar, *Caprimulgus europaeus* (Linnaeus, 1758)

Thrush, *Turdus sp.*

House sparrow, *Passer domesticus* (Linnaeus, 1758)

Chaffinch, *Fringilla coelebs* (Linnaeus, 1758)

Linnet, *Acanthis il. cannabina* (Linnaeus, 1758)

Starling, *Sturnus vulgaris* (Linnaeus, 1758)

Nutcracker, *Nucifraga caryocatactes* (Linnaeus, 1758)

Magpie, *Pica pica* (Linnaeus, 1758)

Alpine chough, *Pyrrhocorax graculus* (Linnaeus, 1766)

Rook, *Corvus frugilegus* (Linnaeus, 1758)

Carrion crow, *Corvus corone* (Linnaeus, 1758)

Jackdaw, *Corvus monedula* (Linnaeus, 1758)

**HABITAT**

On cliffs and rocks. On mountains and hillsides where it nests in rock crevices or caves. A feral pigeon in towns, also on inland and sea cliffs.

Woodland and country with scattered trees, also on cliffs and sometimes in towns.

Wooded country, feeding both in trees and on adjacent farmland.

Wide range of country with open woodland or scattered trees, often feeding in farmland.

Farmland and open country with scattered trees, open woodlands, and orchards.

Open, mainly deciduous woodland, parkland, large gardens and other areas with scattered trees, not uncommon in villages, towns and some cities.

Open woodlands, forest edges, patches of felled woodland, and open country with scattered trees.

Nest usually in bush or tree.

Highly gregarious, inhabiting human settlements of all kinds including large urban centres, often feeding in associated cultivated areas.

Woods and forests, areas with scattered trees, heaths, farmlands, town parks, gardens, frequent in town suburbs.

Open bushy country including mixed farmland, where both arable and grassland habitats are present.

Open woods, areas with scattered trees, cultivations, villages and towns.

Forests, especially coniferous; frequently perches on topmost branches of trees, and hops on the ground.

Areas with scattered trees and scrub, from tundra and semi-desert to farmland and town suburbs.

High rocky mountains with steep cliffs and crags.

Farmlands and grasslands with plenty of scattered trees or small woods, feeding in more open country.

Frequent in farmland, moorland, town parks and suburbs.

Open and cultivated country with rocks, crags and old trees, frequent in towns and villages, especially around ruins.
oenas), perhaps the tawny owl (Strix aluco) and the buzzard (Buteo buteo) are usually to be found in woodland, nesting in the tops of large old trees. The magpie (Pica pica) prefers a generally open landscape with occasional trees or lives in clumps of high shrubs in open pastures or fields. The nutcracker (Nucifraga caryocatactes) lives in coniferous and mixed (predominantly beech) woodland and only during very cold winters comes down to the lowland plains and valleys. The nightjar (Caprimulgus europaeus) prefers coniferous, broad leaf and mixed woodlands, whereas the thrush (genus Turdus) is found in forest or shrubland. As the bird finds include nine species which prefer open landscapes, it also seems certain that in Antiquity, close to the city, there was unforested land, probably open fields. There would have also have been pastures, meadows or open arable land. These habitats would have been ideal for the great bustard (Otis tarda), little bustard (Otis tetrax), partridge (Perdix perdix), quail (Coturnix coturnix) and rook (Corvus frugilegus), all of whom would have favoured these open areas to nest, feed and rear their young.

The petrophyllous species, which include the lammergeier (Gypaetus barbatus), jackdaw (Corvus monedula), kestrel (Falco tinnunculus) and little owl (Athene noctua), dwell in rock massifs where they nest on high, inaccessible precipices and entrances to caves or rock crevices. Usually, the species migrates in search of food to overwinter in the lowlands and plains. The rock partridge (Alectoris graeca) is also a petrophyllous species. It prefers stony terrain, screes, erosion sections and rocky areas within grasslands. Such habitats still exist in the region today. Since 1961 the lammergeier (Gypaetus barbatus) has disappeared from Bulgaria, and all data concerning its former distribution is therefore of considerable interest. According to Kuzev (1927), the lammergeier nested on rocks in the Eleno-Tvardishka mountains until the first quarter of this century. As it is difficult to distinguish between the bones of wild rock dove (Columba livia) and feral pigeon (C. livia domestica), bones identified as belonging to one or other of these species are classified together, the majority of finds probably belonging to rock doves.

**DOMESTIC FOWL**

Two types of domestic birds were identified in the Nicopolis assemblage. Although this only amounts to about 5% of the species represented, at least 84% of the bird bone fragments were from domestic birds. The remains of domestic fowl (Gallus gallus domestica) are the most numerous, represented by 1,343 bones, followed by those of domestic goose (Anser anser domestica), totalling 58 bones. Besides those bones determined to Gallus, most of the bone fragments classified as ‘Gallus/Phasianus’
THE BIRD BONES

were probably also Gallus, because the ratio of both species (domestic fowl and pheasant) in the material which could be differentiated was 1343:20, or approximately 67:1. It follows that many of the bones classified as ‘Gallus/Phasianus’ are most likely to have been domestic fowl.

The occasional breeding of feral pigeon or domestic duck (*Anas platyrhynchos domestica*) may have taken place, but the limited material collected is insufficient to decide whether they were wild or not. However, the relatively small amounts of bones from rock dove and mallard does suggest that these species were not reared in captivity.

It is clear that poultry breeding, rather than wildfowl hunting, made the most important contribution towards the citizens’ diet.

**Breed and Sexual Composition of the Domestic Fowl**

Sexing of *Gallus gallus domesticus* was determined solely by the tarsometatarsus and the development on the bony base of the corneous spur on its mediocaudal surface in the case of roosters (this distinguishing feature is only present in mature males). It is relatively easy to identify different breeds by comparing their metrical differences. Analysis indicated the presence of at least two breeds of domestic fowl. One was large and was about the same size as present day meat breeds. The other was small and gracile, suggesting that it was bred for decorative or sporting purposes. The osteometric characteristics of this breed will be subject to further specialist research. It is also possible that a third breed of domestic fowl existed. Numerous bones of a medium sized specimen were recovered, quite distinct from the bones of the other two breeds. The ratio of the large and medium to small is 1312:31, ie, 42:1. The ratio between male and females is 39:47 (Table 13. 3). This indicates an unusually large number of roosters compared to hens. The sex ratio is approximately 1 cock: 1.2 hens. This suggests that males were not selectively culled; males were reared with females until attaining sexual maturity. The fact that the numbers of roosters and hens were overall quite similar provides no grounds for believing that any of the breeds of domestic fowl were treated in a different way.

The preliminary results of Boev (1991c) are analogous. It is interesting to note that the small domestic fowl (bantam fowl size), appear in the city at the same time as the larger and medium sized breeds, in the period 175–250. Two very large roosters, one dated 250–450, the other 450–600, and two large hens from contexts dated 250–450 were also found. The bony base of one cock’s spur, dated 250–450, was no less than 26.5mm in length, probably because it belonged to a fighting breed.

Long bones of the lower limb, the tibiotarsus, tarsometatarsus and femur, are the best represented in the bird bone material (Table 13. 3). These three types of bones amount to 36% of all the bones identified as domestic fowl. Examination of the material for fragmentation of the bones indicates that vertebrae and phalanges are best preserved (without breakage), followed by the coracoid, tarsometatarsus and carpometacarpus. Around 63% of all of these bone types were preserved intact.

**WILDFOWL**

The species composition of wildfowl was rich and varied. The inhabitants of the city hunted at least 33 species, which today are considered as wildfowl. Four orders of wildfowl were represented; waterfowl (*Anseriformes*), gamefowl (*Galliformes*), Gruiformes and Columbiformes. Waterfowl were the most abundant species.

The discovery of pheasant, a species which has not previously been considered as a native species in the Balkans, is of great interest. It indicates that, if the species had been brought into Europe, it was already established there by the 2nd century. Recently, pheasant bones have also been identified from the Eneolithic site near Dolnoslav in central southern Bulgaria, dating to c. 6000 B.P. (Boev 1996a).

Grey partridges and quails were the most common species of wild fowl. Both species are mainly attested during the earliest period of occupation, c. 100–175. If it is accepted that the mute swan (*Cygnus olor*) was a game bird (a single find from the post-medieval period), then the great bustard and mute swan were the largest game birds identified in the bone material. The great bustard is also found in the Roman to late Roman period (250–450). As nesting species, both European bustards have
Table 13.3 Anatomical representation of the domestic chicken (Gallus gallus domesticus) (NISP values)

<table>
<thead>
<tr>
<th>Anatomical unit</th>
<th>Small size</th>
<th>Small size</th>
<th>Large to medium size</th>
<th>Large to medium size</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>juvenile</td>
<td>adult</td>
<td>juvenile</td>
<td>adult</td>
<td></td>
</tr>
<tr>
<td>Tibiotarsus</td>
<td>-</td>
<td>3</td>
<td>19</td>
<td>165</td>
<td>187</td>
</tr>
<tr>
<td>Tarsometatarsus (total)</td>
<td>1</td>
<td>5</td>
<td>25</td>
<td>124</td>
<td>155</td>
</tr>
<tr>
<td>Tarsometatarsus (male)</td>
<td></td>
<td>(1)</td>
<td></td>
<td>(38)</td>
<td>(39)</td>
</tr>
<tr>
<td>Tarsometatarsus (female)</td>
<td>(2)</td>
<td></td>
<td></td>
<td>(49)</td>
<td>(47)</td>
</tr>
<tr>
<td>Tarsometatarsus (unsexed)</td>
<td>(1)</td>
<td>(2)</td>
<td>(26)</td>
<td>(41)</td>
<td>(69)</td>
</tr>
<tr>
<td>Femur</td>
<td>-</td>
<td>1</td>
<td>18</td>
<td>116</td>
<td>135</td>
</tr>
<tr>
<td>Radius</td>
<td>-</td>
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<td>4</td>
<td>121</td>
<td>126</td>
</tr>
<tr>
<td>Coracoid</td>
<td>-</td>
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<td>9</td>
<td>103</td>
<td>113</td>
</tr>
<tr>
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<td>17</td>
<td>81</td>
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<td>Ulna</td>
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<td>48</td>
</tr>
<tr>
<td>Carpometacarpus</td>
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<td>-</td>
<td>39</td>
<td>41</td>
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<td>Vertebrae</td>
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<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Fibula</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Phalanx 1 dig. Ill aliae</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8</td>
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</tr>
<tr>
<td>Synsacrum (corpora verteb.)</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Mandibula</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
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</tr>
<tr>
<td>Notarium</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Cranium</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Pygostyl</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3</td>
<td>28</td>
<td>110</td>
<td>1202</td>
<td>1343</td>
</tr>
</tbody>
</table>

now disappeared from the Bulgarian avifauna. The sole specimen of little bustard identified comes from a post-medieval context.

The most diverse range of wildfowl game is found in the Roman to late Roman period (250–450), when at least ten species were hunted: the great crested grebe, geese (type unknown), white-fronted goose, shelduck, (?)mallard, wigeon, teal, garganey, wood pigeon, stock dove, (?)rock dove, rock partridge, pheasant, pochard and turtle dove. It was at this time that the city was most threatened by external enemies, first the Goths and then the Huns. It may be that the population of Nicopolis became more dependant upon hunting wildfowl and the breeding of poultry during these difficult years. Certainly, the numbers of domestic fowl bones recorded for this period are many more than during other periods which suggests that the citizens depended heavily upon chickens as a source of food.

ORNAMENTAL BIRDS

According to Sossinka (1982), the Indian (Blue) peacock (Pavo cristatus) was one of the first birds to be domesticated, along with the greylag goose (Anser anser), the rock dove (Columbia livia), the red jungle fowl (Gallus gallus) and the mallard (Anas platyrhynchos). He maintains that these species ‘were bred with increasing success by the Greeks and, in particular, by the Romans, who developed a market for delicacies derived therefrom’ (Sossinka 1982, 377). Bogdanov (1937) also asserts that the peacock is a product of an ancient domestication, but notes that there is an important difference between the peacock and other domesticated birds. The peacock remained practically unchanged in morphological terms and appears to be identical with its ancestor, the wild Indian peacock.
The first reports of peacocks in Europe occur in the Bible (1 Kings 10.22) where they are listed amongst the contents of the Phoenician ships of King Solomon (1020–980 BC). These spectacular birds are mentioned several times in the Bible, and they were brought to the town of Tharsis, between the rivers Guadiana and Guadalquivir in southern Spain. The first clear evidence for peacock breeding in Europe comes from Greece (Bogdanov 1937). They were brought there from Asia Minor, and, by the 5th century BC, peacocks were a common domestic bird in Athens. Peacocks were probably also reintroduced by Alexander the Great (330–323 BC). In the early 1st century AD the Romans took an interest in peacocks and began breeding them for their meat (Bogoljubskyi 1959). The Romans also offered peacocks as a sacrifice to Juno, the goddess of matrimony and motherhood.

The oldest archaeological find of peacock from Europe which has so far been found is a proximal fragment of a right tibiotarsus, which was discovered in a deposit described as being of simply ‘Holocene’ date from a site in Poland (Bochenski 1974). The discovery of the peacock bone from Nicopolis is therefore of some interest. The bone (NMNH Sofia, catalogue number 4295) came from an early Byzantine context (450–600) but is most probably residual. A date in the 2nd or 3rd centuries AD would seem most likely, given the prosperity of the city at that time. It consists of half of a pelvis (synsacrum). Comparison of its bony sculpture and general size with modern peacock bones in the Sofia National Museum of Natural History collections suggests that it came from an adult male. The remains of peacock (Pavo cristatus) have not been identified before on any archaeological site in Bulgaria. It provides tantalising evidence which suggests that peacocks may have been bred in the larger Roman towns in the region. Numerous Roman bas-reliefs include depictions of peacocks but this is the first direct zooarchaeological evidence for its existence. Although peacocks may have been kept in Nicopolis for their aesthetic/ornamental value, it is quite possible that the inhabitants considered the meat a delicacy.

**Butchery and cooking practices**

Knife-cuts to the distal articulations of both humerus and tibiotarsus indicate that the trunks of birds were cut open to remove the distal parts of the body (apical end of the wings and feet), removing non-meat bearing parts. Only a few bones have traces of burning, suggesting that the birds were normally cooked by boiling/baking, rather than by cooking directly over a fire.

**BIRDS OF UNCERTAIN SIGNIFICANCE TO MAN**

The remaining 23 species of wild birds, which cannot be generally considered as game, are included in this category. Some of them would today be regarded as synanthropic species: the rock/feral pigeon (Columbia livia/Columba livia domestica), little owl (Athene noctua), tawny owl (Strix aluco), house sparrow (Passer domesticus), chaffinch (Fringilla coelebs), starling (Sturnus vulgaris), magpie (Pica pica), carrion crow (Corvus corone), and jackdaw (Corvus monedula). All these species are classified by Donchev and Jankov (1989) as initial, advanced or extreme synurbanists for whom human activity does not deter them from living in towns and villages. However, it should be remembered that some passerine species, such as starlings, thrushes and warblers, are still regarded in some parts of Europe as a valuable source of food, notably in France, Italy and Greece.

Some of the species found at Nicopolis cannot be regarded as synurban avifauna; namely the cormorant (Phalacrocorax carbo), mute swan (Cygnus olor), sparrowhawk (Accipiter nisus), goshawk (Accipiter gentilis), buzzard (Buteo buteo), nightjar (Caprimulgus europaeus), kestrel (Falco tinnunculus) and, particularly, the lammergeier (Gypaetus barbatus). Some of these birds, like the sparrowhawk and goshawk, may have been used for falconry, hunting small game such as partridges, doves, quails, and hares. Both species of hawks are often used for hunting today (Sternberg 1969). As a large and beautiful bird with spectacular plumage, the lammergeier may have been considered a hunting trophy. Its primary feathers may have been used as stabilizers in hunting arrows, a practice which still existed in the region during the 18th century (Georgiev, 1987). The presence of nutcracker
(Nucifraga caryocatactes) and alpine chough (Pyrrhocorax graculus) may simply be chance occurrences. Both species are mountain birds and their closest ‘typical’ (breeding) habitats are more than 40 kilometres south of Nicopolis.

The Nicopolis bird bone assemblage: Comparison with other published sites

As mentioned earlier, there has been relatively little research carried out in Bulgaria on bird remains from archaeological sites. Boev (1991b) mentions, in a review of waterfowl found on fifteen archaeological sites of various dates, notes that they produced a modest total of only 257 bone fragments. Most of these sites only produced a very small number of bird bones, no doubt because no systematic recovery methodology had been employed during the excavations. Geese bones were the most common finds which suggests that the samples were biased in favour of the larger and better-preserved bones which could have been retrieved by hand. There are a few sites, contemporary with Nicopolis, which have produced fuller records and, generally, these assemblages are dominated by domestic fowl and include only very small quantities, usually just one or two bones, belonging to wild species.

The presence of domestic fowl, as well as fourteen bones of greylag/domestic goose (Anser anser cf, domestica), and other bones of goose (Anser sp.), gadwall (Anas strepera) and garganey (Anas querquedula) were noted in 2nd – 5th century levels at Cabyle in Central Bulgaria (Boev and Ribarov, 1993, Ribarov 1982).

A total of forty-nine bird bone fragments were recorded from 2nd-4th century levels at Ratiaria (Archar) on the Danube in north-west Bulgaria (Iliev et al 1993). The bone assemblage includes thirty five from domestic fowl (Gallus gallus domestica), eight from domestic fowl/pheasant (Gallus/Phasianus), three pheasant (Phasianus colchicus), two mallard (Anas platyrhynchos cf, domestica) and one bone from a griffon vulture (Gyps fulvus).

Small quantities of domestic fowl (Gallus gallus domestica, n= 42), two bones of mallard (Anas platyrhynchos cf, domestica), a partridge (Perdix perditix) and an unknown member of the Charadriiformes were recorded from 3rd-4th century deposits at the Roman villa of Bela Voda, just to the south-west of Sofia (Iliev et al 1992).

The discovery of domestic fowl bones is recorded for a number of other Roman sites in Bulgaria including Abritus, Armira, Ivailovgrad, Kostinbrod and Sofia (Boev 1996). Three Roman sites have produced comparatively large assemblages of bird bones. These are the late Roman fortresses of Iatrus (Krivina) and Novae (Svishtov), both on the Danube and the site of Dichin, 15km to the west of Nicopolis, on the south bank of the river Rositsa (Fig 1.2). For Iatrus a small quantity of bird bones has been published from the 1970–72 excavations (Bartosiewicz and Choyke 1991). Domestic fowl (n=5), white pelican (Pelecanus onocrotatus, n=3), crane (Grus grus, n=3), white-tailed eagle (Haliaetus albicilla, n=2), cormorant (Phalacrocorax carbo, n=1), white swan (Cygnus olor, n=1) and white stork (Ciconia ciconia, n=1) were all recorded. At the Roman fortress/town of Novae, a series of publications record small quantities of bird bones (Chrzanowska and Molenda 1983, Makowiecki 1999, Schramm 1975, 1979, Waluszewska-Bubien and Krupska 1983). Species noted include domestic fowl (Gallus gallus domestica), geese (Anser sp.), pochard (Aythyaferina), white pelican (Pelecanus onocrotalus), mute swan (Cygnus olor), goshawk (Accipiter gentilis) and rook (Corvus frugilegus). At Dichin, more than 200 hundred bird bones have been recovered from the recent 1996–2001 excavations (see above, p. 14). The majority of these belong to domestic fowl (n=283), with small quantities of domestic geese (n=2) and possibly duck (n=1). Wild bird species include ?golden eagle (cf, Aquila chrysaetos, n=2), black grouse (Tetrao tetrix, n=8), crow/rook (Corvus corone/frugilegus, n=3), great crested grebe (Podiceps cristatus, n=1), partridge (Perdix perditix, n=1), jay/nutcracker (Garrulus glandarius/Nucifraga caryocatactes, n=3) and pigeon/dove (Columbia sp., n=4). This assemblage, not surprisingly, is similar to that from Nicopolis since the sites are close together and the occupants of both the city and the fort no doubt exploited similar, if not the same habitats.

Overall, the available evidence points to the importance of poultry husbandry although, clearly, the exploitation of game fowl and wild birds was also important in certain parts of Bulgaria.
Conclusions

The bird bone assemblage from Nicopolis represents the richest and most diverse subfossil avifauna ever published from an archaeological site in Bulgaria. Nicopolis occupied a favoured location, with rich local fauna and flora and with freshwater, woodland, open land and rocky lands providing suitable habitats for different kinds of birds. The subfossil avifauna is notable for its diversity, in terms of its species composition, as well as for the quantity of material recovered. The bird remains analysed represent 42 species, 5 genera, 4 families and 3 orders, a total of 55 taxa.

Poultry farming was already underway during the very earliest period after the establishment of the city. It was based chiefly on raising domestic fowl which accounts for 96% of all domestic bird remains. To judge from their relative size, there were two, possibly three, distinct breeds. The rooster/hen ratio was about 1:1.2. The keeping of domestic goose seems to have been only of limited importance in the Roman to early Byzantine period.

There was a diverse range of wildfowl, including at least 22 species, of which the most popular game birds would seem to have been partridge and quail. The inhabitants of Nicopolis probably hunted most often across open farmland and grassland. Fowling was no doubt carried out throughout the year, not just during the summer, and would seem to have been most important between c 250 and 450: the bones of at least 10 wildfowl species have been found in deposits dating to this period. The cooking of bird meat, both wildfowl and domestic fowl, was probably done mainly by boiling or roasting over a temperate fire, since traces of burning on the bones are extremely rare. The presence of twelve species has been recognized in the archaeological record for the first time in Bulgaria; the lammergeier, little bustard, stock dove, wood pigeon, rock partridge, nightjar, (?)linnet, starling, chaffinch, wigeon, teal and garganey.

It is to be hoped that further efforts will be made to recover bird bones from archaeological sites in Bulgaria. The avifauna from Nicopolis demonstrates how valuable such remains can be for our understanding of the environmental setting, as well as economic aspects of settlements in the region. Only if archaeologists ensure that appropriate retrieval methods are used on excavations, such as the systematic use of sieving, will progress be made and useful assemblages of bird bones retrieved for future research.

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ABBREVIATIONS


*Novaensia* *Novaensia: badania Ekspedycji Archeologicznej Uniwersytetu Warszawskiego w Novae*, Warsaw, 1987–


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NICOPOLIS AD ISTRUM
A LATE ROMAN AND EARLY BYZANTINE CITY
THE FINDS AND BIOLOGICAL REMAINS

This, the third and final monograph, completes the description of the excavations carried out by the British team, part of the Anglo-Bulgarian archaeological programme on the site of Nicopolis ad Istrum in northern Bulgaria, one of the best-preserved ancient cities of the Roman Empire. The site provided a unique opportunity to compare the changing layout and economy of an urban centre from the Roman to the late Roman and the early Byzantine periods (c. AD 100–600). The excavations, geophysics, coins and wall-plaster were published in volume 1. Volume 2 describes the evidence for economic changes between the Roman and early Byzantine periods and contains full reports on the pottery and the glass.

This volume includes full descriptions of all the small finds (ceramic, copper-alloy and iron objects, glass, lamps, sculpture, architecture and flints), each object being provided with a description of its archaeological context and the date of deposition. The second half of the volume identifies the environmental and economic differences between the three main periods in the history of the site. Reports include quantified assemblages of zooarchaeological finds (large and small mammals), fish, birds, archaeobotanical remains, mollusca and human skeletons as well as the results of metallurgical analysis: copper-alloy, iron and ‘natural’ steel.

Not only is the range and quantity of finds in these reports unparalleled in the Balkans, they represent a valuable resource for the material culture of the Roman and late Roman periods, coming, as they do, from a part of the Roman Empire which has produced very few comparable assemblages. Of no less importance are the quantified bioarchaeological data which offer a unique insight into the changing morphology and economy of a Roman, late Roman and early Byzantine city.