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The bird bones from the excavations of ancient Chersonesos (Crimea, Ukraine)

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The Bird Bones from the Excavations of Ancient Chersonesos (Crimea, Ukraine). — Tajkova, S. Y., Klochko, A. V. — The bird bone remnants discovered during the excavations of the ancient Chersonesos III B.C. to XIII A.D, were reviewed. 631 bone fragments of total 859 were identified as representing 26 species. Two bones were identified to genus only: *Anas* sp. and *Calidris* sp. 228 bone fragments are too damaged for the proper identification to species. The identified bone fragments collected from the same layer were grouped by the number of source specimens. The majority of studied bone fragments were represented by the Domestic Fowl (*Gallus gallus* f. *domestica*). All other species except for the Great Bustard (*Otis tarda*) and Mallard (*Anas platyrhynchos*) are represented just by isolated finds.

Keywords: *bird bones, Chersonesos, Crimea, Ukraine.*

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Introduction

Recent fauna of the Crimea includes about 300 species of birds belonging to 19 genera. The remnants of birds from excavations in the Crimea were firstly reviewed by M. A. Voinstvensky [6]. He identified 54 species from the Alimov shed in Bakhchysarai region (late Stone Age and later), 20 species from the excavations in Okunevka village located at the Tarkhankut peninsula (I–III cent. AD) and 5 species from the excavations in the vicinities of Tchaika village of Eupatoria region (III cent. AD). Also, 7 species represented by 12 remnants were identified in the cultural-historical complex Chersonesos (I cent. BC — II–III cent. AD). Recent excavations in Chersonesos allowed a considerable extension of the species check-list of the local subfossil ornitofauna. This paper is devoted to the analysis of the bird osteological materials collected during the excavations in Chersonesos and dated as III cent. BC–XIII cent. AD.

Materials and methods

859 bone remnants dated as III cent. BC–XIII cent. AD were found during the excavations. Identification of the bone remnants was done using the comparative osteological bird collection of the Zoological Museum, National Museum of Natural History of the National Academy of Sciences of Ukraine (Kyiv). Terminology follows [1].

Results

631 bone fragments of total 859 were identified to species. 228 bone fragments were broken in different directions, so they were glued together, and (although still too damaged for proper identification to species) identified as skeletal bones. These were represented by pelvis (29), costae (12), carina sterni (9), humerus (2), femur, neurocranium, radius, sternum, tibiotarsus. 155 unidentifiable bird bone diaphyses were neither identified to species nor to skeletal parts. Bird bone remnants, which were identified to species level, belong to 26 species. Two remnants were identified to generic level.

The identified bone fragments, collected from the same layer, were grouped by the number of source specimens.

The 26 bird species were represented by the following remnants: *Gallus gallus* f. *domestica* — 501 remnants (152 specimens), *Gavia arctica* — 3 (3), *Podiceps cristatus* — 1 (1), *Podiceps nigricollis* — 2 (2), *Puffinus puffinus* — 5 (4), *Phalacrocorax carbo* — 8 (6), *Phalacrocorax aristotelis* — 5 (4), *Rufibrenta ruficollis* — 1 (1), *Anas clypeata* — 3 (1), *Anas platyrhynchos* — 19 (13), *Anas strepera* — 4 (3), *Netta rufina* — 1 (1), *Aythya ferina* — 2 (2), *Clangula hyemalis* — 1 (1), *Melanitta nigra* — 1 (1), *Bucephala clangula* — 3 (2), *Aquila chrysaetos* — 2 (2), *Coturnix coturnix* — 7 (5), *Otis tarda* — 39 (25), *Columba*

palumbus — 4 (3), *Columba livia* — 5 (5), *Garrulus glandarius* — 1 (1), *Corvus monedula* — 1 (1), *Corvus cornix* — 8 (8), *Corvus corax* — 1 (1), *Turdus merula* — 1 (1) and two remnants were identified to genus only: *Anas* sp. — 1 (1) and *Calidris* sp. — 1 (1).

Discussion

It is proposed to group the identified species into domestic or poultry (Domestic Fowl) and the game birds. The last group includes also some occasional findings, which are represented by the birds that might be hunted for food, but more probably were killed by accident or some other reasons. The examples of these findings are the Hooded Crow (*Corvus cornix*), the Raven (*Corvus corax*), the Jackdaw (*Corvus monedula*), the Jay (*Garrulus glandarius*), and the Manx Shearwater (*Puffinus puffinus*).

The Domestic Fowl dominated in all deposits and most its bone remnants belong to the Medieval Age. Many of them are juveniles, which are difficult to identify. The fowls from the Roman and early Byzantine Age are generally adults and belong to a small-sized, possibly egg-laying breed. However, there were also greater-sized male juveniles (possibly capons). This allows us to propose, that the domestic fowls were used in ancient Chersonesos for obtaining eggs. The remnants include bones from males, females and immature birds. Most of the tarsometatarsi with spurs would have been from the male birds.

Almost all of the 25 game bird species reported here either nest or occur while migrating or overwintering on the territory of the Crimean peninsula, in the vicinities of the Sebastopol Bay [2–5].

The remnants of waterfowls dominated among the studied bones of game birds. These birds occur in high number in the autumnal — autumn-winter seasons during migrations and often fall into fisher nets. Majority of bone remnants belong to the Medieval Age.

The Great Bustard is of special interest. The hunting for this species within the Black Sea region was rather productive at all times, as follows by findings of its numerous remnants in excavations on the south of Ukraine [6]. Most common way of hunting has been the one used for hundred years back in steppe regions. Birds were mass killed in winter, on a glaze ice, when they became completely helpless. The great bustards have no coccygeal gland (which is present in waterfowls) and they cannot lubricate their feathers. In autumn, in a rainy weather, birds become wet, and their feathers being covered by ice at first frosts after rain. Then bustards lose their capacity to fly and become a victim of hunters.

Crows are represented by 4 species. Most likely they were not used for food, since the bones are not broken. The found remnants of the Wood Pigeon might belong to both, domestic and wild forms, but more precise identifications are not possible.

Systematic part

Poultry

Order Galliformes

Gallus gallus f. *domestica* Linnaeus, 1758

The remnants of subfossil fowls are constantly present in excavations on the territory of Ukraine, since III cent. BC [6]. Ancient India is considered as one of the most probable places of the fowl's domestication (*Gallus gallus* f. *domestica*). Apparently, it might happen in the late Stone Age. The images of this bird on the household pieces bear evidence that at that time Indian people knew fowl as poultry. The fowl was brought to Ancient Greece from Persia in VI–V cent. BC, and in V cent. BC it was used as sacrifices.

501 remnants representing 152 specimens of the Domestic Fowl, were found at the excavations at Chersonesos. The fowl bones occur nearly in all layers and are represented by all parts of skeleton of small- and large-sized specimens.

Game birds

The wild birds were used as objects of hunting at all times. For example, the ancient Greeks hunted for cleats, pigeons, daws, gulls. The Great Bustard and Waterfowl were caught on migrations and winterings in the Black Sea [2–5]. The eggs of gulls and gannets were likely collected by local people on bird colonies.

Order Gaviiformes

Gavia arctica (Linnaeus, 1758) — Black-throated Diver

This is regularly overwintering species which occurs in the Crimea at stopovers. Majority of the Black-throated Divers stay along the sea coasts; occasionally they reach mountain rivers in winter. This bird was hunted for its feathers, which are also known as the “bird fur”.

3 remnants (2 tarsometatarsi, 1 tibiotarsus) which belong to 3 specimens of the Black-throated Diver were found during the excavations at Chersonesos. The bones were identified in the layers dated as XIII cent. AD.

Order Podicipediformes

Podiceps cristatus (Linnaeus, 1758) — Great Crested Grebe

Now the Great Crested Grebe is the nesting, migrating and wintering bird in the Crimea. It winters on the Southern coast and prefers fresh waters.

One tibiotarsus of the Great Crested Grebe dated as XIII cent. AD, was found during the excavations at Chersonesos.

Podiceps nigricollis Brehm, 1831 — Black-necked Grebe

This is a common species, which occurs in the Crimea during the spring and fall stopovers. Some Black-necked Grebes overwinter in a limited number on the sea shores of the Black Sea and Sea of Azov.

One femur and one radius from 2 specimens of the Black-necked Grebe were found during the excavations at Chersonesos. These bones were dated as X–XI and XIII cent. AD.

Order Procellariiformes

Puffinus puffinus (Brunnich, 1764) — Manx Shearwater

This species occurs near the Crimean seacoast during the whole year. The most numerous bird populations occur along the southern bank of the Crimea (from Sebastopol to Kerch). It is a fish-hunting bird, which stays distant from shores, not approaching the bank closer than to 200 m. It also can get caught by the fishing nets.

Five bones (3 humeri, 1 cranium and 1 tibiotarsus) from 4 specimens of the Manx Shearwater were found during the excavations at Chersonesos. The remnants were dated as XII–XIII cent. A.D.

Order Pelecaniformes

Phalacrocorax carbo (Linnaeus, 1758) — Cormorant

Populations of this common species occur near the Crimean seacoast during the whole year. It gathers for winterings in high number in the localities between the Fiolent and Chersonesos capes. Eight bones (3 scapulae, 2 femora, 1 coracoids, 1 humerus, 1 tarsometatarsus) from 6 specimens of the Cormorant were found during the excavations at Chersonesos. The remnants were dated as XI–XIV cent. AD.

Phalacrocorax aristotelis (Linnaeus, 1761) — Common shag

The Shag is non-migratory and not numerous species, migrating along seashores of the Crimean Peninsula. It nests on rocks and feeds along the sea coasts.

Five bones (2 radii, 1 coracoid, 1 ulna, 1 carpometacarpus) from 4 specimens of the Shag were found during the excavations at Chersonesos. The remnants were dated as IX–XIII cent. AD.

Order Anseriformes

Rufibrenta ruficollis (Pallas, 1769) — Red-breasted Goose

This is migratory species in the Crimea. It occurs in habitats with open shallow waters during autumn and winter.

One coracoid of the Red-breasted Goose was found during the excavations at Chersonesos. The remnants were dated as XII–XIII cent. AD.

Anas clypeata Linnaeus, 1758 — Shoveler

This is migratory and wintering species in the Crimea. It overwinters generally on the south bank of the Crimea, but the number of overwintering birds is not significant.

Three bones (2 carinae sterni and 1 coracoid) from one specimen of the Shoveler were found during the excavations at Chersonesos. The remnants of *Anas clypeata* were dated as IX–XI cent. AD.

Anas platyrhynchos Linnaeus, 1758 — Mallard

This is common nesting species, which occurs on flyways and overwinters at the southern bank of the Crimea. This bird is the main (basic) object of sport hunting.

Nineteen bones (3 coracoids, 3 humeri, 3 ulnae, 3 tibiotarsi; 2 bones of pelvis, 2 tarsometatarsi; 1 furcula, 1 scapula, 1 radius) from 13 specimens of the Mallard were found during the excavations at Chersonesos. The remnants were dated as IX–XI cent. AD, XII–XIII cent. AD.

Anas strepera Linnaeus, 1758 — Gadwall

This rare species occurs sporadically on freshwater and salty water reservoirs on the southern bank of the Crimea and Crimean mountains. Four bones (2 furculae and 2 — humeri) from 3 specimens of the Gadwall were found during the excavations at Chersonesos. The remnants were dated as XII–XIII cent. AD.

Netta rufina (Pallas, 1773) — Red-crested Pochard

This wintering species occurs at the Southern coast of the Crimea.

One furcula of the Red-crested Pochard was identified from the excavations at Chersonesos. The remnants were found in an undated layer.

Aythya ferina (Linnaeus, 1758) — Pochard

This bird occurs regularly on the ice-free coast of the Southern Crimea.

Two ulnae from two specimens of the Pochard were found during the excavations at Chersonesos. The remnants were dated as X–XIII cent. AD.

Clangula hyemalis Linnaeus, 1758 — Long-tailed Duck

This bird occurs generally far north to the Crimea, in moorland pools and lakes of the Tundra. So its findings are very rare in the Crimea.

One coracoid of the Long-tailed Duck was identified at excavations of Chersonesos. The remnants were found in an undated layer.

Melanitta nigra (Linnaeus, 1758) — Common Scoter

This is uncommon stray bird species in the Crimean peninsula. It nests in the Tundra zone of Eurasia. This bird might be caught by cleats along with other diving ducks.

One coracoid of the Common Scoter was identified from the excavations at Chersonesos. The remnants were found in an undated layer.

Bucephala clangula (Linnaeus, 1758) — Goldeneye

This bird overwinters in the Crimea and occurs on freshwater reservoirs in its mountainous part, and also in deep and shallow places in the open sea.

Three bones (1 carpometacarpus, 1 scapula, 1 radius) from 2 specimens of the Goldeneye were identified from the excavations at Chersonesos. The remnants were dated as XIII cent. AD and the Early Byzantine period.

Order Falconiformes

Aquila chrysaetos Linnaeus, 1758 — Golden Eagle

This is a migratory and overwintering bird in the Crimea.

Two bones (1 ulna, 1 carpometacarpus) from 2 specimens of the Golden Eagle were found during the excavations at Chersonesos. The remnants of *Aquila chrysaetos* were dated as XII–XIII cent. AD.

Order Charadriiformes

Calidris sp. — Knots and Surfbirds

These are the Arctic-breeding, strongly migratory wading species. These birds form huge mixed flocks on coasts and estuaries in winter.

One mandibula of the Knot or Surfbird was identified from the excavations at Chersonesos. The remnants were found in an undated layer.

Order Galliformes

Coturnix coturnix (Linnaeus, 1758) — Quail

This is a nesting species, which occurs in the Crimea on its flyaways. Some birds occasionally overwinter in the Crimea, but in low number. This is a game bird, which inhabits steppe and other open areas. Seven bones (3 tibiotarsi, 2 carpometacarpi, 1 ulna and 1 tarsometatarsus) from 5 specimens of the Quail were found during the excavations at Chersonesos. The remnants were dated as X–XI cent. AD and possibly the late Early Byzantine.

Order Gruiformes

Otis tarda Linnaeus, 1758 — Great Bustard

This bird nests and occurs on flyaways in the Crimea. Local migrations of the Great Bustard were observed on the territory of the Crimean Peninsula. The majority of the Great Bustards stops at the southern bank of the Crimea and form numerous flocks. The number of the hunted birds might depend significantly on the weather conditions in winter (light or heavy frosts) and other meteorological circumstances.

Thirty nine bones (10 carpometacarpi, 8 radii, 6 ulnae, 3 humeri, 3 femora, 3 tibiotarsi, 2 coracoids, 2 scapulae, 1 tarsometatarsus, 1 phalanges) from 25 specimens of the Great Bustard were found during the excavations at Chersonesos. The remnants were dated as II cent. AD, III cent. BC, IX–XIII cent. AD, and also as the late Early Byzantine.

Order Columbiformes

Columba palumbus Linnaeus, 1758 — Wood Pigeon

It is a nesting species in Mountainous Crimea, and also migratory and overwintering bird of the inner Crimea.

Four bones (2 radii, 1 coracoid, 1 femur) from 3 specimens of the Wood Pigeon were found during the excavations at Chersonesos. The remnants were dated as XII–XIV cent. AD.

Columba livia Gmelin, 1789 — Rockdove

This non-migratory bird nests on maritime rocks on the Southern Coast of the Crimea.

Five bones (2 humeri, 1 ulna, 1 tibiotarsus, 1 pelvis) from 5 specimens of the Rockdove were found during the excavations at Chersonesos. The remnants were dated as V–VI and XIII cent. AD.

Order Passeriformes

Garrulus glandarius (Linnaeus, 1758) — Jay

This non-migratory bird nests and migrates in mountain-forest parts of the Crimea. Occasionally it appears in orchards of southern coast of the Crimea in cold seasons, generally since October.

One ulna of the Jay was found during the excavations at Chersonesos. The remnants were dated as XII–XIII cent. AD.

Corvus monedula Linnaeus, 1758 — Jackdaw

This is a non-migratory species, which occurs in winter and early spring in the Crimea.

One femur of the Jackdaw was found during the excavations at Chersonesos. The remnants were dated as IX–XI cent. AD.

Corvus cornix Linnaeus, 1758 — Hooded Crow

This is non- or partly migratory bird, which occurs in vicinities of cities, towns and villages.

Eight bones (3 ulnae; 2 humeri, 1 radius, 1 carpometacarpus, 1 femur) from 8 specimens of the Hooded Crow were found during the excavations at Chersonesos. The remnants were dated as VI, IX–XI, XII–XIII cent. AD.

Corvus corax Linnaeus, 1758 — Common Raven

This non-migratory bird is common for mountain-forest part of the Crimea, where it feeds mainly on carrion and wastes, but sometimes on arthropods, amphibians, small mammals, birds and reptiles.

One radius of the Common Raven was found during the excavations at Chersonesos. The bones were identified in the layers dated as IX–XI cent. AD.

Turdus merula Linnaeus, 1758 — Blackbird

There are two subspecies in the Crimea: *T. m. merula* L., a migratory and overwintering bird, and *T. m. aterrimus* (Madarasz, 1903), a nesting and probably non-migratory bird. Blackbirds inhabit most of Mountainous Crimea and nest in foothill orchards, steppe and river valleys.

One femur of the Blackbird was found during the excavations at Chersonesos. The bone was found in the layer dated as XIII cent. AD.

Conclusions

The bird remains from ancient Chersonesos (III cent. B.C. — XIII cent. A.D) demonstrated that the majority of the excavated bone fragments were represented by the domestic fowl (*Gallus gallus* f. *domestica*), whereas all other species except the Great Bustard (*Otis tarda*) and the Mallard (*Anas platyrhynchos*) were represented only by isolated findings. The analysis proposed above allowed more than 3 times extension of the checklist of the subfossil birds of ancient Chersonesos (7 species were mentioned by M.A. Voynstvensky [6]) and 26 are listed in this paper).

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Кістки птахів з розкопок давнього Херсонеса (Крим, Україна). — Тайкова С. Ю., Ключко Г. В. — Вивчені залишки кісток птахів, виявлені при розкопках у Херсонесі (Севастополь, Крим, Україна), датованих III ст. до н. е. — XIII ст. н. е. Визначення показали, що 631 з 859 фрагментів кісток належать 26 видам. Дві кістки ідентифіковані тільки до роду: *Anas* sp. и *Calidris* sp. 228 кісткових фрагментів занадто пошкоджені для належної ідентифікації до виду. Ідентифіковані кісткові фрагменти, отримані з того самого шару, були згруповані за кількістю вихідних екземплярів. Більшість вивчених фрагментів кісток належать домашній курці (*Gallus gallus* f. *domestica*), тоді як всі інші види, окрім дрохви (*Otis tarda*) і крижня (*Anas platyrhynchos*), представлені одиничними знахідками.

Ключові слова: кісткові залишки птахів, Херсонес, Крим, Україна.

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Кости птиц из раскопок древнего Херсонеса (Крым, Украина). — Тайкова С. Ю., Ключко А. В. — Изучены остатки костей птиц, обнаруженные при раскопках в Херсонесе (Севастополь, Крым, Украина), датированных III в. до н. э. — XIII в. н. э. Определения показали, что 631 из 859 фрагментов костей принадлежат 26 видам. Две кости идентифицированы только до рода: *Anas* sp. и *Calidris* sp. 228 костных фрагмента слишком повреждены для надлежащей идентификации до вида. Идентифицированные костные фрагменты, полученные из того же слоя, были сгруппированы по количеству исходных экземпляров. Большинство изученных фрагментов костей принадлежат домашней курице (*Gallus gallus* f. *domestica*), в то время как все остальные виды, кроме дрофы (*Otis tarda*) и криквы (*Anas platyrhynchos*), представлены единичными находками.

Ключевые слова: костные остатки птиц, Херсонес, Крым, Украина.

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