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Ornis Hungarica 2023. 31(2): 125–137.
DOI: 10.2478/orhu-2023-0024

Description of representatives of the family Phasianidae from Mátraszőlős 3 (Nógrád county, Hungary) by means of recent finds of Badenian age

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Received: August 19, 2023 – Revised: October 05, 2023 – Accepted: October 18, 2023

Horváth, I. 2023. Description of representatives of the family Phasianidae from Mátraszőlős 3 (Nógrád county, Hungary) by means of recent finds of Badenian age. – Ornis Hungarica: 125–137. DOI: 10.2478/orhu-2023-0024

Abstract The article reviews of the Galliformes fo from the Mátraszőlős 3 site in Hungary from the Middle Miocene. A total of 200 bones have so far been recovered from site at Mátraszőlős 3, of which the identification of 95 bones will be discussed in this article, including anatomical differences between species. Within the fossil record, *Palaeocryptonix hungaricus* (Jánossy 1991) and three species of *Palaeortyx* have been identify (*P. phasianoides* Milne-Edwards, 1869*, P. gallica* Milne-Edwards, 1869 and *P. brevipes* Milne-Edwards, 1869). Only one bone of *P. brevipes* was recovered. As the appearance of the members of the family can be traced back to the early Oligocene, while the majority of the species are of Neogene origin, the study contributes to a better understanding of the distribution of extinct pheasant speciesin the Carpathian Basin.

Keywords: Mátraszőlős 3, Phasianidae, Palaeortyx, middle Miocene, Hungary, birds, fossils

Összefoglalás A cikk a magyarországi középső-miocén korabeli Mátraszőlős 3-as lelőhelyről előkerülő leletanyag feldolgozását mutatja be. Ezen publikációban a tyúkalakúak (Galliformes), azon belül a fácánfélék (Phasianidae) család képviselői kerülnek bemutatásra. Mátraszőlős 3-as lelőhelyről eddig összesen 200 db csont került elő, melyek közül 95 db határozását ezen cikk tárgyalja, a fajok közti anatómiai eltérésekre is kitérve. A leleteken belül a *Palaeocryptonix hungaricus* Jánossy, 1991 illetve 3 *Palaeortyx* fajt sikerült azonosítani (*P. phasianoides* Milne-Edwards, 1869, *P. gallica* Milne-Edwards, 1869, és *P. brevipes* Milne-Edwards, 1869), ezek körül egynek *(P. brevipes)* csupán 1 db csontja került elő. Mivel a család tagjainak megjelenése az eocénig vezethető vissza, ugyanakkor a fajok többsége a neogénből származik, a cikk hozzájárul ahhoz, hogy részletesebb képet kapjunk a Kárpát-medence kihalt fácánféléinek elterjedéséről.

Kulcsszavak: Mátraszőlős 3, Phasianidae, Palaeortyx, középső-miocén, Magyarország, madarak, fossziliák

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Introduction

The village of Mátraszőlős is located in the south-eastern part of Nógrád County, in the Zagyva valley in Hungary. The village and its surroundings are well known and researched in the Hungarian geological and palaeontological literature from several points of view. So far, three sites have been excavated in the vicinity of the settlement. These are the following:

Mátraszőlős (1): This site was already known in the 1940s (Noszky 1940, Horusitzky 1942), but only in 1998 János Hír succeeded in finding vertebrate remains. The following year, site No. 2 was found nearby. The bird material was determined by Erika Gál and Jenő Kessler: aff. *Anhinga* sp., *Bucephala* aff. *cereti*, *Clangula* sp., *Mergus* sp., Anatidarum sp. indet., *Porzana* aff. *estramosi*, *Rallus* sp., Rallidae gen *et* sp. indet., Charadriiformes gen *et* sp. indet., Passeriformes sp. (*Chloris-Pyrrhula* + *Parus* size), (Gál *et al*. 1998–1999, then in the revision *Anas* cf. *velox*, *Clangula matraensis*, *Mergus minor* and *Gallinago* cf. *veterior* instead of Anatidarum indet), *Palaeortyx* cf. *gallica* (instead of Charadriiformes gen. *et* sp.!), Pteroclidae sp. indet., *Rallicrex polgardensis* (replacing *Rallus* sp., and from this in 2012 *Rallicrex litkensis*), *Porzana matraensis*, Cuculidae gen. *et* sp. indet. (replacing Passeriformes ind.), Aves indet. (Kessler 2009a, 2009b). From the previously undetermined remains, the following taxa have been identified by redescription: *Phalacrocorax* sp. indet.; *Rallicrex litkensis* and various Passeriformes (Kessler & Hír 2012a, Kessler & Hír 2012b).

Mátraszőlős (2): *Proardeola walkeri* Harrison, 1979*, Megapaloelodus goliath* Miller, 1944*, Mionetta consobrina* Milne-Edwards, 1867 cf. *Miogallus altus* Milne-Edwards, 1869; *Columbidae* gen. *et* sp. indet.; *Turdicus minor* Kessler *et* Hír, 2012b*,* cf. Turdidae gen. *et* sp. indet., Passeriformes indet. (Gál *et al*. 2000), *Palaeortyx* sp. *(P. prisca/ phasianoides)* (Kessler 2009b). From the previously unidentified remains, the following results were obtained from the re-description: Ardeidae gen. *et* sp. indet. cf. *Miogallus altus;* Columbidae gen. *et* sp. indet.; *Turdicus matraensis* Kessler & Hír, 2012; Passeriformes indet. (Kessler & Hír 2012a, Kessler & Hír 2012b).

Most taxa from this find suggest an aquatic or marshy habitat. And the large flamingo *(Megapaloelodus)* is a specialised species of shallow water environment. Some of the galliform species, the warblers and the undetermined cuckoo and thrush, are associated with woody environments, while the quail and the bush hen, with open grassland.

Mátraszőlős (3): the area around the sites was re-examined in spring 2008, when, in addition to the re-exploration of Mátraszőlős 2, it was possible to sample Mátraszőlős 3. This is located about 20 m from the Mátraszőlős 2 site. The swan species *Cygnopterus neogradensis* (Kessler& Hír 2009) and the material of *Palaelodus ambiguus/crassipes, Tadorna minor;* Anatidae gen. *et* sp. indet. *Miocorvus larteti, Turdicus minor*; Aves indet. were also found here (Kessler & Hír 2009, Kessler 2010). The species list indicates a typical wetland, where the small crow and thrush may have lived in the riparian zone. The waterfowl all indicate very typical habitats: the swan, the little flamingo and the shoveler.

All three of these materials are in the possession of the Pásztó City Museum.

Description

The order Galliformes is one of the best represented groups of birds in the fossil record. The main reasons for this are that it contains a large number of species and individuals, which have poor flight ability (apart from quail) and occur in relatively open habitats. They are the preferred prey of many predators. They have skeletal features and dimensions that facilitate their identification, but the considerable homologation makes it much more

difficult to distinguish between genera and species, especially in the smaller and medium-bodied specimens, and their classification is often highly controversial. Because of their sexual dimorphism, their size is highly variable (males are larger). In terms of distribution, pheasants, partridges and quails are found in Eurasia, Africa, Australia and New Zeland mostly in grassy, shrubby areas and nesting on the ground.

Most of the fossil remains come from Europe. The earliest representatives from the Eocene and Oligocene of France are *Paraortyx* species (*Paraortyx lorteti, P. brancoi* (Gaillard, 1908)) and ?*Piriortyx* species Brodkorb, 1964 (*Pirortyx major* (Gaillard, 1939)), and from the Miocene of France, the Czech Republic and Hungary (Mátraszőlős, Rudabánya, Sümeg, Tardosbánya) are *Palaeortyx* species, *Palaeocryptonyx hungaricus* from the Miocene of Hungary (Rátka), *Miogallus* species *(M. altus, M. medius)* from the Miocene of France, Germany, Hungary and Spain, *Alectoris* species *(A. bavarica, A. prisca, A. edwardsi, A. donnezani)* from the Miocene of Germany and France, and *Francolinus capeki* and *Gallus beremendensis* from the early Pleistocene of Romania and Hungary. The turkeys live in Central America and are medium to large in size. The earliest finds are from the Miocene of the USA *(Rhegminornis calobates, R. kimballensis)*. One of the largest genus and species of the order is the family Phasianidae, not only in terms of recurrent taxa, but also in terms of fossil extinct taxa. There are various representatives (partridges, pheasants, quails, peacocks, and allies) and these representatives are present continuously from the Early Miocene to the Holocene. In the Carpathian Basin, they are represented by 3 extinct genera, 11 extinct species and 1 extinct subspecies, in addition to 7 extant taxa. It is important to note that 3 of the extinct taxa and 1 subspecies were present in the area over a fairly wide time span and represent 3 body size types at several sites. Chickens, partridges and quails: chicken by the chicken of Beremendi (*Gallus beremendensis* Jánossy, 1976) and a new species *Pliogallus csarnotanus* (Kessles & Horváth 2022) (from Beremend and Csarnóta) in the Pliocene and Early Pleistocene, partridges by the Betfia frankolin (*Francolinus capeki* (Lambrecht, 1933)) also in the same time range and the partridge subspecies (*Perdix perdix jurcsaki* Jánossy, 1976) also described from Betfia, which occurred as late as the Middle Pleistocene, and quail, an endemic species of an extinct genus (*Palaeocryptonyx hungaricus* Jánossy, 1991) present in the area from the Upper Miocene to the Lower Pleistocene. Its absence in the Upper Pliocene is presumably explained only by identification problems (Kessler 2013, Mayr & Smith 2013, Kessler & Horváth 2022).

From the Mátraszőlős sites, as shown above, only the gallus-like find *Palaeortyx* sp. *(P. prisca/phasianoides)* (Kessler 2009b) from Mátraszőlős 2 is known so far. Thus, the new Mátraszőlős 3 material with a significant number of finds is of particular importance. It will be presented in this paper. In processing this material, we were greatly assisted by the 2005 study by Cécile Mourer-Chauviré and Ursula Göhlich (2005), in which they provide a detailed description of the anatomical differences of these taxa.

From site at Mátraszőlős 3, almost all skeletal parts are represented among 205 relatively well preserved bones, although many are fragmentary, but by definition the limb bones are best represented. The vast majority of these belong to the genus *Palaeortyx* and only five to *Palaeocryptonyx*. The former taxon is presumably represented by 3 species: *P. phasianoides, P. gallica* and *P. brevipes*. Their discussion is presented in the taxonomy chapter.

Abbreviations: MN6-MN8 – Middle Miocene; †-extinct/fossil species-subspecies; A-total lengths; B-partial lengths; C-breadth of proximal epiphysis; D-thickness of proximal epiphysis; E-breadth of diaphysis; E1-partial breadth of diaphysis; F-breadth of distal epiphysis; G-thickness of distal epiphysis; H-height of distal epiphysis; Hungarian Institute of Geology and Geophysics (HIGG)

Anatomical terminology: after Lambrecht (1933), Baumel *et al.* (1979), Gilbert *et al.* (1981), Kessler (2013)

Method of measurement: after von den Driesch (1976), Kessler (2013). The recent comparative material included the partridge (*Coturnix coturnix* (L. 1758)) *(Figure 1/5–7)* and the Rock Partridge (*Alectoris graeca* (Meisner, 1804)) *(Figure 2/9–10, 12–13)*.

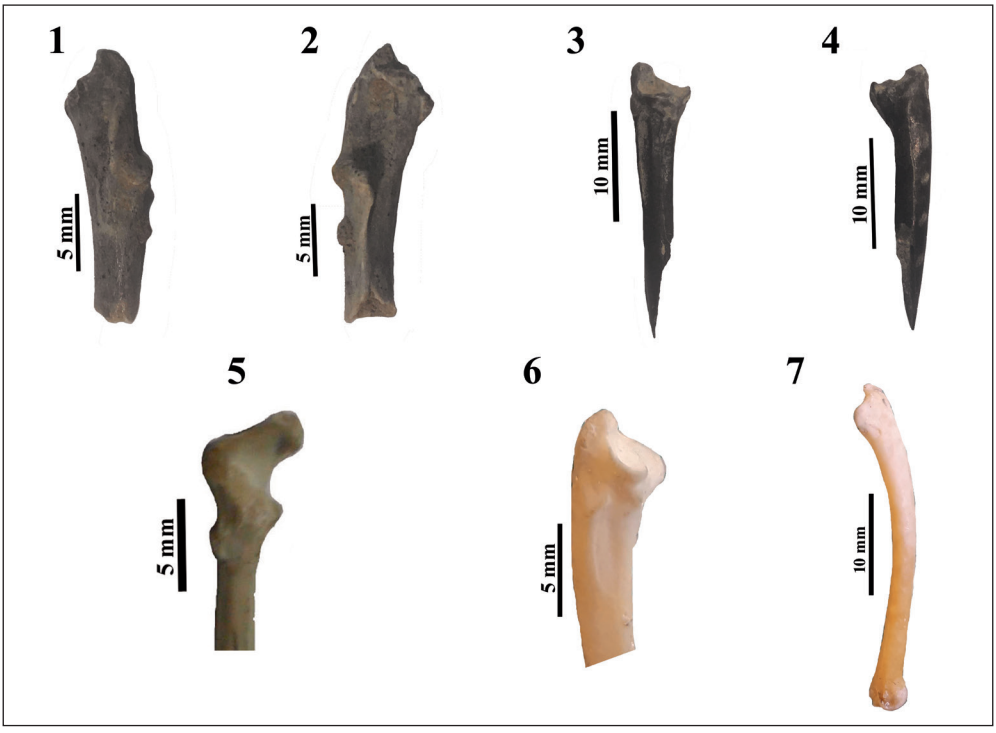


Figure 1. *Palaeocryptonyx hungaricus* Jánossy, 1991 – Mátraszőlős 3. 1. left *coracoideum*, proximal end, lateral view; 2. left *coracoideum*, proximal end, medial view; 3. right *ulna*, proximal end, ventral view; 4. right *ulna*, proximal end, dorsal view; 5. *Coturnix coturnix* (L. 1758) extant, left *coracoideum*, proximal end, lateral view; 6. *Coturnix coturnix* (L. 1758) extant, – right *ulna*, ventral view; 7. *Coturnix coturnix* (L. 1758) extant, – right *ulna*, dorsal view

1. ábra *Palaeocryptonyx hungaricus* Jánossy, 1991 – Mátraszőlős 3. – 1. baloldali hollócsőrcsont, proximális vég, laterális nézet; 2. baloldali hollócsőrcsont, proximális vég, mediális nézet; 3. jobboldali singcsont, proximális vég, ventrális nézet; 4. jobboldali singcsont, proximális vég, dorzális nézet; 5. *Coturnix coturnix* (L. 1758) recens, baloldali hollócsőrcsont, proximális vég, laterális nézet; 6. *Coturnix coturnix* (L. 1758) recens, – jobboldali singcsont, ventrális nézet; 7. *Coturnix coturnix* (L. 1758) recens, – jobboldali singcsont, dorzális nézet

Systematics

Ord. Galliformes (Temminck, 1820)
Fam. Phasianidae (Vigors, 1825)
†*Palaeocryptonix* Depéret, 1892
†*Palaeocryptonix hungaricus* Jánossy, 1991 *(syn: Eurobambusicola turolicus* Zelenkov, 2016)
Location and age: Mátraszőlős 3; Middle Miocene (MN6–8)
Material: 1 *coracoideum* proximal fragment *(Figure 1/1–2)*; 1 *ulna* proximal fragment *(Figure 1/3–4)* and 2 *maxilla (Figure 2/1–2);* 3 *phalanx ungularis*
Dimensions (in mm): *coracoideum*: C-4.97, D-5.72, F-2.94; *ulna*: B-4.74, C-5.33; E-3.18; *phalanx ungularis (Figure 2/7–8, 11)*: A-4.28–9.19, B-3.49–3.64;

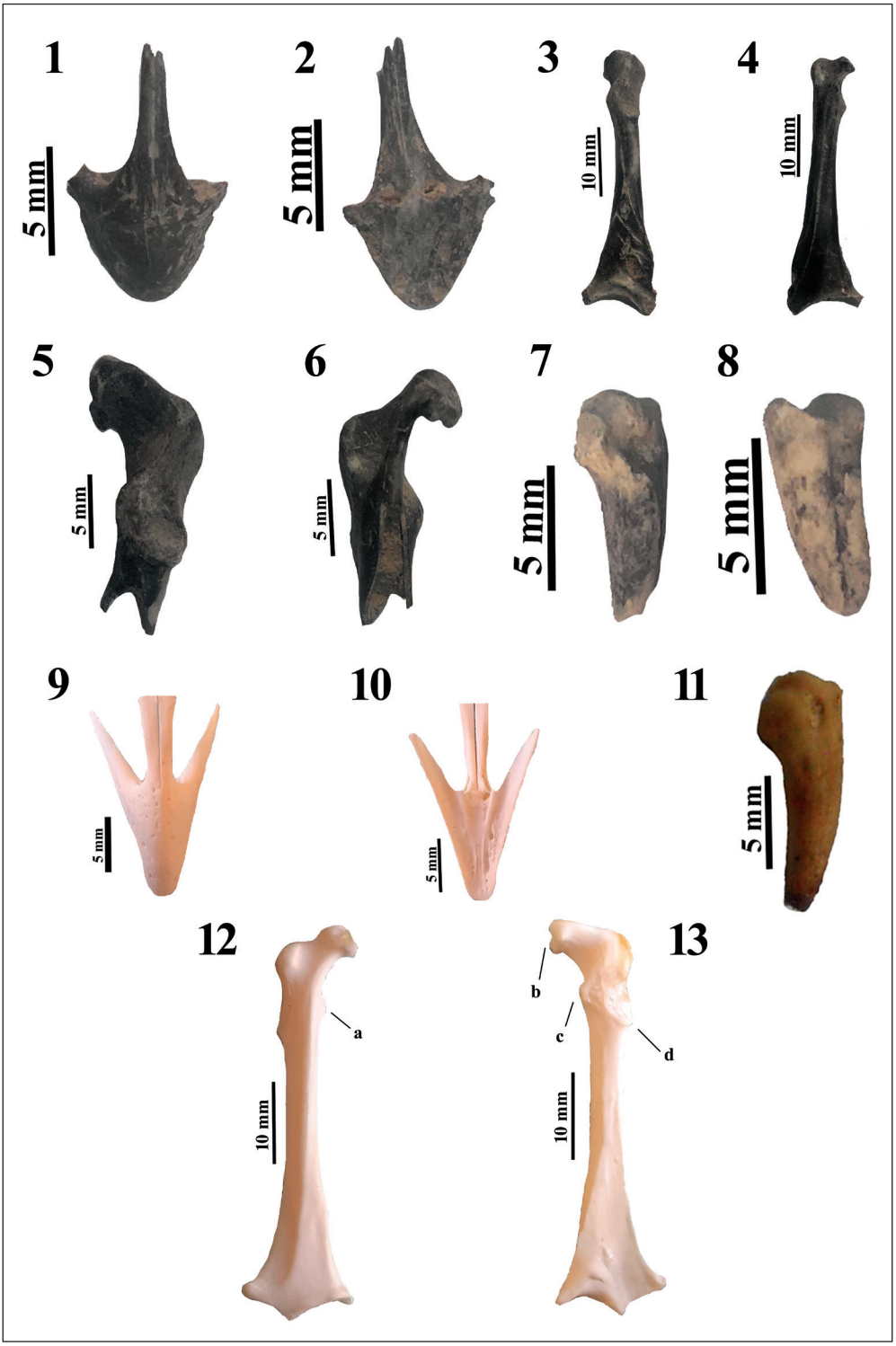
This species is a quail-sized pheasant. It was fairly common in the Carpathian Basin in the late Miocene and early Pliocene. Only one almost complete skeleton has been found from the Upper Miocene in northern Hungary (Rátka). There is no previous information on the *phalanx ungularis*, but its size certainly places it in a smaller size range (Kessler 2019). Mlíkovskỳ also assigns this species and genus to the genus *Alectoris donnezani* (Depéret, 1892) (Mlíkovskỳ 2002). At the same time, N. Zelenkov, examining the collection in the HIGG Museum, assigns it to the species *Eurobambusicola turolicus* (Zelenkov 2016, Kessler 2009b, 2013).

†*Palaeortyx* Milne-Edwards, 1869
† *Palaeortyx brevipes* Milne-Edwards, 1869 / syn. † *Palaeoperdix* (Milne-Edwards, 1871) / **† *Palaeortyx grivensis* Lydekker, 1893** / *Coturnix † gallica* (Mlíkovskỳ, 2002).
Location and age: Mátraszőlős 3; Middle Miocene (MN6–8)
Material: 1 *tarsometatarsus* distal fragment
Dimensions (in mm): E-2.9, F-5.5, G-6.8

It is a slightly larger representative of the genus *Palaeortyx* than the recnt quail. It is easily distinguished from *Palaeocryptonix*. Its distribution outside the Carpathian Basin is type locality of the Grive Saint-Alban (Upper Miocene, MN8) and the Măluşten of eastern Romania (MN15) (Kessler 2019).

† *Palaeortyx gallica* Milne-Edwards, 1869 / syn. *P. intermedia* Ballmann, 1969 / *Coturnix † gallica* (Mlíkovskỳ 2002)
Location and age: Mátraszőlős 3; Middle Miocene (MN6–8)
Material: 2 *tarsometatarsus* distal fragment and 5 *tarsometatarsus* proximal fragment; 1 almost complete bone; *ulna* 1 proximal fragment and 1 distal fragment; *humerus* distal fragment.
Dimensions (in mm): *tarsometatarsus*: A-ap.31, C-6.8–7.22, D-5.18–6.5, E-2.5, F-7, G-4 *(Figure 4/18–19)*; *ulna*: C-6.31, E-4.01–4.61, F-7.08, G-4.83 *(Figure 3/7–8)*; *humerus*: E-4.77, F-8.58, G-5.22, H-7.21 *(Figure 3/3)*.

This species is slightly larger in size than *P. brevipes*, but much smaller than *P. phasianoides*. In *P. gallica* the *tarsometatarsus* has an anatomical marker that makes it easy to distinguish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from other species. This is the *fossa parahypotarsalis (Figure 4/18–19)*, a notch on the lateral side of the bone, located on the proximal epiphysis of the *tarsometatarsus*. The humeral features are similar in character to those of *P. phasianoides*, except that they have a smaller range. Since a distal epiphysis fragment remains, the *processus supracondylaris dorsalis* is not broken off, so it can be seen to be protruding and branching.

Its geographic distribution is broadly similar to that of *P. brevipes*.

†*Palaeortyx phasianoides* Milne-Edwards, 1869 /syn. † *Palaeoperdix longipes* (Milne-Edwards, 1869) / *Coturnix † longipes* (Mlíkovskỳ, 2002)

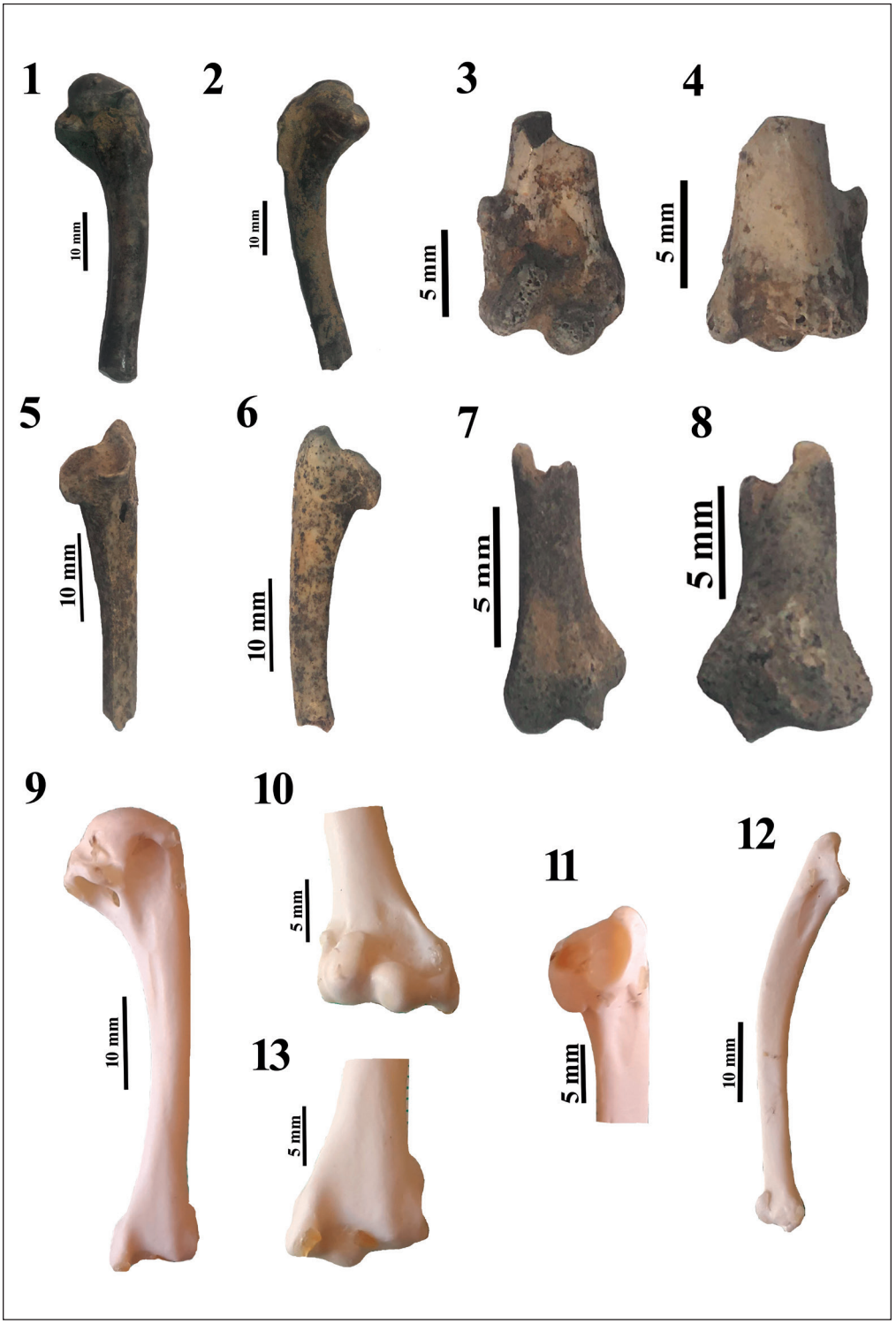
Location and age: Mátraszőlős 3; Middle Miocene (MN6–8)

Material: 31 *tarsometatarsus* (18 proximal fragments, 8 distal fragments and 5 completely intact bone); *femur* (5 proximal and 1 distal epiphysis fragment); 4 *tibiotarsus* distal fragment; 3 *maxilla*; 6 *mandibula*; 5 *coracoideum* proximal fragment; 3 *ulna* proximal fragment; 3 *humerus* (1 proximal and 2 distal epiphysis; fragments); 4 *femur* (3 proximal and 1 distal epiphysis fragments); 9 *carpometacarpus* (1 completely intact bone, 3 proximal epiphysis fragments and 5 distal epiphysis; fragments); 3 *phalanx proximalis digiti majoris*.

Dimensions (in mm): *tarsometatarsus (Figure 4/8)*: A-37.57–ap.41, C-7.79–8.73, D-6.24–8.06, E-3.15–3.59, F-8.26–8.91, G-6.11–6.91; *tibiotarsus*: E-4.42, F-7.02–7.28, G-6.68–6.71; *maxilla*: B-8.30, C-7.30; *mandibula*: B-5.29–7.08, C-6.48–9.02; *coracoideum (Figure 2/3–6)*: A-ap.43, B-ap.40, C-4.87–6.38, D-5.72–9.73, E-2.94–4.66; *ulna (Figure 3/5–6)*: B-8.12, C-7.36; *humerus (Figure 3/1–2, 4)*: A-50, B-20.25, C-16.23, D-15.21, E-6.16, F-11.51–12.19, G-6.54–6.74, H-8.04; *femur (Figure 4/4–5)*: C-9.33–11.39, D-7.69–10.02, E-4.75–5.64, F-11.52, G-8.96; *carpometacarpus (Figure 4/1–2)*: A-ap.32.07, B-28.09,

Figure 2. *Palaeocryptonyx hungaricus* Jánossy, 1991 – Mátraszőlős 3. – 1. *maxilla*, upper view; 2. *maxilla*, lower view; *Palaeortyx phasianoides* Milne-Edwards, 1869 – Mátraszőlős 3. – 3. right *coracoideum*, dorsal view; 4. right *coracoideum*, ventral view; 5. right *coracoideum*, proximal end, dorsal view; 6. right *coracoideum*, proximal end, ventral view; *Palaeocryptonyx hungaricus* Jánossy, 1991 – Mátraszőlős 3. – 7. claw bone, lateral view; 8. claw bone, plantar view; *Alectoris graeca* (Meisner, 1804) extant, – 9. *maxilla*, upper view; 10. *maxilla*, lower view; *Palaeocryptonyx hungaricus* Jánossy, 1991 – Mátraszőlős 3. – 11. claw bone, lateral view; *Alectoris graeca* (Meisner, 1804) extant, – 12. right *coracoideum*, dorsal view, a – *processus procoracoidalis*; 13. right *coracoideum*, ventral view, b – *processus acrocoracoidalis*, c – *cotyla scapularis*, d – *facies articularis humeralis*

2. ábra *Palaeocryptonyx hungaricus* Jánossy, 1991 – Mátraszőlős 3. – 1. *maxilla*, felső nézet; 2. *maxilla*, alsó nézet; *Palaeortyx phasianoides* Milne-Edwards, 1869 – Mátraszőlős 3. – 3. jobboldali hollócsőrcsont, dorzális nézet; 4. jobboldali hollócsőrcsont, ventrális nézet; 5. jobboldali hollócsőrcsont, proximális vég, dorzális nézet; 6. jobboldali hollócsőrcsont, proximális vég, ventrális nézet; *Palaeocryptonyx hungaricus* Jánossy, 1991 – Mátraszőlős 3. – 7. karomcsont, laterális nézet; 8. karomcsont, plantáris nézet; *Alectoris graeca* (Meisner, 1804) recens, 9. *maxilla*, felső nézet; 10. *maxilla*, alsó nézet; *Palaeocryptonyx hungaricus* Jánossy, 1991 – Mátraszőlős 3. – 11. karomcsont, laterális nézet; *Alectoris graeca* (Meisner, 1804) recens, – 12. jobboldali hollócsőrcsont, dorzális nézet, a – *processus procoracoidalis*; 13. jobboldali hollócsőrcsont, ventrális nézet, b – *processus acrocoracoidalis*, c – *cotyla scapularis*, d – *facies articularis humeralis*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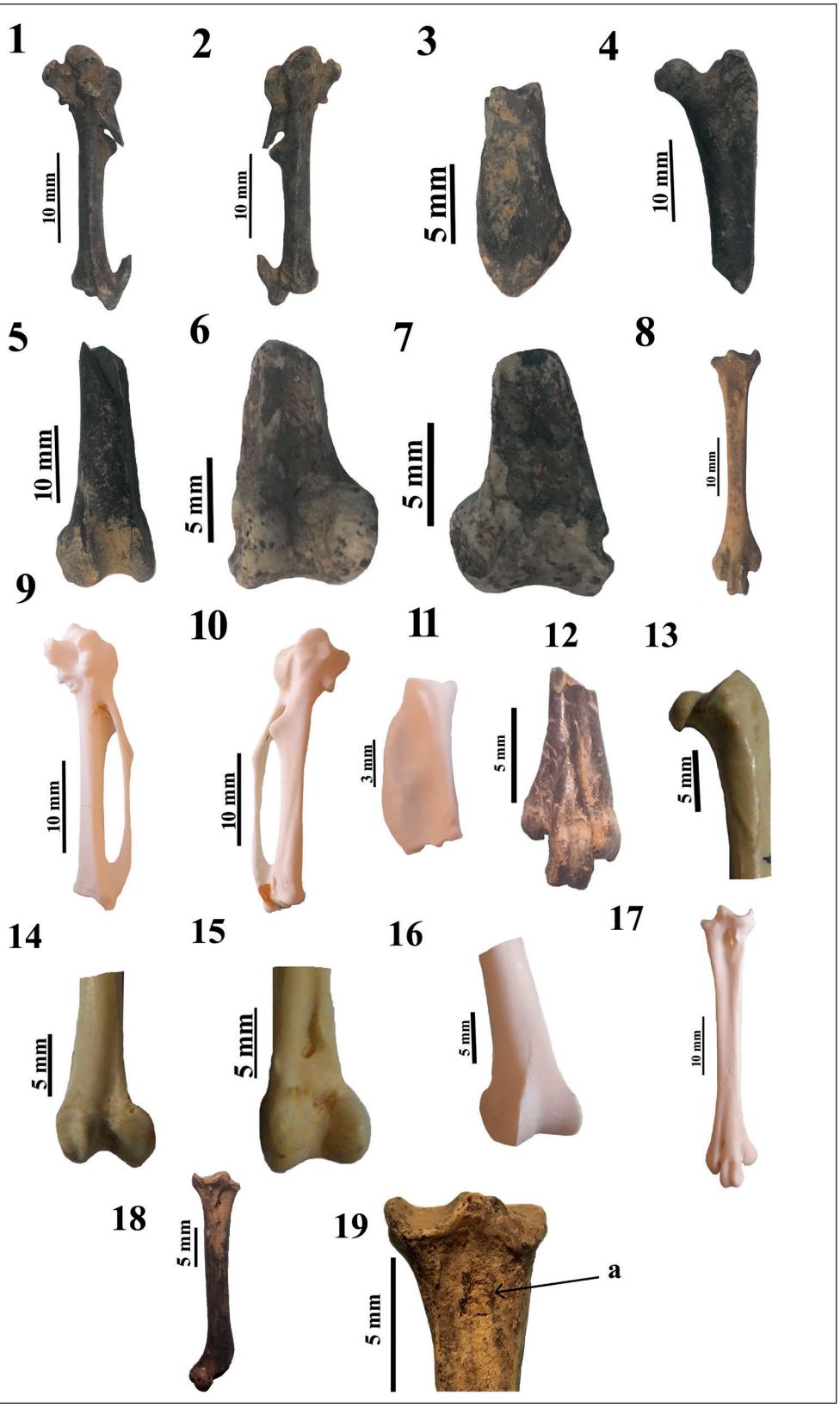
C-8.14–10.14, D-4.92–6.04, E1-3.55–2.94, F-6.26–7.71, G-3.46–4.49; *phalanx proximalis digiti majoris (Figure 4/3)*: A-13.73–16.05, C-4.69–5.28, E-6.03–6.62, F-5.54–5.99.

The largest extinct species of pheasant at the locality. Most of the bones in the Mátraszőlős 3 fossil belong to this species. If the size range of *tarsometatarsus* is observed, it can be noticed that there are 2 different size classes within this species. This is most likely due to sexual dimorphism, i.e. the smaller size range bones are assumed to belong to a female (A-37.57, C-7.79, D-6.24, E-3.15 F-8.28, G-6.11), while the larger ones belong to a rooster (A-ap.41, C-8.73, D-8.06, E-3.59, F-8.9. These are differences of a few mm. What distinguishes them from *P. gallica* is that the *parahypotarsal* indentation of the fossa on the proximal epiphysis of the tarsometatarsus is less marked. The range of tibiotarsal dimensions and the thickness/height of the distal epiphysis, as well as the *pons supratendineus*, make it certain that it belongs to this species. The *incisura intercondylaris* is rounded. The *maxilla* and *mandibula* are almost equal in size, morphologically all two are characterized by a short and broad beak tip with a broad and semicircular beak notch and a small tip in the middle. Also in the *coracoideum*, there is some difference between the thickness of the proximal epiphysis and the width of the diaphysis, which may also be due to the sex difference. In the *ulna*, the *olecranon* is rounded and slightly conical and the *cotyla dorsalis* is elongated and conical. The proximal and distal epiphysis; of the *humerus* are spectacularly larger than those of any other member of the genus *Palaeortyx*. In the distal epiphysis, the *processus supracondylaris dorsalis* is broken off. In the *carpometacarpus*, the most visible anatomical stamp is the strongly developed *processus intermetacarpalis*. The *facies articularis metacarpalis* is straight and wavy, the strongly and irregularly prominent arc of the *margo dorsalis* is slightly wavy, and the *facies articularis phalangealis* is a strongly prominent dorsal process. In the *femur*, the *fovea lig. capitis* and the *facies articularis acetabularis* are also clearly visible.

Figure 3. *Palaeortyx phasianoides* Milne-Edwards, 1869 – Mátraszőlős 3. – 1. right *humerus*, proximal end, caudal view; 2. right *humerus*, proximal end, cranial view; *Palaeortyx gallica* Milne-Edwards, 1869 – Mátraszőlős 3. – 3. right *humerus*, distal end, caudal view; *Palaeortyx phasianoides* Milne-Edwards, 1869 – Mátraszőlős 3. – 4. right *humerus*, distal end, cranial view; 5. right *ulna*, proximal end, dorsal view; 6. right *ulna*, proximal end, ventral view; *Palaeortyx gallica* Milne-Edwards, 1869 – Mátraszőlős 3. – 7.right *ulna*, distal end, dorsal view; 8. right *ulna*, distal end, ventral view; *Alectoris graeca* (Meisner, 1804) extant, 9. right *humerus*, caudal view; 10. right *humerus*, distal end, caudal view; 11. right *ulna*, proximal end, dorsal view; 12. right *ulna*, dorsal view; 13. right *humerus*, distal end, cranial view

3. ábra *Palaeortyx phasianoides* Milne-Edwards, 1869 – Mátraszőlős 3. – 1. jobboldali felkarcsont, proximális vég, caudális nézet; 2. jobb oldali felkarcsont, proximális vég, craniális nézet; *Palaeortyx gallica* Milne-Edwards, 1869 – Mátraszőlős 3. – 3. jobboldali felkarcsont, disztális vég, caudális nézet; *Palaeortyx phasianoides* Milne-Edwards, 1869 – Mátraszőlős 3. – 4. jobboldali felkarcsont, disztális vég, craniális nézet; 5. jobboldali singcsont, proximális vég, dorzális nézet; 6. jobboldali singcsont, proximális vég, ventrális nézet; *Palaeortyx gallica* Milne-Edwards, 1869 – Mátraszőlős 3. – 7. jobboldali singcsont, disztális vég, dorzális nézet; 8. jobboldali singcsont, disztális vég, ventrális nézet; *Alectoris graeca* (Meisner, 1804) recens – 9. jobboldali felkarcsont, caudális nézet; 10. jobboldali felkarcsont, disztális vég, caudális nézet; 11. jobboldali singcsont, proximális vég, dorzális nézet; 12. jobboldali singcsont, dorzális nézet; 13. jobboldali felkarcsont, disztális vég, craniális nézet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***Palaeortyx* sp. indet.:**
Location and age: Mátraszőlős 3; Middle Miocene (MN6–8)
Materials: 1 *carpometacarpus* proximal fragment
Dimensions (in mm): C-8, D-ap. 6, E-5, E1-ap. 3.

Morphologically different from *P. phasianoides*, (and also in size, much smaller than *P. phasianoides*). The shape of the *trochlea carpalis* is different, but this is due to the fact that this part of *P. phasianoides* is wider and the *facies artic ulnocarpalis* is more prominent. The *processus extensorius* is also different, being slightly shorter and curved upwards in *P. phasianoides*, whereas in this bone it is straight and blunt. Unlike *P. phasianides*, this bone does not have a more developed *processus intermetacarpalis*, so both in size and morphology it can be excluded as a smaller specimen of *P. phasianoides*. The *fovea subalularis* is also different, as this bone lacks a small notch, whereas this is also observed in *P. phasianoides* and *P. gallica*.

Figure 4. *Palaeortyx phasianoides* Milne-Edwards, 1869 – Mátraszőlős 3. – 1. right *carpometacarpus*, ventral view; 2. right *carpometacarpus*, dorsal view; 3. right *phalanx proximalis digiti majoris*, dorsal view; 4. left *femur*, proximal end, caudal view; 5. left *femur*, distal end, cranial view; 6. right *tibiotarsus*, distal end, cranial view; 7. right *tibiotarsus*, distal end, caudal view; 8. left *tarsometatarsus*, dorsal view; *Alectoris graeca* (Meisner, 1804) extant, 9. right *carpometacarpus*, ventral view; 10. right *carpometacarpus*, dorsal view; 11. right *phalanx proximalis digiti majoris*, dorsal view; *Palaeortyx brevipes* Milne-Edwards, 1869 – Mátraszőlős 3. – 12. right *femur*, dorsal view; *Alectoris graeca* (Meisner, 1804) extant, 13. left *femur*, proximal end, caudal view; 14. left *femur*, distal end, cranial view; 15. right tibia, distal end, cranial view; 16. right *tibiotarsus*, distal end, caudal view; 17 – left *tibiotarsus*, dorsal view; *Palaeortyx gallica* Milne-Edwards, 1869 – Mátraszőlős 3. – 18. right *tarsometatarsus*, dorsal view; 19. right *tarsometatarsus*, dorsal view – a. – *fossa parahypotarsalis*

4. ábra *Palaeortyx phasianoides*, Milne-Edwards, 1869 – Mátraszőlős 3. – 1. jobboldali kézközépcsont, ventrális nézet; 2. jobboldali kézközépcsont, dorzális nézet; 3. jobboldali kézujjperc, dorzális nézet; 4. baloldali combcsont, proximális vég, caudális nézet; 5. baloldali combcsont, disztális vég, craniális nézet; 6. jobboldali lábszárcsont, disztális vég, craniális nézet; 7. jobboldali lábszárcsont, disztális vég, caudális nézet; 8. baloldali csüd, dorzális nézet; *Alectoris graeca* (Meisner, 1804) recens, 9. jobboldali kézközépcsont, ventrális nézet; 10. jobboldali kézközépcsont, dorzális nézet; 11. jobboldali kézujjperc, dorzális nézet; *Palaeortyx brevipes* Milne-Edwards, 1869 – Mátraszőlős 3. – 12. jobb oldali csüd, dorzális nézet; *Alectoris graeca* (Meisner, 1804) recens, 13. baloldali combcsont, proximális vég, caudális nézet; 14. baloldali combcsont, disztális vég, craniális nézet; 15. jobboldali lábszárcsont, disztális vég, craniális nézet; 16. jobboldali lábszárcsont, disztális vég, caudális nézet; 17. baloldali csüd, dorzális nézet; *Palaeortyx gallica* Milne-Edwards, 1869 – Mátraszőlős 3. – 18. jobb oldali csüd, dorzális nézet; 19. jobb oldali csüd, dorzális nézet, a – *fossa parahypotarsalis*

Conclusions

By examining the material from site 3 at Mátraszőlős, I concluded that three species of the genus *Palaeortyx, P. phasianoides, P. gallica* and *P. brevipes,* were found. These 3 species are well distinguishable both in size and anatomy, although most of their anatomical characters are similar. In terms of size, *P. phasianoides* falls within the pheasant size range, *P gallica* is a smaller size, and *P. brevipes* falls within an even smaller size range. Of the *Palaeortyx* species, *P. phasianoides* was probably a common and frequent species, as evidenced by the large number of bones found in this find.

Based on the identification of recent finds from Mátraszőlős 3 and the large number of these finds, it is concluded that presumably a relatively large, continuous, dry grassland and forest area was typical of the Middle Miocene (Erdei *et al.* 2011). This is in line with the ecological characteristics of the period, as we know that the Middle Miocene was characterised by a warm subtropical climate, with a high number of both forest and open areas inhabited by a large number of species and individuals. It is important to note that species indicative of warmer climatic conditions are also known to have been present, such as the anhingas, boobies, flamingos and tropical swift (Gál *et al*. 2000, Kessler 2009b, Kessler & Hír 2012a, Kessler & Hír 2012b).

Acknowledgements

I would like to thank Dr. János Hír for providing the fossil material, Prof. Dr. Jenő Kessler for his professional guidance, and to Dr. Mihály Gasparik for acces in recent bird bone collection in the Natural History Museum of Hungary. Finally, to Prof. Dr. Sándor Faragó for making the research work possible.

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