

Neogene songbirds (Aves, Passeriformes) from Hungary

Eugen KESSLER¹

(with 1 figure and 26 plates)

The author has studied and identified an exceptionally rich fossil songbird material (385 identified bones) from West Hungary (Polgárdi localities, Fejér County, Upper Miocene, MN 13) and from Southwest Hungary (Csarnóta and Beremend localities, Baranya County, Pliocene, MN 15-16). These are presented with rich figures (247) and with necessary biometrical data. All identified taxa (98) represent a new species. These are following:

Alauda tivadari n. sp.; *Lullula minor* n. sp.; *Calandrella gali* n. sp.; *Hirundo gracilis* n. sp.; *Delichon polgardiensis* n. sp.; *Riparia minor* n. sp.; *Aegithalos gaspariki* n. sp.; *Sitta gracilis* n. sp.; *Tichodroma capeki* n. sp.; *Muscicapa miklosi* n. sp.; *Luscinia denesi* n. sp.; *Saxicola lambrechtii* n. sp.; *Oenanthe kormosi* n. sp.; *Turdicus pannonicus* n. sp.; *Turdus miocaenicus* n. sp.; *Turdus polgardiensis* n. sp.; *Cettia janossyi* n. sp.; *Acrocephalus major* n. sp.; *Acrocephalus minor* n. sp.; *Hippolais veterior* n. sp.; *Sylvia intermedia* n. sp.; *Locustella kordosi* n. sp.; *Phylloscopus venzeli* n. sp.; *Anthus hiri* n. sp.; *Motacilla intermedia* n. sp.; *Bombycilla brevia* n. sp.; *Troglodytes robustus* n. sp.; *Cinclus gaspariki* n. sp.; *Prunella freudenthali* n. sp.; *Lanius capeki* n. sp.; *Sturnus brevis* n. sp.; *Passer hiri* n. sp.; *Carduelis kretzoi* n. sp.; *Carduelis lambrechtii* n. sp.; *Pyrrhula gali* n. sp.; *Fringilla kormosi* n. sp.; *Emberiza pannonica* n. sp.; *Emberiza polgardiensis* n. sp.; *Plectrophenax veterior* n. sp. (from Polgárdi);

Galerida pannonica n. sp.; *Lullula parva* n. sp.; *Hirundo major* n. sp.; *Delichon pusillus* n. sp.; *Aegithalos congruis* n. sp.; *Parus robustus* n. sp.; *Parus parvulus* n. sp.; *Sitta pussila* n. sp.; *Certhia immensa* n. sp.; *Saxicola baranensis* n. sp.; *Saxicola parva* n. sp.; *Phoenicurus erikai* n. sp.; *Oenanthe pongraczi* n. sp.; *Turdus major* n. sp.; *Turdus medius* n. sp.; *Turdus minor* n. sp.; *Cettia kalmani* n. sp.; *Acrocephalus kretzoi* n. sp.; *Acrocephalus kordosi* n. sp.; *Sylvia pussila* n. sp.; *Locustella janossyi* n. sp.; *Phylloscopus pliocaenicus* n. sp.; *Anthus baranensis* n. sp.; *Cinclus minor* n. sp.; *Prunella kormosi* n. sp.; *Lanius hungaricus* n. sp.; *Passer minusculus* n. sp.; *Carduelis parvulus* n. sp.; *Carduelis medius* n. sp.; *Pyrrhula minor* n. sp.; *Fringilla petényii* n. sp.; *Loxia csarnotanus* n. sp.; *Pinicola kubinyii* n. sp.; *Emberiza media* n. sp.; *Emberiza parva* n. sp. (from Csarnóta 2);

Melanocorypha minor n. sp.; *Galerida pannonica* n. sp. *Lullula parva* n. sp.; *Lullula minuscula* n. sp.; *Delichon major* n. sp.; n. sp.; *Parus robustus* n. sp.; *Parus medius* n. sp.; *Sitta villanyensis* n. sp.; *Muscicapa petényii* n. sp.; *Erithacus minor* n. sp.; *Luscinia pliocaenica* n. sp.; *Saxicola baranensis* n. sp.; *Saxicola magna* n. sp.; *Monticola pongraczi* n. sp.; *Phoenicurus baranensis* n. sp.; *Oenanthe pongraczi* n. sp.; *Turdus major* n. sp.; *Turdus medius* n. sp.; *Turdus minor* n. sp.; *Oriolus beremendensis* n. sp.; *Acrocephalus kretzoi* n. sp.; *Sylvia pussila* n. sp.; *Locustella magna* n. sp.; *Locustella janossyi* n. sp.; *Regulus pliocaenicus* n. sp.; *Motacilla minor* n. sp.; *Motacilla robusta* n. sp.; *Bombycilla kubinyii* n. sp.; *Prunella kormosi* n. sp.; *Lanius major* n. sp.; *Lanius intermedius* n. sp.; *Sturnus pliocaenicus* n. sp.; *Sturnus baranensis* n. sp.; *Passer pannonicus* n. sp.; *Coccothraustes major* n. sp.; *Loxia csarnotanus* n. sp.; *Emberiza gaspariki* n. sp. (from Beremend 26).

¹ Dr. Eugen Kessler, Ősz utca 14, 2310 Szigetszentmiklós, Hungary. E-mail: kessler_jeno@yahoo.com

TUDOMÁNYOS KÖZLEMÉNYEK



Fig. 1. Map with fossiliferous localities from Hungary. 1. Polgárdi; 2. Csarnóta; 3. Beremend.

Introduction

In this paper the author presents the remains of songbird fauna from Hungarian Neogene localities. First the paper presents the rich fossil bird material indicating the environmental conditions at the end of the sedimentation of the Pannonian Lake through the passerine bird fauna of Polgárdi in Fejér county in Hungary. In the continuation presents the environmental conditions 2 million years after the sedimentation of the Pannonian Lake through the passerine bird fauna of Csarnóta and Beremend in Baranya County in Hungary.

In the vicinity of the town Polgárdi the limestone quarries of Somlyó Hill and Kőszár Hill (226 m alt.) contained several karst fissures with vertebrate remains. Among them the Polgárdi 2, 4 and 5 localities furnished birds bones.

Polgárdi 2 had been quarried in two excavation campaigns in 1910 by Tivadar KORMOS. The bird remains were identified by Waclav ČAPEK and were published by Kálmán LAMBRECHT in 1912 and 1933 (LAMBRECHT 1912, 1933) as: *Mergus* sp.?; *Gallus* sp.?; cf. *Coturnix* sive *Perdix* sp., cf. *Lanius minor* and *Aves* indet. Miklós KRETZOI also announced this list in his paper, published in 1957 (KRETZOI 1957)

Polgárdi 4 was discovered in 1984-1985 (KORDOS 1991a). This locality yielded a rich mammal and bird assemblage. The mammal fauna was published by Mathias FREUDENTHAL and László KORDOS in 1989

(FREUDENTHAL & KORDOS 1989) and the bird fauna was identified and published by Dénes JÁNOSSY in 1991 (JÁNOSSY 1991)

Polgárdi 5 was discovered in the NE part of the quarry system in 1988 (KORDOS 1991a) and the bird fauna was published by Dénes JÁNOSSY in 1991 (JÁNOSSY 1991)

Previously JÁNOSSY reidentified from Locality 2 the carpometacarpus of *Gallus* sp.? as *Gallus aesculapi* GAUDRY, 1862 (JÁNOSSY 1976) and the complete carpometacarpus of *Mergus* sp. ? as *Anas albae* JÁNOSSY, 1979 (JÁNOSSY 1979)

The list of the bird fauna from Polgárdi 4 and Polgárdi 5 (JÁNOSSY 1991, 1995) includes the following taxa: *Paleocryptonix hungaricus* JÁNOSSY, 1991; *Pavo aesculapi phasianoides* JÁNOSSY, 1991; *Porzana estramosi veterior* JÁNOSSY, 1991; *Rallicrox polgardiensis* JÁNOSSY, 1991; *Otis* aff. *khosiatzkyi* BOCHENSKI ET KUROCHKIN, 1987; *Capella* sp., ?*Cursorius* sp., *Tringa* sp., *Tyto campiterrae* JÁNOSSY, 1991; *Chaetura* aff. *baconica* JÁNOSSY, 1977; *Motacilla* sp., *Acrocephalus* sp. I. („*arundinaceus*”), *Acrocephalus* sp. II., *Cettia* sp., *Sylvia* sp., *Turdus* sp. („*iliacus*”), *Luscinia* sp., Fringillidarum gen et sp. indet., *Corvus* sp. (JÁNOSSY 1991, 1995).

From the unidentified material the author identified and published the following taxa in 2009 and 2010: *Egretta polgardiensis* KESSLER, 2009 (P4),

Anas clypeata L. 1758; (P4, 5), Anatidae indet. (P4, 5), *Buteo* sp. (P4), *Falco* cf. *cherrug* GRAY, 1834 (P4), *Falco tinnunculus atavus* JÁNOSSY, 1972 (P5), *Palaeortyx gallica* MILNE-EDWARDS, 1869 (P4, 5), *P. brevipes* MILNE-EDWARDS 1869 (P4, 5), *Palaeortyx phasianoides* MILNE-EDWARDS, 1869 (from *Pavo aesculapi phasianoides*) (P4, 5), *Galliformes* indet. (P4, 5), *Porzana estramosi* JÁNOSSY, 1979 (P4, 5), *Porzana kretzoi* KESSLER, 2009 (P4), *Rallicrox polgardensis* KESSLER, 2009 (P4, 5), *Otis kalmani* JÁNOSSY, 1972 (P4), *Calidris janossyi* KESSLER, 2009 (P5), *Gallinago veterior* JÁNOSSY, 1979 (P4), *Charadrius lambrechtii* KESSLER, 2009 (P4), *Limosa* sp. (P5), *Tringa* sp. (P4), *Tyto campiterrea* JÁNOSSY, 1991 (P4), *Athene noctua veta* JÁNOSSY, 1992 (P4), *Surnia robusta* JÁNOSSY, 1977 (P4, 5), *Cuculus pannonicus* KESSLER, 2010 (P4), *Apus baranensis* JÁNOSSY, 1977 (P4), *Chaetura baconica* JÁNOSSY, 1977 (P4), *Anthus* sp. (P4), *Motacilla* sp. (P5), *Parus* sp.1, 2, (P4), Muscicapidae gen et sp. indet. (P5), *Luscinia* sp. (P4), *Turdus* sp. (P4, 5), *Bombycilla* sp. (P4, 5), *Acrocephalus* sp. (P4), *Prunella* sp. (P4), *Troglodytes* sp. (P4), *Certhia* sp. (P4), *Sitta* sp. (P5), *Lanius* sp. 1, 2. (P5), *Corvus pliocaenus* (P5), *Corvus* sp. indet. (P4), *Miocorvus larteti* (MILNE-EDWARDS, 1871) (P4), *Sturnus* sp. (P4), *Fringillidae* sp. (P5), *Emberizidae* sp. indet. (P5), *Passeriformes* indet. (P4), *Aves* indet. (P4, 5) (KESSLER 2009a,b, 2010).

From this material the following extinct new species have been identified and are described here:

Alauda tivadari n. sp.; *Lullula minor* n. sp.; *Calandrella gali* n. sp.; *Hirundo gracilis* n. sp.; *Delichon polgardiensis* n. sp.; *Riparia minor* n. sp.; *Aegithalos gaspariki* n. sp.; *Sitta gracilis* n. sp.; *Tichodroma caepki* n. sp.; *Muscicapa miklosi* n. sp.; *Luscinia denesi* n. sp.; *Saxicola lambrechtii* n. sp.; *Oenanthe kormosi* n. sp.; *Turdicus pannonicus* n. sp.; *Turdus miocaenicus* n. sp.; *Turdus polgardiensis* n. sp.; *Cettia janossyi* n. sp.; *Acrocephalus major* n. sp.; *Acrocephalus minor* n. sp.; *Hippolais veterior* n. sp.; *Sylvia intermedia* n. sp.; *Locustella kordosi* n. sp.; *Phylloscopus venczeli* n. sp.; *Anthus hiri* n. sp.; *Motacilla intermedia* n. sp.; *Bombycilla brevia* n. sp.; *Troglodytes robustus* n. sp.; *Cinclus gaspariki* n. sp.; *Prunella freudenthali* n. sp.; *Lanius caepki* n. sp.; *Sturnus brevis* n. sp.; *Passer hiri* n. sp.; *Carduelis kretzoi* n. sp.; *Carduelis lambrechtii* n. sp.; *Pyrrhula gali* n. sp.; *Fringilla kormosi* n. sp.; *Emberiza pannonica* n. sp.; *Emberiza polgardiensis* n. sp.; *Plectrophenax veterior* n. sp.

According to information provided by M. PÁLFY, Tivadar KORMOS began collecting bone material from the red clay deposited in the clefts of the disused stone quarry on the flat top of Cserhegy hill near the village of Csarnóta in the western part of the Villány Mountains between 1910 and 1930 (marking the site as the “upper quarries”). Between 1954–1959 Miklós KRETZOI and Dénes JÁNOSSY regularly collected material there.

The site age has caused much controversy.

In absolute chronology the age of sites is follow: Csarnóta 2: 3.7 my (MN 15b) - Lower Pliocene- ; Csarnóta 3: 3.5 my; Csarnóta 1: 3.3 my and Csarnóta 4: 3.2 my (MN 15-16) - Middle - Upper Pliocene). Chronostratigraphically belong to Romanian stage. Biostratigraphically belongs to: Csarnótanum (Middle Pliocene) - after KRETZOI (1956, 1962, 1969), Uppermost Pliocene after JÁNOSSY (1976, 1979) and Upper Pliocene (MN16a) after KORDOS (1991b). From the absolute chronology to be classified in Lower Cserhegy, *Miomys occitanus* Zone.

We do not want to decide the dispute on Pliocene stratigraphy, mainly in the Carpathian Basin special substages were defined: Ruscinian, Csarnótanum, Beremendium, for with the Lower, Middle and Upper Pliocene, respectively.

Of the four sites, Sites 2 and 4 yielded bird material.

Site 1 was destroyed during the road construction and from its material and from site 3 KORMOS did not report birds remains (KRETZOI 1962).

The bird remains were determined by Dénes JÁNOSSY and Eugen KESSLER.

The Csarnóta 2 list of species is as follows: *Tetrao macropus* JÁNOSSY, 1976 (= *Tetrao praeurogallus* JÁNOSSY, 1969), *Francolinus caepki* LAMBRECHT, 1933; *Rallus aquaticus* (= *Rallicrox polgardensis* KESSLER 2009); *Gallinago veterior* JÁNOSSY, 1979; *Cuculus csarnotanus* JÁNOSSY, 1979; *Bubo bubo*, *Aegolius* sp., *Hirundo* sp. (= *Hirundo major* n. sp.); *Garrulus glandarius*, *Pyrrhocorax graculus vetus* KRETZOI, 1962; *Sitta* sp. (= *Sitta pusilla* n. sp.), *Turdus viscivorus* (= *Turdus major* n.sp.), *Turdoides borealis* JÁNOSSY 1979 (KRETZOI 1962, JÁNOSSY 1976a,b, 1977, 1979a,b).

Over recent years the author has identified and defined the species below from the surviving unclassified material: *Podiceps Csarnótanus* KESSLER, 2009; *Anas albae* JÁNOSSY, 1979; *Falco tinnunculus atavus* JÁNOSSY, 1972; *Palaeortyx brevipes* MILNE-EDWARDS, 1869; *Gallus beremendensis* JÁNOSSY, 1976; *Otis kalmani* JÁNOSSY, 1972; *Rallicrox polgardensis* JÁNOSSY, 1991; *Porzana kretzoi* KESSLER, 2009; *Glaucidium baranensis* KESSLER, 2009; *Athene noctua veta* JÁNOSSY, 1992; *Apus baranensis* JÁNOSSY, 1992; *Motacilla* sp., *Hirundo* sp., (= *Hirundo major* n. sp.); *Sylvia* sp. (= *Sylvia pusilla* n. sp.), *Turdus* sp. (= *Turdus major* n. sp.), Muscicapidae sp. indet. (= *Saxicola*, *Phoenicuros*, *Oenanthe* n. sp.), *Bombycilla* sp., *Cinclus* sp. (= *Cinclus minor* n. sp.), *Lanius* sp. (= *Lanius hungaricus* n. sp.), *Certhia* sp. (= *Certhia immensa* n. sp.), *Sitta* sp. (= *Sitta pusilla* n. sp.), *Prunella* sp. (= *Prunella kormosi* n. sp.), *Corvus harkanyensis* KESSLER, 2010; *Miocorvus larteti* (MILNE-EDWARDS), 1871; *Pica pica major* JÁNOSSY, 1979; *Fringillidae* gen. et sp. indet. (= *Carduelis parvulus* n. sp.; *Carduelis medius* n. sp.; *Pyrrhula*

minor n. sp.; *Fringilla petényii* n. sp.; *Loxia Csarnótanus* n. sp.; *Pinicola kubinyii* n. sp.), *Emberizidae* gen. et sp. indet. (= *Emberiza media* n. sp.; *Emberiza parva* n. sp.), *Passeriformes*, *Aves* indet. (KESSLER 2009a, 2009b, 2010), in last year from Csarnóta 4 (PONGRÁCZ L. collection) was collected bones of *Tetrao partium* KRETZOI, 1962.

Based on the latest classifications the following extinct new species have been identified and described: *Galerida pannonica* n. sp. *Lullula parva* n. sp.; *Hirundo major* n. sp.; *Delichon pusillus* n. sp.; *Aegithalos congruis* n. sp.; *Parus robustus* n. sp.; *Parus parvulus* n. sp.; *Sitta pussila* n. sp.; *Certhia immensa* n. sp.; *Saxicola baranensis* n. sp.; *Saxicola parva* n. sp.; *Phoenicurus erikai* n. sp.; *Oenanthe pongraczi* n. sp.; *Turdus major* n. sp.; *Turdus medius* n. sp.; *Turdus minor* n. sp.; *Cettia kalmani* n. sp.; *Acrocephalus kretzoi* n. sp.; *Acrocephalus kordosi* n. sp.; *Sylvia pussila* n. sp.; *Locustella janossyi* n. sp.; *Phylloscopus pliocaenicus* n. sp.; *Anthus baranensis* n. sp.; *Cinclus minor* n. sp.; *Prunella kormosi* n. sp.; *Lanius hungaricus* n. sp.; *Passer minusculus* n. sp.; *Carduelis parvulus* n. sp.; *Carduelis medius* n. sp.; *Pyrrhula minor* n. sp.; *Fringilla petényii* n. sp.; *Loxia ssarnótanus* n. sp.; *Pinicola kubinyii* n. sp.; *Emberiza media* n. sp.; *Emberiza parva* n. sp.

The Beremend 26 site age is almost identical with Csarnóta 2, but the latter's age definition caused much controversy.

The Szőlő Hill from Beremend (174 m altitude) is located approximately 9 km south around of Villány village. It made up the flat and loess covered Lower Cretaceous limestone (Nagyharsány Limestone Formation). The limestone has been quarried over hundred years and each year more and more karstic cavities and fissures containing bones were discovered.

Already in 1847 Salamon János PETÉNYI and Ferenc KUBINYI collected in the sites No. 1-3. In 1910, 1916 and in the 1930s Tivadar KORMOS collected in the sites No. 4-10. In 1953 Miklós KRETZOI and Dénes JÁNOSSY continued the collect in the mine. Later JÁNOSSY and Endre KROLOPP ply the research and excavation since 1973 (sites No. 11-17) and with László KORDOS (JÁNOSSY 1979; KORDOS 2001).

From 1993 László PONGRÁCZ found new sites (No. 18-39) and collected the fossil remains for as long as possible (PONGRÁCZ 1999).

The age of sites covers a large interval from 3.7 my to 1.3 my (Lower-Upper Pliocene, MN 15-17) belong the Csarnótanum to Biharium biochronological units in the following sequence: 26 – 5 – 11 – 15 etc. (KORDOS 1991, 2001, 2004).

The Beremend 26 is in 100 m (deepest) level in the quarry. It was an about 30 m wide and 20-25 m high red clay fissure filling. In this site the Hungarian Geological Institute carried out a detailed geological investigation in 2001 and the mammal fauna was

determined by László KORDOS (2001). The site was blown down, but László PONGRÁCZ saved the significant part of the fossil remains. The birds bones from this material was identified and described by author in previous years and in this paper.

In 2009 and 2010 the author presented the following fauna list:

Podiceps sp. (*ruficollis* size), *Egretta* sp. (*garzetta* size), *Accipiter* sp. (*nisus* size), *Falco tinnunculus atavus*, *Falco* sp. (*peregrinus* size) *Tetrao praeurogallus*, *Tetrao partium*, *Gallus beremendensis*, *Francolinus capeki*, *Palaeocryptonix hungaricus*, *Perdix perdix jurcsaki*, *Rallus polgardensis*, *Miorallus major*, *Porzana* sp., (*Porzana porzana* size), *Otis kalmani*, *O. lambrechtii*, *Chlidonias* sp., *Tringa* sp. (*glareola-ochropus* size), *Columba* sp., *Glaucidium baranensis*, *Athene noctua veta*, *Strix intermedia*, *Picus* sp., *Dendrocopos* sp. 1, 2, 3 (*medius*, *minor* and *major* size), *Alaudidae* sp. 1, 2, *Melanocorypha* sp., *Motacilla* sp., *Hirundo* sp. 1, 2, *Turdus* sp., *Muscicapidae* sp. 1, 2, *Sylvia* sp., *Acrocephalus* sp., *Parus* sp. 1, 2, *Bombycilla* sp. 1, 2, *Lanius* sp., *Sitta* sp., *Certhia* sp., *Pica pica major*, *Corvus pliocaenicus*, *Microrvus larteti*, *Corvus* sp., *Nucifraga* sp. (as *N. caryocatactes*), *Coccothraustes* sp. (as *C. coccothraustes*), *Pyrrhula* sp. (as *P. pyrrhula*), *Fringillidae* sp., *Emberiza* sp., *Passeriformes* indet., *Aves* indet. (KESSLER 2009 a,b, 2010).

The taxa defined only genus level - except song birds - are or very fragmented, or are represented by claws and therefore they can not be identified at species level.

Based on the latest classifications the following extinct species have been identified and described: *Picus pliocaenicus* KESSLER, 2012; *Dendrocopos praemedius* JÁNOSSY, 1974 (KESSLER 2012-2013).

Recently, the author identified the very rich songbird material at species level, described in the current paper. These are:

Melanocorypha minor n. sp.; *Galerida pannonica* n. sp. *Lullula parva* n. sp.; *Lullula minuscula* n. sp.; *Delichon major* n. sp.; *Parus robustus* n. sp.; *Parus medius* n. sp.; *Sitta villanyensis* n. sp.; *Muscicapa petényii* n. sp.; *Erithacus minor* n. sp.; *Luscinia pliocaenica* n. sp.; *Saxicola baranensis* n. sp.; *Saxicola magna* n. sp.; *Monticola pongraczi* n. sp.; *Phoenicurus baranensis* n. sp.; *Oenanthe pongraczi* n. sp.; *Turdus major* n. sp.; *Turdus medius* n. sp.; *Turdus minor* n. sp.; *Oriolus beremendensis* n. sp.; *Acrocephalus kretzoi* n. sp.; *Sylvia pussila* n. sp.; *Locustella magna* n. sp.; *Locustella janossyi* n. sp.; *Regulus pliocaenicus* n. sp.; *Motacilla minor* n. sp.; *Motacilla robusta* n. sp.; *Bombycilla kubinyii* n. sp.; *Prunella kormosi* n. sp.; *Lanius major* n. sp.; *Lanius intermedius* n. sp.; *Sturnus pliocaenicus* n. sp.; *Sturnus baranensis* n. sp.; *Passer pannonicus* n. sp.; *Coccothraustes major* n. sp.; *Loxia Csarnótanus* n. sp.; *Emberiza gaspariki* n. sp.

Material and methods

The osteological and biometrical comparison of the fossil bird material was made by using recent and fossil comparative collections of the Hungarian Natural History Museum. The anatomical terminology follows BAUMEL et al. (1979) and GILBERT, MARTIN & SAVAGE (1981) and for the measurements follows Angela von den DRIESCH (1976)

The identification of song bird remains was based on the characteristics found on the contours of epiphyses. Out of the total of 63 characteristics found on the nine skeletal types (coracoid, scapula, humerus, ulna, carpometacarpus, phalanga alae I. dig. II., femur, tibiotarsus, tarsometatarsus), 54 is connected to the contour. Only nine characteristics are to be found on the surface of bones (one on the scapula, two on the proximal epiphysis of the humerus, two on the proximal epiphysis of the ulna, and four on the distal epiphysis of the tibiotarsus). This method makes possible the identification of rather small and fragmented bones at species level, in spite of the often damaged surface of the epiphysis, or the occasional mineral sediment attached to the bone remain. In this paper, the diagnoses of the 39 new species have been made according to the aforementioned characteristics, and they are illustrated on the Plates as well. The contour is essential, not the condition of the surface of the bone.

Institutional abbreviations

MÁFI = Geological Institute of Hungary (recently renamed as Geological and Geophysical Institute of Hungary: GGIH), Budapest, Hungary; MTM = Department of Paleontology and Geology of the Hungarian Natural History Museum, Budapest, Hungary.

BKA = Foundation „Beszélő kövek” (private collection, established by László PONGRÁCZ in Villány).

P2, P4, P5 = Polgárdi site 2, 4 and 5.

MTM n=1 = number of recent specimen from osteological collection.

Measurement abbreviations

A (GL) = greatest length,

B (Lm) = medial length,

C (Bp) = breadth of the proximal length,

C1 = thickness of the proximal end,

D (Dp) = depth of the proximal end,

E (Sc) = smallest breadth of the corpus,

E1 = thickness of the corpus (in the case of carpometacarpus = the breadth of metacarpus II.),

F (Bd) = breadth of the distal end,

G (Dd) = depth of the distal end.

Systematic description

Order Passeriformes (LINNAEUS, 1758)

Family Alaudidae (VIGORS, 1825)

Genus *Alauda* LINNAEUS, 1758

Alauda † *tivadari* nova sp.

(Plate I. Figure 1 A-B)

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Coracoideum dext. (damaged sternal), (Polgárdi 4, MÁFI V.11.63.1; V.29138).

Paratype: Distal fragment of the tibiotarsus sin. (Polgárdi 4, MÁFI V.11.801; V.29155).

Measurements: 1. coracoid B=15.11 mm; C=2.36 mm; D=2.96 mm; E=1.04 mm; 2. tibiotarsus F= 2.71 mm; G=2.63 mm.

Comparative material: *Alauda arvensis* (MTM n=1: 1. coracoid D=3.69 mm; E=1.15 mm; 2. tibiotarsus F=2.72 mm; G=2.64 mm); *Galerida cristata* (MTM n=1: 1. coracoid D=4.02 mm; E=1.27 mm; 2. tibiotarsus F=3.17 mm);, *Calandrella brachydactyla* (MTM n=1: 1. coracoid B=17.27 mm; C=2.46 mm; D= 3.01 mm; E=1.08 mm; 2. tibiotarsus

F=2,44 mm); *Lullula arborea* (MTM n=1: 1. coracoid B=18.06 mm; D=3.92 mm; E=1,17 mm; 2. tibiotarsus F=2.64 mm); *Eremophilla alpestris* (MTM n=1: tibiotarsus F=2.94 mm).

Diagnosis: Small species of lark. On the cranial part of coracoid (Fig. 1A), the *processus acrocoracoidalis* (a) has blunted symmetric conical shape, and its cranial edge forms a straight line. *Processus accesorius* (b) is short and broadly hook-shaped. Edge of *sulcus musculi supracoracoidei* (c) has one flattened concave shape. Lateral edge of *facies articularis humeralis* (d) is rounded. *Processus procoracoidalis* (e) is pointed and well developed, exceeds the medial edge of bones.

On tibiotarsus in cranial view (Fig. 1B), there is a *tuberositas retinaculi m. fibularis* (a) which is pointed and weakly grown. Distal end of *sulcus extensorius* (b) is narrowing in V-shape and pointed. *Pons supratendineus* (c) is wide and oblique. *Condylus lateralis* (d) has flattened and pointed oval shape. *Incisura intercondylaris* (e) forms asymmetrical concave line. *Condylus medialis* (f) has flattened egg shape.

Name: Was named after the Hungarian paleontologist Tivadar KORMOS,

Description: The coracoid is somewhat smaller than in recent species, while the distal fragment of the tibiotarsus is equal to it in the size. The extinct species from Felsőtárkány (MN 7/8: *Praealauda hevesensis* KESSLER et HÍR, 2012 differs in its age, sizes and morphological characteristics (KESSLER & HÍR 2012).

Distribution: In the Carpathian Basin the recent genus and species are also known from the Early Pleistocene in Hungary (Beremend 16), Romania (Betfia 9) (JÁNOSSY 1992; GÁL 2002). The genus was reported recently outside the Carpathian Basin in Bulgaria (Upper Pliocene, MN 17, Varshets) as *Alauda xerxarvensis* BOEV, 2012 (but from other types of skeletal fragments: ulna, sternum, mandibula) (BOEV 1996, 2012) and is also known with recent species from the Early Pleistocene from Valerots (France) and Stránská skála (Czech Republic) (TYRBERG 1998).

Alauda gypsorum PORTIS, 1887 and *Alauda major* PORTIS, 1887 (PORTIS 1887) from the Late Miocene (MN 13) of Seniglia and Gabbro (Italy) were reported in slab as fossil species, but MLÍKOVSKÝ (2002) put them into „*Family incertae sedis*”.

Genus *Galerida* BOIE, 1828
Galerida †*pannonica* nova sp.
(Plate I. Figure 2 A-D)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Distal fragment of the tibiotarsus sin. (MÁFI V.11.13.1; V.29088).

Paratypes: Distal fragment of the humerus sin.; carpometacarpus sin.; distal fragment of the tarsometatarsus sin. (Beremend 26, BKA).

Measurements: 1. humerus E=2,57 mm; F=5,75 mm; G=3,39 mm; 2. carpometacarpus A=17,42 mm; B=14,10 mm; C=4,28 mm; E=3,08 mm; F=3,95 mm; 3. tibiotarsus F =2.85 mm; G=2.45 mm; 4. tarsometatarsus E=1,25 mm; F=2,65 mm; G=1,83 mm.

Comparative material: *Galerida cristata* (MTM n=1-2: humerus E=2,40-2,46 mm; F=6,08-6,21 mm; G=3,44 mm; carpometacarpus A=17,41-18,56 mm; B=14,87 mm; C=3,85-4,12 mm; E=2,11 mm; F=3,67 mm; tarsometatarsus E=1,25-1,29 mm; F=2,70-2,79 mm; G=1,67 mm; tibiotarsus: F=3.17 mm; G=3.04 mm); *Alauda arvensis* (MTM n=1: carpometacarpus A=17,26 mm; C=3,85 mm; tibiotarsus: F=2.72 mm; G=2.88 mm; tarsometatarsus E=1,26mm; F=2,76 mm); *Lullula arborea* (MTM n=1: humerus E=2,28; F=4,88 mm; carpometacarpus A=16,39 mm; C=3,73 mm; tibiotarsus: F=2.64 mm; G=2.48 mm; tarsometatarsus E=1,24 mm; F=2,52 mm); *Calandrella brachydactyla* (MTM n=1: carpometacarpus A=14,61 mm; C=3,54 mm; tibiotarsus: F=2.44 mm; tarsometatarsus E= 1,29 mm;

F=2,20 mm); *Melanocorypha calandra* (MTM n=1: humerus E=2,46 mm; F=6,65 mm; tibiotarsus: F=3.71 mm; tarsometatarsus E=1,43 mm; F=3,53 mm); *Eremophila alpestris* (MTM n=1: carpometacarpus A=17,05 mm; C=4,24 mm; tibiotarsus: F=2.94 mm; tarsometatarsus E=1,10 mm, F=2,77).

Diagnosis: On distal epiphysis in cranial view of humerus (Fig. 2A), the *tuberculum ventrale* (a) is weakly developed. The *epicondylus ventralis* (b) is rounded. *Condylus ventralis* (c) has lying oval shaped and distally more protruding. *Incisura intercondylaris* (d) is wider but slightly deeper than in the recent genus. The *condylus dorsalis* (e) has mildly oblique oval shape. *Epicondylus dorsalis* (f) is less rounded. *Processus supracondylaris dorsalis* (g) is short and wide with two unequal branches.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 2B), the *trochlea carpalis* (a) has semicircular-like shape. *Proc. extensorius* (b) has short and pointed oblique conical shape. *Processus alularis* (c) is less developed and the *fovea subalularis* (d) has weakly developed acute angle shape. *Protuberantia metacarpalis* (e) is in the external edge of the *os metacarpale majus* and forms wider and oblique triangular bulge. *Facies articularis digiti major* (f) in medial part has tooth-like protrusions.

On tibiotarsus of distal epiphysis in cranial view (Figure 2C), the *tuberositas retinaculi m. fibularis* (a) is flattened. The distal end of *sulcus extensorius* (b) is wide and arched. *Pons supratendineus* (c) is middling wide and straight. The lower slot of the *canalis extensorius* (d) is wide and has regularly eye-like shape. *Incisura intercondylaris* (e) has concave shape. *Condylus medialis* (f) has regular egg shape.

On distal epiphysis of tarsometatarsus in dorsal view (Fig. 2D), the *trochlea metatarsi* II. (a) has laterally protruding conical shape, with cut-off end. *Incisura intertrochlearis lateralis* (b) is pointed, wide and deep. *Trochlea metatarsi tertii* (c) is wide and bellow average with concave end. *Incisura intertrochlearis medialis* (d) is pointed, deep and wide. *Trochlea metatarsi* IV. (e) is injured.

Name: Was named after the name of the Pannonia region.

Description: It corresponds in characters and sizes with recent species of the genus. The cranial part of the *condylus lateralis* is missing partly and in the *condylus medialis* it is missing totally. The *incisura intercondylaris* is damaged partly. Its characters corresponds with *Galerida cserhatensis* KESSLER et HÍR, 2012 from Litke 2 – Hungary (Lower Miocene, MN 5), but the *tuberositas retinaculi m.fibularis* narrower and more pointed than in the Csarnótian specimen, also the sizes is smaller (KESSLER et HÍR 2012).

Distribution: The genus is known from Beremend 17 – Hungary (Lower Pleistocene, MQ1), (JÁNOSSY 1992) as *Galerida* sp. and from Betfia 2, 9 - Romania (Lower Pleistocene, MQ1) (ČAPEK 1917; LAMBRECHT

1933; JÁNOSSY 1979a; KESSLER, 1975; GÁL, 2002); and Somssich-Hill 2 – Hungary (Lower Pleistocene, MQ2) (JÁNOSSY 1979a, 1980) as recent species *Galerida cristata* (LINNAEUS, 1758).

The genus was reported outside the Carpathian Basin in Bulgaria from Varshets (Late Pliocene, MN 17) as *Galerida bulgarica* BOEV, 2012 (BOEV 2012). It is also known with recent species only from Middle Pleistocene in Europa's fossil localities (TYRBERG 1998).

Genus *Lullula* KAUP, 1829

Lullula †*minor* nova sp.

(Plate I. Figure 3 A-D)

Type locality and age: Polgárdi 4, 5; Late Miocene (MN 13).

Holotype: Ulna sin. (Polgárdi 5, MÁFI V.11.93.1; V.29168).

Paratypes: Distal fragment of the humerus sin. (Polgárdi 4, MÁFI V.11.81.2; V.29156/1); distal fragment of the tarsometatarsus sin. (Polgárdi 4, MÁFI V.11.81.2; V.29156/2).

Measurements: 1. ulna A=24.23 mm; C=3.57 mm; E=1.79 mm; F=3.25 mm; G=2.42 mm; 2. humerus E=1.43 mm; F=3.14 mm; G=2.02 mm; 3. tarsometatarsus E=1.09 mm; F=2.58 mm; G=1.58 mm.

Comparative material: *Lullula arborea* (MTM n=1: 1. ulna A=28.64 mm; C=3.94 mm; E=1.76 mm; F=3.39 mm; G=2.49 mm; 2. humerus E=2.15 mm; F=5.02 mm; G=2.87 mm; 3. tarsometatarsus E=1.25 mm; F=2.52 mm; G=1.51 mm); *Alauda arvensis* (MTM n=1: 1. ulna A=29.68 mm; C=3.96 mm; E=1.92 mm; F=3.32 mm; 2. tarsometatarsus E=1.26 mm; F=2.76 mm); *Galerida cristata* (MTM n=1: 1. ulna A=34.46 mm; C=3.92 mm; E=2.25 mm; F=3.68 mm; 2. humerus E=2.46 mm; F=6.01 mm; 3. tarsometatarsus E=1.29 mm; F=2.79 mm); *Calandrella brachydactyla* (MTM n=1: ulna A=25.73 mm; C=3.38 mm; E=1.51 mm; F=2.88 mm; 2. tarsometatarsus E=1.25 mm; F=2.20 mm).

Diagnosis: Small species of skylark. On distal epiphysis of humerus in cranial view (Fig. 3A), the *tuberculum ventrale* (a) is weakly developed. *Epicondylus ventralis* (b) is strongly arched. *Processus flexorius* (c) is distally projecting and has symmetrical blunted conical shaped. *Condylus ventralis* (d) has extended oval shaped. *Incisura intercondylaris* (e) is slightly deeper than in the recent genus. *Condylus dorsalis* (f) has curved oval shape. *Epicondylus dorsalis* (g) is more rounded than in the recent genus. *Processus supracondylaris dorsalis* (g) is small, wide with less pointed end.

On proximal epiphysis of ulna in cranial view (Fig. 3B), the *oleocranon* (a) has average length, with blunted conical shape. *Cotyla dorsalis* (b) is asymmetrical conical shaped, with rounded end. *Cotyla ventralis* (c) has circular shape. *Tuberculum*

lig. colat. ventralis (d) is less well discernible than in recent genus. *Depressio m. brachialis* (e) is well developed. On distal epiphysis in medial view (Fig. 3C), *condylus dorsalis* (f) has blunted claw-like shape. *Sulcus intercondylaris* (g) is slightly concave. *Condylus ventralis* (h) is wide and has less convex shape. *Tuberculum carpale* (i) has asymmetrically blunted conical shape.

On distal epiphysis of tarsometatarsus in dorsal view (Fig. 3D), the *trochlea metatarsi* II. (a) has laterally protruding conical shape, with cut-off end. *Incisura intertrochlearis lateralis* (b) is weakly wide and deep. *Trochlea metatarsi tertii* (c) is wide and bellow average with concave end. *Incisura intertrochlearis medialis* (d) is much deeper and wider than in recent genus. *Trochlea metatarsi* IV. (e) is beak-like and more pointed than in recent genus.

Name: It was dubbed based on its dimensions.

Description: The fossil species differs from recent with its smaller sizes and in some morphological characters. The fossil species *Lullula neogradensis* KESSLER et HÍR, 2012 from Mátraszőlős 1 was described based on tibiotarsus and its age is much older (KESSLER & HÍR 2012).

Lullula †*parva* nova sp.

(Plate II. Figure 4 A-C)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Other locality: Beremend 26, Pliocene (MN 15-16).

Holotype: Distal fragment of tibiotarsus sin. (Csarnóta 2, MÁFI V.11.20.1; V.29095).

Paratype: Humerus dext. (Beremend 26, BKA).

Measurements: 1. humerus A=21,15 mm; B=9,04 mm; C=6,70 mm; D=5,66 mm; E=1,95 mm; F= 5,06 mm; G=2,76 mm. 2. tibiotarsus F=2.40 mm; G=2.30 mm.

Comparative material: *Galerida cristata* (MTM n=1; 1.humerus A= 28,00 mm; C=8,25 mm; E=2,45 mm; F=6,34; 2. tibiotarsus: F=3.17 mm; G=3.04 mm); *Alauda arvensis* (MTM n=1; tibiotarsus: F=2,72 mm; G=2.68 mm); *Lullula arborea* (MTM n=1; 1. humerus: A=22,00-23,02 mm; B=10,06 mm; C=6,33-6,80 mm; D=5,90 mm; E=2,10-2,28 mm; F=4,60-4,88 mm; G=2,73 mm; 2. tibiotarsus: F=2.64 mm; G=2.51 mm); *Calandrella brachydactyla* (MTM n=1; tibiotarsus: F=2.44 mm); *Melanocorypha calandra* (MTM n=1; 1. humerus A=27,75 mm; C= 8,33 mm; E=2,46 mm; F=6,65 mm; 2. tibiotarsus: F=3.71 mm); *Eremophila alpestris* (MTM n=1; tibiotarsus: F=2.94 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 4A), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and convex, but not too outstanding. *Tuberculum ventrale* (c) forms one protruding oval-like spur. *Crista bicipitalis* (d) is strongly protruding and rounded. *Crus fossae* (e) can

be seen but it is blurred, the *fossae pneumotricipitalis* (f) is divided into two part. On distal epiphysis in cranial view (Fig. 4B), the *tuberculum supracondylare ventrale* (g) is less developed; the *epicondylus ventralis* (h) is less rounded. *Processus flexorius* (i) is protruding and rounded. *Condylus ventralis* (j) has wide lying oval shape. *Incisura intercondylaris* (k) is wide but it is less deep. *Condylus dorsalis* (l) is crooked oval shaped. *Epicondylus dorsalis* (m) is less rounded. *Processus supracondylaris dorsalis* (n) is short, bent and has two unequal branches.

On distal epiphysis of tibiotarsus in cranial view (Figure 4C), the distal end of *sulcus extensorius* (b) is narrowing. *Pons supratendineus* (c) is wide and slightly oblique. *Condylus lateralis* (d) has oval shape. *Incisura intercondylaris* (e) forms oblique line. *Condylus medialis* (f) has wide egg shape.

Name: The name refers to its dimensions.

Description: It corresponds in characters to the recent genus. The fossil species *Lullula neogradensis* KESSLER et HIR, 2012 (KESSLER & HIR, 2012) from Mátraszőlös 1 – Hungary (Middle Miocene, MN 7/8) and *Lullula* † *minor* from Polgárdi differ in its age and sizes to Csarnótián specimen.

Lullula † *minuscule* nova sp.
(Plate II. Figure 5 A-B)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Humerus dext. (BKA)

Measurements: humerus A=14,62 mm; B=6,07 mm; C=4,45 mm; D=4,15 mm; E=1,41 mm; F=3,89 mm; G=1,95 mm.

Comparative material: *Lullula arborea* (MTM n=3: humerus: A=22,00-23,02 mm; B=10,06 mm; C=6,33-6,80 mm; D=5,90 mm; E=2,10-2,28 mm; F=4,60-4,88 mm; G=2,73 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 5A), the *caput humeri* (a) is wide and convex, but not too outstanding. *Tuberculum ventrale* (b) forms rounded ovalic spur. *Crista bicipitalis* (c) is strongly protruding and distally pointed. *Crus fossae* (d) is well developed, the *fossae pneumotricipitalis* (e) is divided into two part. On distal epiphysis in cranial view (Fig. 5B), the *tuberculum supracondylare ventrale* (f) is less developed; the *epicondylus ventralis* (g) is rounded. *Processus flexorius* (h) is strongly protruding, is wider than in recent species and rounded. *Condylus ventralis* (i) has lying oval shape. *Incisura intercondylaris* (j) is deep and has angle shape. *Condylus dorsalis* (k) has crooked oval shape. *Epicondylus dorsalis* (l) is rounded. *Processus supracondylaris dorsalis* (m) is short, bent and has two unequal branches.

Name: The name refers to very small dimensions of the species.

Description: In size corresponds with *Lullula minor* KESSLER, 2012 from Polgárdi - Hungary

(Upper Miocene, MN 13) but is younger. It is different in size and in characters to *Lullula parva*. The *tuberculum dorsale* is missing.

Distribution: The genus was reported outside the Carpathian Basin in Bulgaria from the Late Miocene Chrabarsko as *Lullula* sp. (BOEV 2000), and from the Late Pliocene - Early Pleistocene as *Lullula slivnicensis* BOEV, 2012 (Slivnica, MN 17) and *L. balcanica* BOEV, 2012 (Varshets, MN 18) based on other skeletal types (coracoid, sternum and phalanga alae) (BOEV 1996, 2012).

The recent species *Lullula arborea* (LINNAEUS), 1758 is known from Betfia 2, 9 – Romania (Lower Pleistocene, MQ1) (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979; KESSLER 1975; GÁL 2002) and was reported from the Late Pliocene and the Early Pleistocene (MN 18) in Mallorca (Spain) (SONDAAR et al. 1995).

Genus *Calandrella* KAUP, 1829
Calandrella † *gali* nova sp.
(Plate II. Figure 6 A-D)

Type locality and age: Polgárdi 4, 5; Late Miocene (MN 13).

Holotype: Humerus sin. (Polgárdi 4, MÁFI V.11.65.1; V.29140).

Paratypes: Coracoideum dext. (Polgárdi 4, MÁFI V.11.109.1; V.29184), distal fragment of tibiotarsus dext. (Polgárdi 5, MÁFI V.11.127.1; V.29202).

Measurements: 1. humerus A=21.04 mm; B=5.91 mm; C=6.24 mm; D=4.81 mm; E=1.82 mm; F=5.23 mm; G=2.45 mm; 2. coracoid A=15.75 mm; B=14.68 mm; C=2.19 mm; D= 2.81 mm; E=1.05 mm; G=3.53 mm; 3. tibiotarsus F=2.51 mm; G=2.52 mm.

Comparative material: *Calandrella brachydactyla* (MTM n=1: 1. humerus: A=20.00 mm; C=6.00 mm; E= 1.80 mm; F=4.5 mm; 2. coracoid A=18.08 mm; B=17.27 mm; C=2.46 mm; D= 3.01 mm; E=1.08 mm; G=4.31 mm; 3. tibiotarsus F=2.44 mm); *Alauda arvensis* (MTM n=1: 1. humerus: A=26.4 mm; B=8.45 mm; C=7.67 mm; E=2.26 mm; F=5.91 mm; G=3.08 mm; 2. coracoid A=17.74 mm; D=3.69 mm; E=1.15 mm; F=2.72 mm; G=2,64 mm; 3. tibiotarsus F=2,72 mm G=mm); *Galerida cristata* (MTM n=1: 1. humerus: A=28,08 mm; B=9.71 mm; C=8,24 mm; D=5,79 mm; E=2,45 mm; F=6.09 mm; G=3.24 mm; 2. coracoid A=22,84 mm; D=4,02 mm; E=1.27 mm; tibiotarsus F=3.17 mm; G= G=3.04 mm); *Melanocorypha calandra* (MTM n=1: 1. humerus: A=27.75 mm; C=8,63 mm; E=2,46 mm; F=6.65 mm; 2. tibiotarsus: F=3.71 mm); *Lullula arborea* (MTM n=3: 1. humerus: A=22.00-23.02 mm; B=18.06 mm; C=6.33-6.80 mm; D=5.90 mm; E=2.10-2.28 mm; F=4.60-4.88 mm; G=2.73 mm; 2. coracoid A=18.53 mm; D=3,92 mm; E=1.17 mm; 3. tibiotarsus F=2.64 mm; G=2.48 mm).

Diagnosis: Middle sized species of lark. On coracoid in dorsal view (Fig. 6A), the *acrocoracoid*

(a) has asymmetrical blunted conical shape, blunter than in the recent genus. *Processus accessorius* (b) is short and hook-like with rounded edge, but longer than in recent genera of this family. Edge of *sulcus m. supracoracoidei* (c) has flattened concave shape. *Facies aricularis humeralis* (d) has rounded protruding cranial end. Point of *processus procoracoidei* (e) exceeds the medial edge of corpus.

On proximal epiphysis of humerus in caudal view (Fig. 6B), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and convex, but not too protruding. *Tuberculum ventrale* (c) forms oval-like spur. *Crista bicipitalis* (d) is rounded. *Crus fossae* (e) can be seen, because *fossae pneumotricipitalis* (f) is divided into two parts. On distal epiphysis in cranial view (Fig. 6C), the *epicondylus ventralis* (g) is rounded. *Processus flexorius* (h) is protruding and with rounded end. *Condylus ventralis* (i) has lying oval shape. *Incisura intercondylaris* (j) is in angle hollow. *Condylus dorsalis* (k) is mildly lopsided and oval. *Epicondylus dorsalis* (l) is rounded. *Processus supracondylaris dorsalis* (m) is short, bent and has pointed end.

On tibiotarsus of distal epiphysis in cranial view (Fig. 6D), the *tuberositas retinaculi m. fibularis* (a) is flattened, but more developed than in recent genus. *Sulcus extensorius* (b) is relatively shallow. *Pons supratendineus* (c) is no too wide, lopsided. *Condylus lateralis* (d) is flattened and distally rounded. *Incisura intercondylaris* (e) has concave shape. *Condylus medialis* (f) is distally rounded and regularly oval.

Name: after the Hungarian paleornithologist Erika GÁL.

Description: It corresponds in its characters to recent species, but its size is somewhat differ.

Distribution: The genus was reported only from the Late Pleistocene of Tarchankut, Ukraine with recent species *Calandrella brachydactyla* (LEISLER, 1814), (VOJNSTVENS'KYJ 1967).

Genus *Melanocorypha* BOIE, 1826

Melanocorypha † *minor* nova sp.

(Plate III. Figure 7 A-B)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Humerus sin. (BKA),

Measurements: Humerus A=17,1-17,7 mm, C=4,8-5,5 mm, F=3,9-4,4 mm.

Comparative material: *Melanocorypha calandra* (MTM n=1: humerus: A=27,75 mm; C= 8,63 mm; E=2,46 mm; F=6,65 mm; G=3,28 mm); *Calandrella brachydactyla* (MTM n=1: humerus: A=20,00 mm; C=6,00 mm; E= 1,80 mm; F=4,5 mm); *Alauda arvensis* (MTM n=1: humerus: A=26,4 mm; B=8,45 mm; C=7,67 mm; E=2,26 mm; F=5,91 mm; G=3,08 mm); *Galerida cristata* (MTM n=1: humerus: A=28,08 mm; B=9,71 mm; C=8,24 mm; D=5,79 mm; E=2,45 mm; F=6,09 mm; G=3,24 mm); *Lullula*

arborea (MTM n=3: humerus: A=22,00-23,02 mm; B=18,06 mm; C=6,33-6,80 mm; D=5,90 mm; E=2,10-2,28 mm; F=4,60-4,88 mm; G=2,73 mm;).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 1A), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and convex, but not too outstanding. *Tuberculum ventrale* (c) forms ovale-like spur. *Crista bicipitalis* (d) is strongly protruding and rounded. *Crus fossae* (e) can be seen, because the *fossae pneumotricipitalis* (f) is divided into two parts. On distal epiphysis in cranial view (Fig. 1B), the *tuberculum supracondylare ventrale* (g) is well developed; the *epicondylus ventralis* (h) is flattened. *Processus flexorius* (i) is protruding and wider than in recent species. *Condylus ventralis* (j) has wide lying oval shape. *Incisura intercondylaris* (k) is wide but it is less deeper than in recent species. *Condylus dorsalis* (l) is mildly oblique and oval shaped. *Epicondylus dorsalis* (m) is rounded. *Processus supracondylaris dorsalis* (n) is short, bent and has two unequal branches.

Name: after the small size.

Description: It corresponds to the recent genus, but dimensions are smaller.

Distribution: The genus was reported from Bulgaria: *Melanocorypha serdicensis* BOEV, 2012 (Upper Miocene, Hrabarsko); and *Melanocorypha donchevi* BOEV, 2012; (Upper Pliocene, Varshets), (BOEV 2012). One fossil species of larks have been described from the Pleistocene deposits in Israel: *Melanocorypha gracilis* TCHERNOV, 1968 (TYRBERG 1998).

The other genera were reported from Bulgaria: *Eremarida xerophila* BOEV, 2012 (Upper Miocene, Hrabarsko); *Eremophila prealpestris* BOEV, 2012 (Upper Pliocene, Varshets), (BOEV 1996, 2012). The recent species *Eremophila alpestris* (LINNAEUS, 1758) was described from the Late Pliocene of Mas Ramboult (France) (MOURER-CHAUVIRÉ 1975). Finally, ZELENKOV (2011) reported the *Eremophila* aff. *E. alpestris* in the Late Pliocene (MN 16) of Beregovaya (Bichursky District, Republic of Buryatia, Russia).

Family Hirundinidae VIGORS, 1825

Genus *Hirundo* LINNAEUS, 1758

Hirundo † *gracilis* nova sp.

(Plate III. Figure 8 A-B)

Type locality and age: Polgárdi 4, 5 Late Miocene (MN 13).

Holotype: Ulna sin. with damaged proximal epiphysis (Polgárdi 5, MÁFI V.11.97.1; V.29172).

Paratype: Ulna dext. with damaged proximal epiphysis (Polgárdi 4 (MÁFI V.11.82.1; V.29157).

Measurements: Ulna A= 24-25 mm; E=1.78 mm; F=2.57-2.72 mm; G=2.03-2.06 mm.

Comparative material: *Hirundo rustica* (MTM n=1: A=23.92 mm; C=3.54 mm; E=1.61 mm; F=3.01

mm; G=1.94 mm); *Delichon urbica* (MTM n=1: A=20.80 mm; C=3.32 mm; E=1.47 mm; F=2.68 mm; G=1.94 mm); *Riparia riparia* (MTM n=1: A=20.05 mm; C=3.06 mm; E=1.55 mm; F=2.72 mm; G=1.82 mm);

Diagnosis: Medium sized swallow species. On proximal epiphysis of ulna in cranial view (Fig. 8A), the *cotyla dorsalis* is asymmetrical rounded and *cotyla ventralis* (a) has circular shape. *Tuberculum lig. colateralis ventralis* (b) is strongly protruding. On distal epiphysis in medial view (Fig. 8B), lateral edge of *condylus dorsalis* (c) bends in arch. *Sulcus intercondylaris* (d) is straight, while it draws mildly concave arch in recent genus. *Condylus ventralis* (e) is obliquely conical, more than in recent genus. *Tuberculum carpale* (f) is protruding and semicircular.

Name: Its name refers to the slenderness of bones.

Description: More slender than the recent species.

Hirundo † *major* nova sp.
(Plate III. Figure 9 A-B)

Type locality: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Ulna dext. (distal fragment) (MÁFI V.11.14.1; V.29089/1).

Paratype: Tibiotarsus dext. (distal fragment) (MÁFI V.11.14.2; V.29089/2).

Dimensions: 1. Ulna E=1.86 mm; F=3.18 mm; G=1.97mm; 2. tibiotarsus E=0.89 mm; F=1.97 mm; G=1.81 mm.

Comparative material: *Hirundo rustica* (MTM n=1; 1. ulna: E=1.61 mm; F=3.01 mm; G=1.94 mm; 2. tibiotarsus: E=0.89 mm; F=2.04 mm; G=1.99 mm).

Diagnosis: On distal epiphysis of ulna in medial view (Fig. 9A), the *condylus dorsalis* (c) has hook-like shape, but it is less pointed than in recent species. *Sulcus intercondylaris* (d) is less concave than in recent genus. *Condylus ventralis* (e) is obliquely conical. *Tuberculum carpale* (f) has wide hook-like shape and it is less protruding than in recent species.

On tibiotarsus the distal epiphysis in cranial view (Fig. 9B), the *tuberositas retinaculi m. fibularis* (a) is flattened. The distal end of the *sulcus extensorius* (b) is rounded. *Pons tendineus* (c) is wide and oblique. *Condylus lateralis* (d) has distally rounded conical shape. *Incisura intercondylaris* (e) has strongly concave shape. *Condylus medialis* (f) is distally pointed oval shaped.

Etymology: after its large size.

Description: It corresponds in characteristics with recent genus, but its dimensions are larger. This material was reported as *Hirundo* sp. from Csarnóta 2 by JÁNOSSY (1979a). The fossil species *Hirundo* † *gracilis* KESSLER, 2012 from Polgárdi (Late Miocene, MN 13) is smaller than the Csarnótián specimen. The its *condylus dorsalis* is more rounded and the *incisura intercondylaris* is less concave.

Distribution: The genus is known from the Early Pliocene (MN 15) from Ivanovce I. - Slovakia (Švec,

P. 1985: In: FEJFAR & HEINRICH 1985; MLÍKOVSKÝ 2002). It was described in the Early Pleistocene (MQ1) as recent species *H. rustica* (LINNAEUS, 1758) from Betfia 2 (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979a; KESSLER 1975; Gál 2002); Betfia 9 (Romania), (GÁL 2002); Deutsch-Altenburg 4B, 2C - Austria, (JÁNOSSY 1981; DÖPPES, D & RABEDER, 1997; MLÍKOVSKÝ 1998); Osztramos 8 (Hungary), (JÁNOSSY & KORDOS 1976; JÁNOSSY 1986).

The genus was reported outside the Carpathian Basin with the recent species *Hirundo rustica* LINNAEUS, 1758 from Early Pleistocene (MQ1) in Koneprusy and Stranská skála - Czech Republic (JÁNOSSY 1972; MLÍKOVSKÝ 1996) and from younger sites.

Genus *Delichon* MOORE, 1854
Delichon † *polgardiensis* nova sp.
(Plate III. Figure 10 A-B)

Type locality and age: Polgárdi 5, Late Miocene (MN 13).

Holotype: Coracoideum dext. (MÁFI V.11.94.1; V.29169).

Paratypes: Ulna sin., with damaged proximal epiphysis; 4 distal fragments of ulnae - 3 dext. and one sin. (MÁFI V.11.118.5; V.29193/1-5).

Measurements: 1. coracoid A=16.27 mm, B=15.67 mm; C=3.39 mm, D=2.24 mm, E=1.03 mm; G=3.26 mm; 2. ulna: E=1.69-1.93 mm; F=2.92-3.07 mm; G=2.07-2.27 mm.

Comparative material: *Delichon urbica* (MTM n=1: 1. coracoid A=16,86 mm, B=16,15 mm; C=3,66 mm, D=3,54 mm, E=1,36 mm; G=3,56 mm; 2. ulna E=1,47 mm; F=2,68 mm; G=1,94 mm.

Diagnosis: Medium sized swallow species. On coracoid in dorsal view (Fig. 10A), the *acrocoracoid* (a) is strongly protruding, the end is rounded, the medial end bulges mildly. *Processus accessorius* (b) is short, hook-like and blunted. Edge of *sulcus m. supracoracoidei* (c) forms asymmetrical concave line. *Facies artic. humeralis* (d) is bulged and rounded. Point of *processus procoracoidei* (e) does not exceed medial edge of corpus.

On distal epiphysis of ulna in medial view (Fig. 10B), *condylus dorsalis* (a) is more rounded and claw shaped. *Sulcus intercondylaris* (b) is mildly concave. *Condylus ventralis* (c) is oblique conical. *Tuberculum carpale* (d) is more protruding asymmetrical rectangle shape.

Name: refers to the type locality.

Description: It corresponds in its characters to recent species, but differs in its sizes.

Delichon † *pusillus* nova sp.
(Plate III. Figure 11)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Proximal fragment of carpometacarpus sin. (MÁFI V.11.21.1; V.29096).

Measurements: Carpometacarpus C=2.78 mm.

Comparative material: *Delichon urbica* (MTM n=1; carpometacarpus: C=3.75 mm).

Diagnosis: On proximal epiphysis of carpometacarpus in ventral view (Figure 4), the *trochlea carpalis* (a) has asymmetrically conical and it more bulging than in recent species. *Proc. extensorius* (b) has slightly oblique, rounded beak-like shape. *Processus alularis* (c) has obliquely rectangular shape and the *fovea subalularis* (d) is weakly developed.

Name: The name refer to it smaller size.

Description: It is smaller as the recent species, but in the characteristics mostly corresponds to it.

Delichon † *major* nova sp.
(Plate III. Figure 12)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Carpometacarpus dext. (BKA)

Measurements: Carpometacarpus A=15.59 mm; B=13.42 mm; C=4.21 mm; D=3.27 mm; E=3.74 mm; F=3.56 mm.

Comparative material: *Delichon urbica* (MTM n=1; carpometacarpus A=14.99 mm; B=11.80 mm; C=3.90 mm; D=1.70 mm; E=2.90 mm; F=2.80 mm); the extinct species *Delichon pusillus* (carpometacarpus C=2.78 mm).

Diagnosis: On the proximal epiphysis of carpometacarpus in ventral view (Fig. 11), the *trochlea carpalis* (a) has symmetrically conical shape. *Proc. extensorius* (b) has slightly oblique, asymmetrically beak-like shape. *Processus alularis* (c) has rectangular shape and the *fovea subalularis* (d) is well developed angle shaped. *Protuberantia metacarpalis* (e) has triangular shape. The basis of the *metacarpus majus* (f) is wide and rounded.

Name: Was named after its big dimensions.

Description: It corresponds in characters with recent species, but has larger sizes.

Distribution: The genus is known with recent species only from the Early Pleistocene (MQ1) from the Czech Republic (Stránská skála, MLÍKOVSKÝ 1995); Romania (Betfia 2, ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979a; KESSLER 1975; GÁL 2002 and Betfia 9, GÁL 2002) and Spain (Quibas, MONTOYA et al. 1999).

Genus *Riparia* FORSTER, 1817

Riparia † *minor* nova sp.

(Plate IV. Figure 13 A-C)

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Coracoideum sin. (MÁFI V.11.66.1; V.29141).

Paratypes: Ulna sin., with damaged proximal epiphysis (MÁFI); 3 ulnae dext., distal fragments (MÁFI V.1.83.4; V.29158/1-4).

Measurements: 1. coracoid C=2.28 mm; D=2.69 mm; E=1.56 mm; 2. ulna A=23-24 mm; E=1.60-1.78 mm; F=2.51-2.72 mm; G=1.89-2.08 mm.

Comparative material: *Riparia riparia* (MTM n=1: 1. coracoid: C=2.48 mm; D=3.32 mm; E=1.79 mm; 2. ulna: A=20.05 mm; C=3.06 mm; E=1.55 mm; F=2.72 mm; G=1.82 mm);

Diagnosis: Small sized swallow species. On coracoid in dorsal view (Fig. 12A), the *acrocoracoid* (a) has asymmetrical blunt conical shape, its medial edge bulges strongly. *Processus accesorius* (b) is short, hook-like and blunted. *Sulcus m. supracoracoidei* (c) is asymmetrical concave line. Point of *processus procoracoidei* (d) does not exceed medial edge of corpus. *Facies articularis humeralis* (e) is rounded.

On proximal epiphysis of ulna in cranial view (Fig. 12B), *cotyla ventralis* (a) has circular shape. *Cotyla dorsalis* (b) is angular and asymmetric (but is damaged). *Tuberculum ligamenti colateralis ventralis* (c) is weakly protruding. *Tuberculum bicipitale* (d) and *incisura radialis* (e) are well expressed. *Depressio m. brachialis* (f) is deep. On distal epiphysis of ulna in medial view (Fig. 12C), *condylus dorsalis* (g) has blunted and rounded claw shape. *Sulcus intercondylaris* (h) is slightly concave. *Condylus ventralis* (i) has oblique conical shape. *Tuberculum carpale* (j) is obliquely protruding and rounded.

Name: after its small dimensions.

Description: The coracoid differs from recent species in some morphological characters and in its smaller sizes.

Distribution: The genus is known only from the Early Pleistocene (MQ1) from Czech Republic (Stránská skála, MLÍKOVSKÝ 1995) and Romania (Betfia 9, GÁL 2002) with recent species.

Family Aegithalidae, REICHENBACH 1850

Genus *Aegithalos* HERMANN, 1804

Aegithalos † *gaspariki* nova sp.

(Plate IV. Figure 14 A-B)

Type locality and age: Polgárdi 4, 5, Late Miocene (MN 13).

Holotype: Carpometacarpus dext. (*os metacarpale minus* missing), (Polgárdi 5, MÁFI V.11.90.1; V.29165).

Paratype: Humerus sin. (proximal fragment), (Polgárdi 4, MÁFI V.11.76.1; V.29151).

Measurements: 1. humerus C=4.18 mm; 2. carpometacarpus A=7.93 mm; C=2.43 mm; F=2.15 mm.

Comparative material: *Aegithalos caudatus* (MTM n=1: humerus C=3.78 mm; 2. carpometacarpus A=8.42 mm; C=2.37 mm; F=1.86 mm).

Diagnosis: Larger sized species than recent one. On proximal epiphysis of humerus in caudal view (Fig. 7A), damaged *crista pectoralis* constitutes a mildly bulging line. *Tuberculum dorsale* (a) constitutes weakly developed rounded rectangle. *Caput humeri* (b) has flattened concave shape. *Tuberculum ventrale* (c) is weakly developed. *Crista bicipitalis* (d) constitutes pointed, asymmetric protruding beak shape. *Crus fossae* (e) mildly divides *fossa pneumotricipitalis* (e) into two.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 7B), *trochlea carpalis* (a) has semicircular shape. *Proc. extensorius* (b) has short and truncated conical shape. *Processus alularis* (c) has rounded rectangular shape and *fovea subalaris* (d) has weakly developed acute angle shape. *Protuberantia metacarpalis* (e) is in the external edge of *os metacarpale majus* and forms small and triangular bulge.

Name: After the name of Mihály GASPARIK, Hungarian paleontologist.

Description: It corresponds more in characters and sizes to recent species of the genus.

Aegithalos † *congruis* nova sp.
(Plate IV. Figure 15 A-B)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Tibiotarsus dext. (distal fragment), (MÁFI V.11.15.1; V.29090).

Paratype Coracoid dext. (proximal fragment), (MÁFI V.11.46.1; V.29121).

Measurements: 1. Coracoid C=1,88 mm; D=1.65 mm; 2. tibiotarsus F=1.76 mm; G=1.51 mm.

Comparative material: *Aegithalos caudatus* (MTM n=1; 1. coracoid: C=1.93 mm; D=1.48 mm; 2. tibiotarsus: F=1.92 mm; G=1.72 mm).

Diagnosis: On cranial part of coracoid (Figure 5A), the *processus acrocoracoidalis* (a) is rounded and strongly protruding. *Processus accesorius* (b) has short and pointed hook-shape. The lateral edge of *facies articularis humeralis* (c) is oblique and strongly bulged. The edge of *sulcus musculi supracoracoidei* (d) is arched. *Processus procoracoidealis* (e) is blunt pointed and it weakly exceeds the medial edge of bones.

On tibiotarsus the distal epiphysis in cranial view (Figure 5B), the *tuberositas retinaculi m. fibularis* (a) is weakly developed and blunted. *Sulcus extensorius* (b) is oblique and has asymmetrical distal end. *Pons supratendinous* (c) is wide and oblique. *Condylus lateralis* (d) has slightly pointed oval shape. *Incisura intercondylaris* (e) has straight and wavy line. *Condylus medialis* (f) has slightly pointed oval-like shape. The its lateral edge is bulged.

Name: The name refer to lat. *congruis*=agreement, corresponding.

Description: It mostly corresponds with recent species in the characters and sizes.

Distribution: The family and genus is known in fossil material with recent species *Aegithalos caudatus* (LINNAEUS, 1758) from the Early Pleistocene (MQ1) from Betfia 2– Romania (ČAPEK 1917) and S'Onix-Mallorca – Spain (SONDAAR et al. 1995).

Fam. Paridae BOIE, 1826
Genus *Parus* LINNAEUS, 1758
Parus † *robustus* nova sp.
(Plate IV. Figure 16 A-D)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Other locality: Beremened 26, Pliocene (MN 15-16).

Holotype: Ulna sin. (distal fragment), (Csarnóta 2, MÁFI V.11.16.1; V.29091).

Paratypes: Carpometacarpus dext. and sin. (proximal fragments), (Csarnóta 2, MÁFI V.11.47.2; V.29122); Humerus dext., distal fragment of humerus dext. (Beremened 26, BKA).

Measurements: 1. humerus A=18,16 mm; B=6,27 mm; C=6,01 mm; D=5,03 mm; E=1,75mm; F= 5,00-5,06 mm; G=2,45-2,53 mm; 2. ulna E=1.23 mm; F=2.45 mm; G=1.75 mm; 3. carpometacarpus C=2.43-2.77 mm.

Comparative material: *Parus major* (MTM n=1; 1. ulna: E=1.13 mm; F=1.94 mm; G=1.49 mm, 2. carpometacarpus: C=2.24 mm), *P. palustris* (MTM n=1; 1. humerus A=13,95 mm; B= 4,87 mm; C=4,49 mm; D=4,04 mm; E=1,26 mm; F=3,74 mm; G=1,72 mm; 2. carpometacarpus: C=2.31 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 16A), *crista pectoralis* form rounded contour and the *tuberculum dorsale* (a) has rounded rectangle shape. *Caput humeri* (b) has wide and slightly convex shape. *Tuberculum ventrale* (c) forms protruding circular spur. *Crista bicipitalis* (d) has protruding and rounded shape. *Crus fossae* (e) is less developed, the *fossa pneumotricipitalis* (f) is not divided into two part. On distal epiphysis in cranial view (Fig. 16B), the *tuberculum supracondylare ventrale* (g) is less developed. *Epicondylus ventralis* (h) is flatten. *Processus flexorius* (i) is strongly protruding and rounded. *Condylus ventralis* (j) has lying oval shape. *Incisura intercondylaris* (k) is wide and has angle shape. *Condylus dorsalis* (l) is crooked oval shaped. *Epicondylus dorsalis* (m) is rounded. *Processus supracondylaris dorsalis* (n) is long, bent and has two unequal branches.

On distal epiphysis of ulna in medial view (Fig. 16C), the *condylus dorsalis* (c) has wide and blunted claw-like shape. *Sulcus intercondylaris* (d) is less concave than in recent genus. *Condylus ventralis* (e) has strongly rounded and obliquely blunted conical shape. *Tuberculum carpalis* (f) has asymmetrical

blunted conical shape, but it is narrower than in recent species.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 16D), the *trochlea carpalis* (a) has bulging blunted conical shape. *Proc. extensorius* (b) has short, rounded and straight beak-like shape. *Processus alularis* (c) forms slightly obliquely and rounded rectangular shape and the *fovea subalularis* (d) has wide acute angle shape.

Name: Was named after its large dimensions.

Description: It is fossil species with larger dimensions than recent *Parus major*.

Parus † *parvulus* nova sp.
(Plate V. Figure 17)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Cranial fragment of coracoideum sin. (MÁFI V.11.17.1; V.29092).

Measurements: Coracoid C=2.17 mm; D=1.68 mm.

Comparative material: *Parus ater* (MTM n=1; coracoid: C=2.23 mm D=2.49 mm), *P. coeruleus* (MTM n=1; coracoid: C= 2.19 mm; D=2.50 mm).

Diagnosis: On coracoid in medial view (Figure 7), the *acrocoracoid* (a) has conical shape. *Processus accessorius* (b) is hook-like. *Sulcus m. supracoracoidei* (c) has semicircular shape. The point of *processus procoracoidei* (d) is blunted and just exceed the medial edge of the corpus.

Name: The name refers to its sizes.

Description: It is small Tit species. The end of the *processus accessorius* is damaged, but this does not hinder the identification.

Parus † *medius* nova sp.
(Plate V. Figure 18 A-B)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Humerus dext. (BKA).

Paratype: Distal fragment of humerus dext. (BKA).

Measurements: Humerus A=14,92 mm; B=5,93 mm; C=4,71 mm; D=3,61 mm; E=1,31-1,44 mm; F=3,57-3,79 mm; G=1,98-2,04 mm.

Comparative material: *Parus coeruleus* (MTM n=1 humerus A=14,33 mm; B=5,80 mm; C=4,91 mm; D=3,95 mm; E=1,33 mm; F=4,17 mm; G=1,87 mm); *Parus palustris* (MTM n=1: humerus A=13,95 mm; B=4,87 mm; C=4,49 mm; D=4,04 mm; E=1,26 mm; F=3,74 mm; G=1,72 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 18A), *crista pectoralis* forms rounded contour and the *tuberculum dorsale* (a) has rounded rectangle shape. The *caput humeri* (b) is wide and slightly convex. *Tuberculum ventrale* (c) forms protruding circular spur. *Crista bicipitalis* (d)

has protruding and pointed shape. *Crus fossae* is less developed, the *fossae pneumotricipitalis* (e) is not divided into two part. On distal epiphysis in cranial view (Fig. 6B), the *tuberculum supracondylare ventrale* (f) is less developed; the *epicondylus ventralis* (g) is less rounded. *Processus flexorius* (h) is strongly protruding and rounded. *Condylus ventralis* (i) has lying oval shape. *Incisura intercondylaris* (j) is wide and has angle shape. *Condylus dorsalis* (k) is crooked oval shaped. *Epicondylus dorsalis* (l) is rounded. *Processus supracondylaris dorsalis* (m) has two unequal branches.

Name: Was named after its medium size dimensions.

Description: It is among the medium-sized tits.

Distribution: The genus is known only from Lower Pliocene in the Carpathian Basin as *Parus* sp. foss.indet. from Beremend 26 - Hungary (MN 15) (KESSLER 2010) The recent species was reported in Early Pleistocene (MQ1-2) as *Parus coeruleus* LINNAEUS, 1758 from Betfia 9 -Romania (GÁL 2002); as *Parus major* LINNAEUS, 1758 from Betfia 2, 9-Romania (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979a; KESSLER 1975; GÁL 2002); Chişinău 2. - România (KESSLER 1982; JURCSÁK & KESSLER 1988; GÁL 2002); as *Parus lugubris* TEMMINCK, 1820 from Betfia 2 -Romania (GÁL 1917).

The family is known outside the Carpathian Basin only from the Late Pliocene from Varsets (MN 17, Bulgaria) as *Parus* sp. (BOEV 1987b, 2000a); Stránská skalá (MQ1, Czechia) as *Parus major* LINNAEUS, 1758 (JÁNOSSY 1972); *Parus cristatus* C. L. BREHM, 1839; *P. ater* LINNAEUS, 1758 and *P. major* LINNAEUS, 1758 (SOONAR et al. 1995) (MONTROYA et al. 1999, 2001) and Tarchankut (MQ1, Ukraine) as *Parus major* LINNAEUS, 1758 (VOJINSTVENS'KYJ 1967).

Family Sittidae (BONAPARTE, 1831)

Genus *Sitta* LINNAEUS, 1758

Sitta † *gracilis* nova sp.
(Plate V. Figure 19)

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Carpometacarpus sin. (proximal fragment), (MÁFI V.11.60.1; V.29135).

Measurements: Carpometacarpus C=2.82 mm, D=1.42 mm.

Comparative material: *Sitta europaea* (MTM n=1: C=3.21 mm; D=1.57 mm).

Diagnosis: Small-sized slider species. On proximal epiphysis of carpometacarpus in ventral view (Fig.19), *trochlea carpalis* (a) has strongly protruding semicircular shape. *Proc. extensorius* (b) is short and asymmetrically rounded. *Processus alularis* (c) is undeveloped and has asymmetric and pointed cone shape. *Fovea subalularis* (d) has acute angled pit.

Name: The name was given after its slenderness.

Description: Its size is smaller than in recent species.

Sitta † *pusilla* nova sp.
(Plate V. Figure 20 A-B)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16), (KESSLER, 2010a).

Holotype: Carpometacarpus dext. (proximal fragment), (MÁFI V.11.34.1; V.29109).

Paratypes: Carpometacarpus dext. (proximal fragment), 2 tarsometatarsi sin. (distal fragments) (MÁFI V.11.53.3; V.29128).

Measurements: 1. carpometacarpus C= 2.22-2.39 mm; 2. tarsometatarsus E=0.99-1.26 mm; F=1.92-2.11 mm; G=1.22-1.57 mm.

Comparative material: *Sitta europaea* (MTM n=1; 1. carpometacarpus: C=2.99 mm; 2. tarsometatarsus: E=1.11 mm; F=2.15 mm; G=1.46 mm).

Diagnosis: The characteristics corresponds with recent species, but the sizes differ more in carpometacarpus and less in tarsometatarsus.

On proximal epiphysis of carpometacarpus in ventral view (Figure 20A), the *trochlea carpalis* (a) has strongly protruding semicircular shape. *Proc. extensorius* (b) is straight and with rounded end. *Processus alularis* (c) has rounded conical shape. *Fovea subalularis* (d) has acute-angled pit shape.

On distal epiphysis in dorsal view of tarsometatarsus (Figure 20B), the *trochlea metatarsi* II. (a) has laterally protruding, pointed and claw-like shape. *Incisura intertrochlearis medialis* (b) is wider and deep. *Trochlea metatarsi tertii* (c) is wide and in middle it significantly immersed. *Incisura intertrochlearis lateralis* (d) is deep and wide. *Trochlea metatarsi* IV. (e) has blunt conical shape.

Name: The name refers to very small sizes of the species.

Description: The dimensions of fossil species is smaller than of recent species. The *Sitta gracilis* from Polgárdi was described also on the basis of carpometacarpus. It is larger than the Csarnótian specimen (carpometacarpus C=2.82 mm, D=1.42 mm) and differ to it in shape of the *processus extensorius*. The Polgárdi specimen is shorter than in the Csarnótian remains. The *processus alularis* is more pointed. The characteristics corresponds in generally to recent species. JÁNOSSY (1995) reported this bones as *Sitta* sp.

Sitta † *villanyensis* KESSLER, 2012
(Plate V. Figure 21)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Carpometacarpus dext. (BKA).

Measurements: Carpometacarpus A=12,41 mm; B=11,13 mm; C=3,71 mm; E=3,32 mm; F=2,89 mm.

Comparative material: *Sitta europaea* (MTM n=1: A=12,61 mm; B=10,90 mm; C=3,64 mm; E=3,43 mm; F= 2,69 mm).

Diagnosis: A small sized slider species. On proximal epiphysis of carpometacarpus in ventral view (Fig. 21), the *trochlea carpalis* (a) has blunt conical shape. *Proc. extensorius* (b) has asymmetrically conical shape. *Processus alularis* (c) is rounded rectangle shaped. *Fovea subalularis* (d) has acute angled pit. *Protuberantia metacarpalis* (e) is undeveloped, wide and flattened. The basis of the *facies articularis digiti major* (f) is asymmetrically angle shaped. The end of *os metacarpi minus* (g) is beveled.

Name: Was named after the Villány Hill.

Description: It corresponds in characters and size with recent species and differ in these to extinct species from Polgárdi and Csarnóta, which are much smaller.

Distribution: The family and genus were reported from the Carpathian Basin as Sittidae gen et sp. foss. indet. from Subpiatra 2 – Romania (Middle Miocene, MN 6) (KESSLER & VENCZEL 2009). The recent species is known from the Early Pleistocene (MQ1-2) as *Sitta europea* LINNAEUS, 1758 from Betfia 9 - Romania (GÁL 2002); Deutsch-Altenburg 4B – Austria (JÁNOSSY 1981) and from Somssich-Hill 2 – Hungary (JÁNOSSY 1979a, 1980).

The genus is known outside the Carpathian Basin only from the Early Pliocene (MN 16) from Rebielice Królowskie I. (Poland) as *Sitta* sp. (also with smaller sizes) (JÁNOSSY 1974) and from the Late Pliocene from Varsets (MN 17, Bulgaria) (BOEV 1996, 2000). The fossil species *Sitta senogalliensis* PORTIS, 1887 from Senigallia (Upper Miocene, MN 13, Italy) was put by MLÍKOVSKÝ (2002) into „*Family incertae sedis*”.

Family Certhiidae (VIGORS, 1825).

Genus *Certhia* LINNAEUS, 1758

Certhia † *immensa* nova sp.

(Plate V. Figure 22 A-C)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Coracoideum dext. (cranial fragment), (MÁFI V.11.22.1; V.29097).

Paratypes: One right and one left side carpometacarpus (proximal fragments); tarsometatarsus sin. (distal fragment), (MÁFI V.11.42.3; V.29117).

Measurements: 1. coracoid: C=2.62 mm; D=2.16 mm; 2. carpometacarpus C=2.47-2.52 mm; 3. tarsometatarsus E=1.03 mm, F=1.84 mm.

Comparative material: *Certhia brachydactyla* (MTM n=1; 1. coracoid: C=2.14 mm; D=1.36 mm; 2.

carpometacarpus: C=2.15 mm; 3. tarsometatarsus: E=0.76 mm, F=1.56 mm).

Diagnosis: On medial side of coracoid (Figure 22A) in cranial end, the *acrocoracoideum* (a) has asymmetrical rounded cone shape. Its medial edge bulges mildly. The end of *processus accessorius* (b) is damaged, but it is elongated hook-like. The edge of *sulcus m. supracoracoidei* (c) is mildly flattened concave shape. *Facies articularis humeralis* (d) has cranial edge strongly bulges. The point of *processus procoracoidei* (e) exceeds the medial edge of corpus.

On proximal epiphysis of carpometacarpus in ventral view (Figure 22B), the *trochlea carpalis* (a) is asymmetrically bulging. *Proc. extensorius* (b) is obliquely blunted conical shaped with rounded end. *Processus alularis* (c) is small, protruding and has asymmetrical conical shape. *Fovea subalularis* (d) has asymmetrical truncated conical shape.

On distal epiphysis of tarsometatarsus in dorsal view (Figure 9C), the edge (a) between *fossa metatarsi I.* and *trochlea metatarsi II.* is weakly waved. *Trochlea metatarsi II.* (b) has truncated conical shape. *Incisura intertrochlearis medialis* (b) is mildly wide and deep. *Trochlea metatarsi III.* (c) is wide, and its end is strongly and wide concave. *Incisura intertrochlearis lateralis* (d) is wide and deep. *Trochlea metatarsi IV.* (e) has rounded blunt conical shape.

Name: The name refer to larger dimensions of species.

Description: The sizes are larger than in recent species.

Distribution: The family and genus was reported with fossil species only from the Carpathian Basin. *Certhiidae* gen. et sp. foss.indet. was reported from Subpiatra 2. – Romania (Middle Miocene, MN6), (KESSLER & VENCZEL 2009) and *Certhia janossyi* KESSLER et HÍR, 2012 from Rudabánya (Upper Miocene, MN 9) (KESSLER & HÍR 2012b). The recent species was reported from Betfia 2-Romania (Lower Pleistocene MQ1) (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979a; KESSLER 1975; GÁL 2002).

Family Tichodromidae SWAINSON, 1827

Genus *Tichodroma* ILLIGER, 1811

Tichodroma †*capeki* nova sp.

(Plate VI. Figure 23 A-B)

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Humerus dext. (proximal fragment), (MÁFI V.11.68.1; V29143).

Measurements: Humerus B=5.04 mm; C=5.13 mm; D=4.91 mm; E=1.89 mm.

Comparative material: *Tichodroma muraria* (MTM n=1: B=5.66 mm; C=5.67 mm; D=5.26 mm; E=1.93 mm).

Diagnosis: Fossil species, smaller than recent one. On proximal epiphysis of humerus in cranial view (Fig. 23A), *caput humeri* (a) is convex, but not too protruding. *Tuberculum dorsale* (b) is less rounded up than in recent genus. *Sulcus lig. transversus* (c) is more wide and deep than in recent species. *Crista bicipitalis* (d) is protruding in a point similarly to, but more blunted than in recent species, distal edge is similarly concave. In caudal view (Fig. 23B), *tuberculum ventrale* (e) is well developed and rounded. *Crus fossae* (f) is weakly developed and the two parts of *fossa pneumotricipitalis* (g) can be separated with difficulty.

Name: After the name of Waclav ČAPEK, Czech paleornithologist.

Description: Its characters correspond to recent species.

Distribution: The family and genus are not known in other fossil materials.

Family Muscicapidae VIGORS, 1825

Genus *Muscicapa* LINNAEUS, 1766

Muscicapa †*miklosi* nova sp.

(Plate VI. Figure 24).

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Femur sin. (distal fragment), (MÁFI V.11.67.1; V.29142).

Measurements: Femur E=1.28 mm; F=2.51 mm; G=1.98 mm.

Comparative material: *Muscicapa albicollis* (MTM n=1: E=0.95 mm; F=2.05 mm; G=1.59 mm); *M. hypoleuca* (MTM n=1: F=2.46 mm); *M. parva* (MTM n=1: E=0.94 mm; F=2.01 mm; G=1.79 mm); *M. striata* (MTM n=1: E=1.24 mm; F=2.37 mm; G=2.09 mm).

Diagnosis: Small flycatcher species. On distal epiphysis of femur in caudal view (Fig. 24), *trochlea fibularis* (a) is slightly pointed in contrast with recent species. Distal end of *condylus lateralis* (b) constitutes an arc. *Incisura intercondylaris* (c) is concave-like, but less than in recent genus. *Condylus medialis* (d) is oblique, but more pointed than in recent genus. *Epicondylus medialis* (e) and *epicondylus lateralis* are rounded, but weakly developed.

Name: After the name of Miklós KRETZOI, Hungarian paleornithologist.

Description: It corresponds in characteristics and sizes to recent species of the genus. The fossil species *Muscicapa leganyii* KESSLER et HÍR, 2012 from the Middle Miocene (MN 7/8) of Felsőtárkány-Felnémet 2/3 (KESSLER & HÍR 2012) was identified based on the coracoid. This bone also corresponds in characteristics and sizes to recent species, but its age is older than Polgárdi specimen.

Muscicapa † *petényii* nova sp.
(Plate VI. Figure 25)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Carpometacarpus dext. (BKA).

Measurements: Carpometacarpus A=11,29 mm; F=2,79 mm.

Comparative material: *Muscicapa striata* (MTM n=1: carpometacarpus A=11,84 mm; F=2,06 mm); *Muscicapa parva* ((MTM n=1: carpometacarpus A=10,09 mm; F=1,96 mm); *Ficedula albicollis* (MTM n=1: carpometacarpus A=11,49 mm; F=2,33 mm).

Diagnosis: On proximal epiphysis of carpometacarpus in ventral view (Fig. 9), the *trochlea carpalis* (a) is symmetrical bulging, with rounded and conical shape. *Processus alularis* (b) has rounded rectangle shape. *Fovea subalularis* (c) has acute angled pit. *Protuberantia metacarpalis* (d) is well developed, wide and pointed. The basis of *facies articularis digiti major* (e) is symmetrically angle shaped. The end of *os metacarpi minus* (g) is beveled.

Name: Was named after Hungarian paleontologist Salamon János PETÉNYI.

Description: It corresponds in characters and in dimensions to recent species of *Muscicapa* (*Ficedula*) genus. The missing *processus extensorius* does not prevent the identification. The extinct species known from the Carpathian Basin differ in age to Beremendian specimen, and were described from other type of bones.

Distribution: The genus was reported as *Muscicapa leganyii* KESSLER et HÍR, 2012 from the Middle Miocene (MN 7/8) of Felsőtárkány-Felnémet 2/3 (KESSLER & HÍR 2012) and the Late Pliocene – Early Pleistocene boundary (MN 17-18) from S'Onix - Mallorca (Spain) as *Muscicapa striata* (PALLAS, 1764), (SONDAAR et al. 1995); from Varshets (Bulgaria) as *Muscicapa* sp. (BOEV 1996, 2000); from Mas Ramboult (France) as *Ficedula hypoleuca* (PALLAS, 1764), (MOURER-CHAUVIRÉ 1975) and as *Ficedula* sp. from Montoussé (France) (CLOT et al. 1976).

Genus *Luscinia* FORSTER, 1817

Luscinia † *denesi* nova sp.

(Plate VI. Figure 26)

Type locality and age: Polgárdi 4, Late Miocene (MN 13)

Holotype: Humerus dext. (distal fragment), (MÁFI V.11.72.1; V.29147).

Measurements: Humerus E=1.52 mm; F=3.92 mm; G=2.23 mm.

Comparative material: *Luscinia luscinia* (MTM n=1: E=1.68 mm; F=4.26 mm; G=2.29 mm); *L. megarhynchos* (MTM n=1: E=1.59 mm; F=4.05 mm; G=2.39 mm); *L. svecica* (MTM n=1: E=1.55 mm; F=4.04 mm; G=2.16 mm).

Diagnosis: Smaller species than recent species of the genus. In cranial view (Fig.11) of distal epiphysis of humerus, the *tuberculum ventrale* is undeveloped; *epicondylus ventralis* (a) is well developed but is protruding more strongly than in recent genus. *Processus flexorius* (b) is wide, rounded and less protruding than in recent genus. *Condylus ventralis* (c) has stretched oval shape. *Incisura intercondylaris* (d) has deep and pointed pit. *Condylus dorsalis* (e) has mildly bent oval shape. *Epicondylus dorsalis* (f) is rounded. *Proc. supracondylaris dorsalis* (g) is averagely long, widening between it and diaphysis is deeper and wider than in recent genus.

Name: After the name of Dénes JÁNOSSY, Hungarian paleornithologist.

Description: It corresponds in characters to the recent genus. The fossil species *Luscinia praeluscinia* KESSLER ET HÍR, 2012 from the Early Miocene (MN5) from Litke 2 (North Hungary) was identified based on the coracoid, so there is no basis of comparison. The fossil species *Luscinia jurcsáki* KESSLER et VENCZEL, 2011 from Subpiatra (Middle Miocene, MN 6, Romania) was identified also on the basis of its humerus, and differs from the Polgárdi specimen in characters of *epicondylus lateralis* (the *tuberculum supracondylare ventrale* is not protruding, the *processus flexorius* is much wider and protruding), therefore it is somewhat larger. The Polgárdi specimen has intermediate size between recent species *Luscinia luscinia* (LINNAEUS, 1758) and *L. megarhynchos* C. L. BREHM, 1831. This material was described as *Luscinia* sp. by JÁNOSSY (1992, 1995) and KESSLER (2010).

Luscinia † *pliocaenica* nova sp.
(Plate VI. Figure 27 A-B)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Distal fragment of humerus dext. (BKA).

Paratype: Carpometacarpus sin. (damaged) (BKA).

Measurements: 1, humerus E=1,75 mm; F=4,32 mm; G=2,29 mm; 2. carpometacarpus A=14,92 mm; E=2,75 mm; F=3,14 mm.

Comparative material: *Luscinia megarhynchos* (MTM n=1: humerus E=1,61 mm; F=4,31 mm; G=2,25 mm; carpometacarpus A=12,51 mm; E=3,00 mm; F=3,18 mm); *Luscinia luscinia* (MTM n=1: humerus E=1,59 mm; F=4,26 mm; G=mm; carpometacarpus A=24,02 mm; E=3,89 mm; F=4,85 mm).

Diagnosis: On distal epiphysis in cranial view of humerus (Fig. 27A), the *tuberculum ventrale* (a) is well developed; the *epicondylus ventralis* (b) is rounded. *Processus flexorius* (c) is rounded and less protruding. *Condylus ventralis* (d) is strongly bulged. *Incisura intercondylaris* (e) has deep and wide pit shape. *Condylus dorsalis* (f) has mildly bent oval

shape. *Epicondylus dorsalis* (g) is rounded. *Proc. supracondylaris dorsalis* (h) is short but probable it is damaged.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 27B), the *trochlea carpalis* (a) is symmetrical bulging. *Fovea subalularis* (b) is wide and less concave shaped. *Protuberantia metacarpalis* (c) is well developed and pointed. The end of *os metacarpalis minus* (d) is asymmetrically rounded.

Name: Was named after the age of the sites.

Description: The characters of carpometacarpus corresponds to recent genus despite its damages, however, it has largest dimensions than in recent species.

Distribution: The genus is known for extinct species from Litke 2 - Hungary (Lower Miocene, MN5) as *Luscinia* † *praeluscinia* KESSLER et HÍR, 2012 (KESSLER & HÍR 2012); from Subpiatra - Romania (Middle Miocene, MN6) as *Luscinia* † *jurcsaki* KESSLER et VENCZEL, 2011 (KESSLER & VENCZEL 2011). The recent species are known from the Pleistocene as *Luscinia luscinia* (LINNAEUS, 1758) from Betfia 9 (Q1, GÁL 2002); as *Luscinia megarhynchos* C. L. BREHM, 1831 from Betfia 9 (Q1, GÁL 2002); as *Luscinia svecica* (LINNAEUS, 1758) from Hundsheim (Q3, MLÍKOVSKÝ 2009), etc.

The genus was reported outside the Carpathian Basin as *Luscinia svecica* (LINNAEUS, 1758) by JÁNOSSY from Rebielice I. (Upper Pliocene, Poland), (JÁNOSSY 1974) and from Stránská skála (MQ1, Czechia), (JÁNOSSY 1972).

Genus *Erithacus* CUVIER, 1801

Erithacus † *minor* nova sp.

(Plate VI. Figure 28 A-B)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Carpometacarpus dext. (BKA).

Paratypes: Two fragment distal of humeri (dext. and sin.) (BKA).

Measurements: 1. humerus E=1,43-1,55 mm; F=3,55-3,77 mm; G=1,84-1,85 mm; 2. carpometacarpus A=8,98 mm; C=2,54 mm; E=2,17 mm; F=2,36 mm.

Comparative material: *Erithacus rubecola* (MTM n= 1: humerus E=1,53 mm; F=3,88 mm; G=1,97 mm; 2. carpometacarpus A=10,27 mm; C=2,71 mm, E=2,35 mm; F=2,45 mm).

Diagnosis: On distal epiphysis in cranial view of humerus (Fig. 28A), the *tuberculum ventrale* (a) is well developed; the *epicondylus ventralis* (b) is well developed and rounded. *Processus flexorius* (c) is wide, rounded and less protruding than in recent genus. *Condylus ventralis* (d) is strongly bulged. *Incisura intercondylaris* (e) has deep and wide pit shape. *Condylus dorsalis* (f) has mildly bent oval shape. *Epicondylus dorsalis* (g) is rounded. *Proc.*

supracondylaris dorsalis (h) is long and has two small branches.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 28B), the *trochlea carpalis* (a) is symmetrical bulging, with rounded and conical shape. *Processus extensorius* (b) is asymmetrically oblique conical shaped. *Processus alularis* (c) is less developed. *Fovea subalularis* (d) has deep and triangular shape. *Protuberantia metacarpalis* (e) is small but well developed and pointed. The basis of *facies articularis digiti major* (f) is straight. The end of *os metacarpalis minus* (g) is asymmetrically rounded.

Name: The name refers to its sizes.

Description: It corresponds in characters to recent species, but it is smaller.

Distribution: The extinct species *Erithacus* † *horusitskyi* KESSLER et HÍR, 2012 is known from Mátraszőlös 1., (Middle Miocene, MN 7/8) (KESSLER & HÍR 2012). As *Erithacus* sp. was reported from Beremend 17 (Q1- Lower Pleistocene) (JÁNOSSY 1992, 1995). Recent species *Erithacus rubecola* was reported from Betfia 2, 9 - Q1 (KORMOS 1913, ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979; KESSLER 1975; GÁL 2002); Q3/I: Hundsheim (MLÍKOVSKÝ 2009); Q4/I: Velika Pecina (M. MALEZ 1975; V. MALEZ 1984, 1988); and from the Early Pleistocene of Spain and from the Middle Pleistocene of England, France, Israel and Italy (TYRBERG 1998).

Genus *Phoenicurus* FORSTER, 1817

Phoenicurus † *erikai* nova sp.

(Plate VII. Figure 29).

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Ulna dext. (distal fragment) (MÁFI V.11.25.1; V.29100).

Measurements: Ulna F=2.43 mm; G=1.55 mm.

Comparative material: *Phoenicurus ochrurus* (MTM n=1; ulna: F=2.53 mm; G=1.61 mm); *Phoenicurus phoenicurus* (MTM n=1; ulna: F=2.77 mm; G=1.85 mm).

Diagnosis: On distal epiphysis in medial view (Fig. 29), *condylus dorsalis* (a) has wide and blunt claw shape. *Sulcus intercondylaris* (b) is slightly concave. *Condylus ventralis* (c) has semicircular shape. *Tuberculum carpale* (d) has asymmetrical, blunt conical shape.

Name: named after Hungarian paleornithologist Erika GÁL.

Description: It corresponds in characteristics to recent genus, but it resemble in sizes with smaller recent species.

Phoenicurus † *baranensis* nova sp.
(Plate VII. Figure 30)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Humerus dext. with damaged proximal epiphysis (BKA).

Paratypes: Distal fragments of the right and left side humerus (BKA).

Measurements: Humerus A=18,08 mm; B=6,86 mm; E=1,71-1,78 mm; F=4,73-5,05 mm; G=2,50-2,59 mm.

Comparative material: *Phoenicurus ochrurus* (MTM n=1: humerus A=15,29 mm; B=5,17 mm; E=1,47 mm; F=4,23 mm; G=2,09 mm); *Phoenicurus phoenicurus* (MTM n=1: humerus A=17,40 mm; B=5,86 mm; E=1,60 mm; F=4,54 mm; G=2,17 mm);

Diagnosis: On distal epiphysis of humerus in cranial view (Fig. 30), the *tuberculum supracondylare ventrale* (a) is well developed. *Epicondylus ventralis* (b) is asymmetrically rounded. *Processus flexorius* (c) is protruding and has rounded end. *Condylus ventralis* (d) has oval shape. *Incisura intercondylaris* (e) has wide acute angle shape. *Condylus dorsalis* (f) has bented oval shape. *Epicondylus dorsalis* (g) is rounded. *Proc. supracondylaris dorsalis* (h) is wide and has two unequal branches.

Name: refers to name of Baranya County.

Description: Its characteristics corresponds to recent genus, but has alargest dimensions.

Distribution: The genus was reported only from Quibas – Spain (Lower Pleistocene, Q1) (MONTROYA et al. 1999) and the recent species from some localities from the Middle and the Late Pleistocene in Europa (TYRBERG 1998).

Genus *Monticola* Boie, 1822
Monticola † *pongraczi* nova sp.
(Plate VII. Figure 31)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Distal fragment of humerus sin. (BKA)

Measurements: Humerus F=6,35 mm; G=3,08 mm.

Comparative material: *Monticola saxatilis* (MTM n=1: humerus F=6,36 mm; G=3,36 mm).

Diagnosis: On distal epiphysis of humerus in cranial view (Fig. 31), the *tuberculum supracondylare ventrale* (a) is well developed. *Epicondylus ventralis* (b) is strongly rounded. *Processus flexorius* (c) is protruding and has rounded end. *Condylus ventralis* (d) has oval shape. *Incisura intercondylaris* (e) has wide acute angle shape. *Condylus dorsalis* (f) has bented oval shape. *Epicondylus dorsalis* (g) is rounded. *Proc. supracondylaris dorsalis* (h) is long and has two small branches.

Name: Was named after the name of László PONGRÁCZ who created the „Beszélő Kövek” Foundation.

Description: It corresponds mostly in characteristics and size to recent species.

Distribution: The genus is known only the Middle and the Late Pleistocene to recent species from Cyprus, France, Italy and Romania (TYRBERG 1998).

Genus *Saxicola* BECHSTEIN, 1892
Saxicola † *lambrechtii* nova sp.
(Plate VII. Figure 32 A-D)

Type locality and age: Polgárdi 4, 5; Late Miocene (MN 13).

Holotype: Humerus sin. (Polgárdi 5, MÁFI V.11.106.1; V.29181).

Paratypes: Three humeri sin. (2 proximal fragments) (Polgárdi 4,5); ulna sin. (proximal fragment), (Polgárdi 4) (MÁFI V.11.110.3, V.11.128.2); tibiotarsus sin. (distal fragment), (Polgárdi 5) (MÁFI V.29185).

Measurements: 1. humerus A=16.41-17.07 mm; B=3.93 mm; C=4.99-5.51 mm; E=1.65 mm; F=4.21 mm; G=2.37 mm; 2. ulna B=2.67 mm; C=2.88 mm; F=2.41 mm; G=1.56mm; 3. tibiotarsus F=2.49 mm; G=2.43 mm.

Comparative material: *Saxicola rubetra* (MTM N=1: humerus A=16.42 mm; C=4.36 mm; E=1.44 mm; F=4.04 mm; ulna B=2.45 mm; C=2.64 mm; tibiotarsus F=2.37 mm; G=2.09 mm); *S. torquata* (MTM N=1: humerus A=15.45 mm; B=3.93 mm; C=4.99-5.51 mm; E=1.54-1.66 mm; F=3.73-3.88 mm; G=2.17-2.58 mm; ulna B=2.38 mm; C=2.60 mm; E=1.25 mm; F=2.30 mm; G=1.70 mm; tibiotarsus F=2.24 mm).

Diagnosis: Fossil species, that corresponds in size to recent species of genus. On proximal epiphysis of humerus in caudal view (Fig. 32A), *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide, flat and hardly bulging. *Tuberculum ventrale* (c) is well developed and has circular shape. *Crista bicipitalis* (d) is asymmetrical rounded and protruding. *Crus fossae* (e) is well developed and *fossae pneumotricipitalis* (f) is divided into two parts. On distal epiphysis in cranial view (Fig. 32B), *tuberculum supracondylare ventrale* (g) is developed. *Epicondylus ventralis* (h) forms straight line. *Processus flexorius* (i) is protruding and has rounded end. *Condylus ventralis* (j) has stretched oval shape. *Incisura intercondylaris* (k) is deeper than in recent species. *Condylus dorsalis* (l) has bented oval shape. *Epicondylus dorsalis* (m) forms straight line, while in recent genus is rounded. (*Proc. supracondylaris dorsalis* (n) is damaged).

On proximal epiphysis of ulna in cranial view (Fig. 32C), the *oleocranon* (a) is long, with blunted end. *Cotyla dorsalis* (b) has protruding semicircular shape. *Cotyla ventralis* (c) has circular shape.

Tuberculum lig. colat. ventralis (d) and *depressio m. brachialis* (e) are well developed.

On tibiotarsus the distal epiphysis in cranial view (Fig. 32D), the *tuberositas retinaculi m. fibularis* (a) is small and asymmetrically triangular. *Sulcus extensorius* (a) is less wide and has narrowing end. *Pons supratendinosus* (c) is wide and straight. *Condylus lateralis* (d) has reverse oval shape, and is laterally flattened and distally pointed. *Incisura intercondylaris* (e) has concave and wavy line. *Condylus medialis* (f) has oval shape.

Name: After the name of Kálmán LAMBRECHT, Hungarian paleornithologist.

Description: It corresponds in characters and sizes to recent species of the genus.

Saxicola † *baranensis* nova sp.

Plate VII. Figure 33 A-C)

Type locality and age: Pliocene (MN 15-16).

Other locality: Beremend 26, Pliocene (MN 15-16).

Holotype: Ulna dext. (proximal fragment), (Csarnóta 2, MÁFI V.11.18.1; V.29093).

Paratypes: Distal fragment of humerus dext., distal fragment of ulna dext. (Beremend 26, BKA).

Measurements: 1. humerus E=1,59 mm; F=4,42 mm, G=2,28 mm; 2. ulna B=2.65 mm; C=2.92 mm; F=2,76 mm; G=1,73 mm.

Comparative material: *Saxicola rubetra* (MTM n=1; humerus E=1,51 mm; F=4,38 mm, G=2,15 mm; ulna: B=2.45 mm; C=2,64 mm; F=2,47 mm); *Saxicola torquata* (MTM n=1; humerus E=1,44 mm; F=4,04 mm, G=1,95 mm; ulna: B=2.38 mm; C=2.57 mm; F=2,30 mm).

Diagnosis: On distal epiphysis of humerus in cranial view (Fig. 33A), the *tuberculum supracondylare ventrale* (a) is well developed. *Epicondylus ventralis* (b) is strongly rounded. *Processus flexorius* (c) is protruding and has rounded end. *Condylus ventralis* (d) has extended oval shape. *Incisura intercondylaris* (e) has acute angle shape. *Condylus dorsalis* (f) has bented oval shape. *Epicondylus dorsalis* (g) is rounded. *Proc. supracondylaris dorsalis* (h) is long and has two unequal branches.

On proximal epiphysis of ulna in cranial view (Fig. 33B), the *oleocranon* (a) is not very long, straight with rounded end. *Cotyla dorsalis* (b) is projecting and has semicircular end. *Cotyla ventralis* (c) has circular shape. The *tuberculum lig. colat. ventralis* (d) and the *depressio m. brachialis* (e) are well developed.

On distal epiphysis of ulna in medial view (Fig. 33C), the *condylus dorsalis* (a) has wide and claw-like shape. *Sulcus intercondylaris* (b) has less concave shape. *Condylus ventralis* (c) has semicircular shape.

Name: refers to Baranya County .

Description: Its characteristics corresponds to recent genus and has larger sizes than recent species.

Saxicola † *parva* nova sp.

(Plate VIII. Figure 34)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Ulna dext. (proximal fragment), (MÁFI V.11.24.1; V.29099).

Paratype: Ulna sin. (proximal fragment), (MÁFI V.11.43.1; V.29118).

Measurements: Ulna B=2.21 mm; C=2.49-2.51 mm.

Comparative material: *Saxicola rubetra* (MTM n=1; ulna: B=2.45 mm; C=2.64 mm); *Saxicola torquata* (MTM n=1; ulna: B=2.38 mm; C=2.57 mm).

Diagnosis: On proximal epiphysis of ulna in cranial view (Figure 11), the *oleocranon* (a) is long and has conical shape with rounded end. *Cotyla dorsalis* (b) is less projecting than in *Saxicola baranensis* and has asymmetrical conical shape with rounded end. *Cotyla ventralis* (c) has circular shape. The *tuberculum lig. colat. ventralis* (d) and the *depressio m. brachialis* (e) are well developed.

Name: The name refers to smaller sizes of species.

Description: It is smaller than *S. baranensis*. The characteristics and dimensions corresponds to smaller species of recent genus.

Saxicola † *magna* nova sp.

(Plate VIII. Figure 35)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Distal fragment of humerus sin. (BKA).

Paratype: Distal fragment of humerus sin. (BKA).

Measurements: Humerus F=4,73-4,84 mm; G=2,53-2,59 mm.

Comparative material: *Saxicola rubetra* (MTM n=1: humerus F=4,38 mm, G=2,15 mm); *Saxicola torquata* (MTM n=1: humerus F=4,04 mm, G=1,95 mm).

Diagnosis: On distal epiphysis of humerus in cranial view (Fig. 13A), the *tuberculum supracondylare ventrale* (a) is well developed. *Epicondylus ventralis* (b) is strongly rounded. *Processus flexorius* (c) is protruding and has rounded end. *Condylus ventralis* (d) has oval shape. *Incisura intercondylaris* (e) has wide acute angle shape. *Condylus dorsalis* (f) has bent oval shape. *Epicondylus dorsalis* (g) is rounded. *Proc. supracondylaris dorsalis* (h) is long and wide and has two unequal branches.

Name: Was named after its larger dimensions.

Description: Its characteristics corresponds to recent genus and has larger sizes than recent species.

Distribution: The recent species was reported from Betfia 2 and 9 –Romania (Lower Pleistocene, Q1) as *Saxicola rubetra* (Betfia 9, GÁL 2002) and *Saxicola torquata* (Betfia 2; ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979a; KESSLER 1975; GÁL 2002).

The genus is known outside the Carpathian Basin only from Early Pleistocene (MQ1) from Voigstedt (Germany) (JÁNOSSY 1965) and from Quibas (Spain) (MONTROYA et al. 1999).

Genus *Oenanthe* VIELLOT, 1816

Oenanthe †*kormosi* nova sp.

(Plate VIII. Figure 36 A-D)

Type locality and age: Polgárdi 5, Late Miocene (MN 13).

Holotype: Femur dext. (MÁFI V.11.103.1; V.29178).

Paratypes: Carpometacarpus dext. (proximal fragment); tibiotarsus dext. (distal fragment); tarsometatarsus sin. (distal fragment), (MÁFI V.11.125.3; V.29200).

Measurements: 1. carpometacarpus C=3.91 mm; 2. femur A=18.71 mm; B=17.55 mm; C=3.32 mm; D=2.11 mm; E=1.59 mm; F= 3.45 mm; G=2.46 mm; 3. tibiotarsus E=1.45 mm; F=3.04 mm; G=2.78 mm.; tarsometatarsus E=1.29 mm; F=2.56 mm; G=1.53 mm.

Comparative material: *Oenanthe oenanthe* (MTM n= 1: 1. carpometacarpus C=3.55 mm; 2. femur A=17.49 mm; B=16.21 mm; C=3.18 mm; D=2.01 mm; E=1.51 mm; F=3.21 mm; G=2.52 mm; 3. tibiotarsus E=1.46 mm; F=2.76 mm; G=2.72 mm; 4. tarsometatarsus E=1.27 mm; F=2.33 mm; G= 1.43 mm). *O. hispanica* (MTM n=1: 1. carpometacarpus C=2.55 mm; 2. tibiotarsus E=1.34 mm; F= 2.86 mm; 3. tarsometatarsus E=1.24 mm; F=1.75 mm; G=1.23 mm).

Diagnosis: Fossil species, larger than species of recent genus. On proximal epiphysis of carpometacarpus in ventral view (Fig. 36A), *trochlea carpalis* (a) is slightly asymmetrically bulging, with rounded and conical shape, as in recent genus. *Processus extensorius* (b) has long and stretched beak-like shape, with rounded end. *Processus alularis* (c) has small conical shape. *Fovea subalularis* (d) has asymmetrical mangled conical shape.

On proximal epiphysis of femur in caudal view (Fig. 36B), the *trochanter femoris* (a) is rounded. *Fossa trochanteris* (b) is weakly concave. *Facies articularis acetabularis* (c) has round pit. *Impressiones obturatoriae* (d) has stretched oval shape. On distal epiphysis, *trochlea fibularis* (e) is rounded. *Crista tibiofibularis* (f) is well developed. *Condylus lateralis* (g) is rounded distally. *Incisura intercondylaris* (h) has deeply concave line. *Condylus*

medialis (i) has oblique conical shape and is more pointed than in recent genus. *Epicondylus medialis* (j) is undeveloped.

On distal epiphysis of tibiotarsus in cranial view (Fig. 36C), the *tuberositas retinaculi m. fibularis* (a) is wide with rounded point. *Sulcus extensorius* (b) is wide and pointed distally. *Pons supratendinous* (c) is wide and straight. *Condylus lateralis* (d) has oval shape. *Incisura intercondylaris* (e) has slightly oblique and wavy line. *Condylus medialis* (f) has oval shape.

On distal epiphysis of tarsometatarsus in dorsal view (Fig. 36D), the *trochlea metatarsi* II. (a) has thin and claw-like shape. *Incisura intertrochlearis medialis* (b) is wide and deep. *Trochlea metatarsi* III. (c) is weakly wide with slightly concave end. *Incisura intertrochlearis lateralis* (d) is slightly wide and deep. *Trochlea metatarsi* IV. (e) has thin and flattened blunt conical shape.

Name: After the name of Tivadar KORMOS, Hungarian paleontologist.

Description: In its characteristics and sizes close to the recent species *Oenanthe oenanthe* (LINNAEUS, 1758), but is somewhat larger, also than the species from rest of the family, but it is smaller than *Monticola*.

Oenanthe †*pongrazci* nova sp.

(Plate VIII. Figure 37 A-D)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Other locality: Beremend 26, Pliocene (MN 15-16).

Holotype: Ulna dext. (distal fragment), (Csarnóta 2, MÁFI V.11.23.1; V.29098).

Paratypes: Distal fragment of humerus sin., carpometacarpus sin. and phalanga alae 1. dig.II. (Beremend 26, BKA).

Measurements: 1, humerus F=4,78 mm; G=2,38 mm; F=4,73-4,84 mm; G=2,53-2,59 mm; 2. ulna F=3.09 mm; G=2.11 mm; 3. carpometacarpus A=15,78 mm; B=13,04 mm; C=3,68 mm; E= 3,55 mm; F=3,45 mm; 4. ph.alae A=7,88 mm; C=2,23 mm, E=2,65 mm; F=2,39 mm.

Comparative material: *Oenanthe oenanthe* (MTM n=1; humerus F=4,79 mm; G=2,58 mm; ulna: F=3.05 mm; G=2.17 mm; carpometacarpus A=14,40 mm; B= 12,04mm; C=3,30 mm; E=3,02mm; F= 3,19 mm; ph.alae A=7,51 mm); *Oenanthe hispanica* (MTM n=1; humerus F=4,51 mm; G=2,21 mm; ulna: F=2.41 mm; G=1.74 mm; carpometacarpus A=13,35 mm; B=11,56 mm; C=2,55 mm; E=3,15 mm; F= 3,12 mm).

Diagnosis: On distal epiphysis of humerus in cranial view (Fig. 37A), the *tuberculum supracondylare ventrale* (a) is well developed. *Epicondylus ventralis* (b) is rounded. *Processus flexorius* (c) is less protruding and has rounded end. *Condylus ventralis* (d) has oval shape. *Incisura intercondylaris* (e) has wide acute angle shape.

Condylus dorsalis (f) has bent oval shape. *Epicondylus dorsalis* (g) is rounded. *Proc. supracondylaris dorsalis* (h) has conical shape.

On distal epiphysis of ulna in cranial view (Fig. 37B), the *condylus dorsalis* (a) has pointed claw shape. *Sulcus intercondylaris* (b) is wide and slightly concave, less than in the recent species. *Condylus ventralis* (c) has wide and blunted conical shape. *Tuberculum carpale* (d) is semicircular protruding. Between it and the *condylus ventralis* one deep pit can be found.

On carpometacarpus in ventral view (Fig. 37C), the *trochlea carpalis* (a) is symmetrical bulging, with rounded and conical shape, as in the recent genus. *Processus extensorius* (b) has long and oblique beak-like, with rounded end. *Processus alularis* (c) has rounded rectangular shape. *Fovea subalularis* (d) has asymmetrical mangled conical shape. *Protuberantia metacarpalis* (e) has blunted triangular shape. The basis of the *facies articularis digiti major* (f) is asymmetrical triangular shaped. The distal end of the *os metacarpalis minus* (g) is cut off in straight line.

In phalanga alae (Fig. 37D) the proximal edge (c) is projecting in asymetrically rounded form, The ventral point (a) has conical shape. The dorsal point (b) is laterally projecting in conical form. The dorsal edge (d) is bended, while the distal edge (e) is rounded.

Name: after László PONGRÁCZ, who created the „Beszélő Kövek” Foundation.

Description: It mostly corresponds in characteristics to recent species *Oenanthe oenanthe*, but differ in sizes (it is larger).

Distribution: The earliest report of the genus outside the Carpathian Basin is only the Early Pleistocene (MQ1) from Stránská skála (Czech Republic) (JÁNOSSY 1972); Montoussé 5. (France) (CLOT et al. 1976) Quibas (Spain) (MONTROYA et al. 1999).

Family Turdidae RAFINESQUE, 1815

Genus † *Turdicus* KRETZOI, 1962

† *Turdicus pannonicus* nova sp.

(Plate IX. Figure 38 A-B)

Type locality and age: Polgárdi 4, 5; Late Miocene (MN 13).

Holotype: Ulna sin. (distal fragment) (Polgárdi 5, MÁFI V.11.105.1; V.29180).

Paratypes: Tibiotarsus dext. (distal fragment, damaged lateral) (Polgárdi 4, MÁFI V.11.85.1; V.29160).

Measurements: 1. ulna E=2.03 mm; F=3.56 mm; G=2.39mm; 2. tibiotarsus E=.91 mm; F=3.29 mm; G=3.65 mm.

Comparative material: *T. illiacus* (MTM n=1: 1. ulna E=2.31mm; F=3.80 mm; 2. tibiotarsus E=1.71mm; F=3.36mm); *T. philomelos* (MTM n=1: 1.

ulna E=2.16 mm; F=3.91 mm; G=2.65 mm; 2. tibiotarsus E=1.88 mm; F=3.62 mm; G=3.83 mm).

Diagnosis: This species is similar in its sizes to recent smaller species (*Turdus illiacus/philomelos*). On distal epiphysis of ulna in medial view (Fig. 38A), the *condylus dorsalis* (a) has blunted claw shape; *sulcus intercondylaris* (b) has concave line (but it is damaged). *Condylus ventralis* (c) is protruding and rounded. *Tuberculum carpale* (d) has semicircular shape.

On distal epiphysis of tibiotarsus in cranial view (Fig. 38B), the *tuberositas retinaculi m. fibularis* (a) is undeveloped. *Sulcus extensorius* (b) is wide, its distal end is pointed. *Pons supratendineus* (c) is wide and slant. *Condylus lateralis* (d) has asimmetrically oval shape and distally is rounded. Line of *incisura intercondylaris* (e) is walvy and obliquely. *Condylus medialis* (f) has reverse and pointed oval shape.

Name: Was named after Pannonia region.

Description: *Sulcus intercondylaris* and *condylus lateralis* got partly damaged. The ulnae of the fossil species *Turdicus minor* KESSLER ET HÍR, 2012 from Litke 2 - Hungary (Lower Miocene, MN5) are smaller (E=1,73-1,84 mm; F=3,32-3,33 mm; G=2,12-2,22 mm) than the Polgárdi specimen and the *condylus ventralis* is more rounded (KESSLER & HÍR 2012). The type species *Turdicus tenuis* KRETZOI 1962 was described from Betfia 5 (MQ1, Romania) as new genus and species, but without sizes and photos (KRETZOI 1962). The holotype cannot be found, therefore this species was considered as „*nomen nudum*” (MLÍKOVSKÝ 2002).

Distribution: The fossil genus has not been reported yet from external zone of the Carpathian Basin. In the Carpathian Basin there it is present continuously in the Neogene.

Genus *Turdus* LINNAEUS, 1758

Turdus † *miocaenicus* nova sp.

(Plate IX. Figure 39 A-B)

Type locality and age: Polgárdi 5, Late Miocene (MN 13).

Holotype: Ulna sin. (distal fragment) (MÁFI V.11.102.1; V.29177).

Paratypes: Coracoid sin. (with damaged cranial part) (MÁFI V.11.124.1; V.29199).

Measurements: 1. coracoid E=1.81 mm; 2. ulna E=2.78 mm; F=4.75 mm; G=3.58 mm.

Comparative material: *Turdus pilaris* (1. coracoid E=1.85 mm; 2. ulna E=2.76 mm; F=4.94 mm); *T. viscivorus* (1. coracoid E=1.78 mm; 2. ulna E=2.74 mm; F=4.89 mm; G=3.55); *T. torquatus* (MTM n=1: 1. coracoid E=1,90 mm; 2. ulna E=2.51mm; F= 4.82 mm).

Diagnosis: Similar in its characteristics and sizes to larger recent species (*Turdus pilaris/viscivorus/torquatus* size), On the medial side of coracoid (Fig. 15A), the *acrocoracoid* (a) and its

medial edge are lopsided and steep. *Facies articularis humeralis* (b) has lateral edge that strongly bulges. Edge of the *sulcus m.supracoracoidei* (c) forms straight line. *Processus procoracoidei* (d) is triangular and well developed.

On distal epiphysis of the ulna in medial view (Fig.15B), the *condylus dorsalis* (a) is claw shaped, but more blunt than in recent species of genus. *Sulcus intercondylaris* (b) is less concave. *Condylus ventralis* (c) is lopsided and narrow conical. *Tuberculum carpale* (d) has asymmetrically and obliquely conical shape.

Name: named after its type strata.

Description: Its size and characters are very similar to recent larger thrushes (*Turdus pilaris/viscivorus/torquatus* size), but the shape of *tuberculum carpale* differ to (it is not a semicircular shape). The fossil species *Turdicus minor* KESSLER ET HÍR, 2012 from the Hungarian Lower and Middle Miocene (Litke 2, MN 5; rather Mátraszölös 2. and 3. MN 7/8) has smaller sizes (1. coracoid: E=1.52 mm; 2. ulna: E=1.73-1.84 mm; F=3.32-3.33 mm; G=2.12-2.22 mm) and the shape of *condylus ventralis* and *tuberculum carpale* differ (KESSLER & HÍR 2012).

Turdus † polgardiensis nova sp.
(Plate IX. Figure 40 A-B)

Type locality and age: Polgárdi 5, Late Miocene (MN 13).

Holotype: Ulna dext. (with damaged proximal epiphysis), (MÁFI V.11.100.1; V.29175).

Measurements: Ulna A=approx. 33-35 mm; C=4.31 mm; E=2.11 mm; F=4.15 mm; G=2.81 mm.

Comparative material: *T. merula* (MTM n=1: A=34.29 mm; C=4.72 mm; E=2.37 mm; F=4.25 mm; G=3.06 mm); *T. philomelos* (MTM n=1: A= 30.67 mm; C=4.32 mm; E=2.16mm; F=3.91 mm; G=2.65 mm).

Diagnosis: In dimensions it is similar to middle sized recent species (*Turdus merula* size), but in characteristics resembles larger size recent species. On proximal epiphysis of the ulna in cranial view (Fig. 40A), *cotyla dorsalis* (a) is conical shaped. *Cotyla ventralis* (b) has circular shape. *Tuberculum lig. colateralis ventralis* (c) is well developed. *Depressio m. brachialis* (e) has circular shape and it is well developed. On the distal epiphysis in medial view (Fig. 40B), the *condylus dorsalis* (f) is rounded. *Sulcus intercondylaris* (g) is less concave than in recent species. *Condylus ventralis* (e) has weakly lopsided conical shape. *Tuberculum carpale* (f) has pointed conical shape, while in the recent species has rather claw-like shape.

Name: Was named after the name of type locality.

Description: The partly damaged oleocranon makes the identification difficult, but in its sizes it is similar to medium size thrushes (*Turdus merula* size). In the morphological characters it is more similar to

larger species of genus, but the shape of the *tuberculum carpale* also differs.

Turdus † major nova sp.
(Plate IX. Figure 41 A-E)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Other locality: Beremend 26, Pliocene (MN 15-16).

Holotype: Humerus sin. (distal fragment), (Csarnóta 2, MÁFI V.11.19.1; V.29094)

Paratypes: Proximal fragment of humerus dext.; carpometacarpus sin. and proximal fragment of the right side bone; two phalanga alae 1. dig.II. and 4 fragments distal of tarsometatarsus (Beremend 26, BKA).

Measurements: 1. humerus C= 9,89 mm, D= 8,49 mm F=7.58 mm; G=3.52 mm; 2. carpometacarpus A=22,13 mm, B=19,20 mm; C=5,23-5,47 mm; E'=1,75 mm; F=4,35 mm; 3. ph-alae A= 10,19-10,72 mm; C=3,30-3,61mm; E=3,37-3,52 mm; F=3,35- 3,40 mm; 4. tarsometatarsus E=2,12-2,34 mm; F=4,01-4,49 mm; G=2,49-2,78 mm.

Comparative material: *Turdus torquatus* (MTM n=1; humerus: C= 9,82 mm, D= 8,41 mm, F=7.88 mm; carpometacarpus A=22,14 mm, B=19,20 mm; C=5,27 mm; E'=1,94 mm; F=4,62mm; ph-alae A=10,12 mm; C=3,09 mm; E=3,49 mm; tarsometatarsus E=1,71 mm; F=3,86 mm; G=mm); *Turdus pilaris* (MTM n=1: humerus C= 10,25 mm, D= 9,09 mm, F=8,21 mm; carpometacarpus A=23,63 mm, B=20,38 mm; C=5,93 mm; E'=2,17 mm; F=5,09 mm; ph-alae A=11,36 mm; C=3,31 mm; E=3,52 mm; tarsometatarsus E=1,63 mm; F=4,13 mm; G=2,32 mm); *Turdus viscivorus* (MTM n=1: humerus C=10,81 mm, D= 9,32 mm, F=7.28 mm; carpometacarpus A=25,10 mm, B=20,86 mm; C=5,17 mm; E'=2,56 mm; F=5,25mm; ph-alae A=12,16 mm; C=4,24 mm; E=4,84 mm; tarsometatarsus E=1,78 mm; F=4,16 mm; G=2,44mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 41A), the *crista pectoralis* forms rounded contour and the *tuberculum dorsale* (a) has rounded shape. *Caput humeri* (b) is wide and slightly convex. *Tuberculum ventrale* (c) forms well developed circular spur. *Crista bicipitalis* (d) has protruding and cut-off shape. *Crus fossae* (e) is developed, the *fossae pneumotricipitalis* (f) is divided into two part.

On distal epiphysis in cranial view of humerus (Fig. 41B), the *tuberculum ventrale* (a) is well developed. *Epicondylus ventralis* (b) is weakly arches. *Processus flexorius* (c) is obliquely protruding and rounded. *Condylus ventralis* (d) has extended oval shape. *Incisura intercondylaris* (e) is deep and blunted as in the recent species. *Condylus dorsalis* (f) has curved ovalic shape. *Epicondylus dorsalis* (l) is mildly

protruding and rounded. *Processus supracondylaris dorsalis* (h) is short and bent with blunted end.

On carpometacarpus in ventral view (Fig. 41C), the *trochlea carpalis* (a) has conical shape, as in the recent genus. *Processus extensorius* (b) has long and oblique beak-like shape, with rounded end. *Processus alularis* (c) has rounded rectangular shape. *Fovea subalularis* (d) has acute angle pit shape. *Protuberantia metacarpalis* (e) is undeveloped. The basis of the *facies articularis digiti major* (f) is rounded triangular shaped. The distal end of the *os metacarpalis minus* (g) has asymmetrical straight line.

On phalanga alae (Fig. 41D), the ventral point of the proximal edge (a) is projecting lateral in conical shape. The dorsal point (b) is laterally projecting in rounded form. The proximal edge (c) is less rounded. The dorsal edge (d) is bended, while the distal edge (e) is rounded.

On distal epiphysis of tarsometatarsus in dorsal view (Fig. 41E), the *trochlea metatarsi tertii* (a) is wide and has oblique cut-off end. *Incisura intertrochlearis medialis* (b) is narrow and deep. *Trochlea metatarsi tertii* (c) is wide and has concave end. *Incisura intertrochlearis lateralis* (d) is wide and deep. *Trochlea metatarsi IV.* (e) has rectangle shape with rounded end.

Name: Was named after the its larger dimensions.

Description: In its characteristics seem to recent species and has the sizes of *T. torquatus*.

Turdus † *medius* nova sp.
(Plate X. Figure 42 A-F)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Other locality: Beremend 26, Pliocene (MN 15-16).

Holotype: Humerus dext. (distal fragment), (Csarnóta 2, MÁFI V.11.26.1; V.29101).

Paratypes: Ulna dext. (distal fragment), (MÁFI); tibiotarsus dext. (distal fragment), (Csarnóta 2, MÁFI V.11.44.2; V.29119); proximal and distal fragments of the left side humerus; two carpometacarpus dext. (missing *os metacarpus minus*); distal fragments of the right and left side tarsometatarsus (Beremend 26, BKA).

Measurements: 1. humerus B=11,02 mm; C=9,03 mm; D=8,28 mm; E=2,69 mm; F=6,30-6,35 mm; G=3,19-3,57 mm; 2. ulna: F=4.03 mm; G=2.88 mm; 3. carpometacarpus A=19,79-20,13 mm, B=16,69 mm; C=5,13 mm; E'=1,72-1,74 mm; F=4,35-4,48 mm; 4. tibiotarsus F=3.68 mm; G=3.55 mm; 5. tarsometatarsus F=3,88 mm; G=2,26-2,38 mm.

Comparative material: *Turdus merula* (MTM n=1; humerus: B=11,39 mm; C=9,46 mm; D=8,67 mm; E=2,75 mm; F=6.46 mm; G=3.38 mm; ulna: F=4.23 mm; G=3.09 mm; carpometacarpus A=20,36 mm, B=16,63 mm; C=5,10 mm; E'=2,27 mm; F=4,16

mm; tibiotarsus: F=3.89 mm; G=3.85 mm; tarsometatarsus F=3,82 mm; G=2,14 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 42A), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and weakly bulging. *Tuberculum ventrale* (c) is well developed and has circular shape. *Crista bicipitalis* (d) has protruding cut-off shape. *Crus fossae* (e) is weakly developed and the *fossae pneumotricipitalis* (f) is divided into two part.

On distal epiphysis in cranial view of humerus (Fig. 42B) the *tuberculum ventrale* (a) is well developed and weakly protruding. The *epicondylus ventralis* (b) is arched. *Processus flexorius* (c) is obliquely protruding and rounded. *Condylus ventralis* (d) has laying oval shape. *Incisura intercondylaris* (e) is deep acute angle pit. The *condylus dorsalis* (f) has curved ovalic shape. *Epicondylus dorsalis* (l) is mildly protruding and rounded. *Processus supracondylaris dorsalis* (h) is bent and curved and has branched end.

On distal epiphysis of ulna in medial view (Fig. 42C), the exterior edge of *condylus dorsalis* (a) is laying arched and has asymmetrically blunted conical shape. *Sulcus intercondylaris* (b) is wide and slightly concave. It is straighter than in the recent species. *Condylus ventralis* (c) is oblique and wide blunted conical. *Tuberculum carpale* (d) is semicircular-like protruding.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 42D), the *trochlea carpalis* (a) has rounded and conical shape, as in recent genus. *Processus extensorius* (b) has wide and oblique beak-like, with rounded end. *Processus alularis* (c) has rectangular shape. *Fovea subalularis* (d) has acute angle shape. *Proeminentia metacarpalis* (e) is undeveloped and flatten. The basis of the *facies articularis digiti major* (f) has tiangle shape. The end of the *metacarpus minus* (g) is less concave.

On distal epiphysis of tibiotarsus in cranial view (Fig. 42E), the *pons supratendineus* (a) is wide and oblique. *Condylus lateralis* (b) has flat and pointed oval shape. The line of *incisura intercondylaris* (c) has concave and slightly wavy. *Condylus medialis* (d) is distally pointed and reversed oval shaped.

On distal epiphysis of tarsometatarsus in dorsal view (Fig. 42F), the *trochlea metatarsi tertii* (a) has rectangle shape with less rounded end. *Incisura intertrochlearis medialis* (b) is wide and deep. *Trochlea metatarsi tertii* (c) is wide and has concave end. *Incisura intertrochlearis lateralis* (d) is narrow and deep. *Trochlea metatarsi IV.* (e) is conical shaped.

Name: Was named after its middle seize dimensions.

Description: It corresponds in characteristics to recent genus, and its dimensions seem to *Turdus merula*.

Turdus † *minor* nova sp.
(Plate X. Figure 43 A-D)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Other locality: Beremend 26, Pliocene (MN 15-16).

Holotype: Humerus sin. (distal fragment), (Csarnóta 2, MÁFI V.11.27.1; V.29102).

Paratypes: Two carpometacarpus dext. (proximal fragments); tarsometatarsus dext. (distal fragment), (Csarnóta 2, MÁFI V.11.45.2; V.29120); Proximal and distal fragment of humerus sin. (Beremend 26, BKA).

Measurements: 1. humerus C=7,67 mm; E=2,42 mm; F=mm; G=mm; F=5,82-6.09 mm; G=2,95-3.01 mm; 2. carpometacarpus C=4.17-4.25 mm; 3. tarsometatarsus E=1.35 mm; G=1.81 mm.

Comparative material: *Turdus philomelos* (MTM n=1; 1. humerus: C=8,45 mm; F=5.65 mm; G=3.40 mm; 2. carpometacarpus: C=4.56 mm; 3. tarsometatarsus: E=1.25 mm; G= 1.82 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 43A), the *caput humeri* (a) is wide and rounded. *Tuberculum ventrale* (b) is well developed and has pointed circular shape. *Crista bicipitalis* (c) is less protruding and rounded. *Crus fossae* (d) is well developed and the *fossae pneumotricipitalis* (e) is divided into two part. On distal epiphysis of humerus in cranial view (Fig. 43B) the *tuberculum ventrale* (a) is well developed. The *epicondylus ventralis* (b) is rounded. *Processus flexorius* (c) is obliquely protruding and rounded. *Condylus ventralis* (d) has rounded oval shape. *Incisura intercondylaris* (e) has deep acute angle pit shape. *Condylus dorsalis* (f) has curved ovalic shape. *Epicondylus dorsalis* (l) is rounded. *Processus supracondylaris dorsalis* (h) is bent and has asymmetrically conical shape.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 43C), the *trochlea carpalis* (a) is asymmetrically bulging. It has conical shape with rounded end. *Proc. extensorius* (b) has long, mildly oblique rectangular shape with rounded end. *Processus alularis* (c) is small and conical. *Fovea subalularis* (d) is wide and conical pit.

On distal epiphysis of tarsometatarsus in dorsal view (Fig. 43D), the edge between *fossa metatarsalis* I. and *trochlea metatarsi* II. (a) is wide and wavy. *Trochlea metatarsi tertii* (b) is wide and asymmetrical with mildly concave end. *Incisura intertrochlearis lateralis* (c) is medium wide and deep.

Trochlea metatarsi IV. (e) has flattened blunt conical shape.

Name: The name refers to smaller sizes of species.

Description: It corresponds in characteristics to recent genus, and has dimensions seem to *Turdus philomelos*, but it is smaller. The distal epiphysis of

tibiotsarsus is damaged. Lateral edge of tarsometatarsus is incomplete and *trochlea metatarsi* II. missed.

Distribution: The thrushes are represented better in fossil materials because of their relatively larger stature (between the songbirds). In the Carpathian Basin they were described from Middle Miocene (MN7/8) of Mátraszőlős 2 – Hungary (GÁL et al. 2000) as Turdidae gen et sp. foss. indet., from Middle Miocene (MN7/8) of Felsőtárkány-Hungary (HÍR et al. 2001) as *Turdus* sp. foss. indet. from the Early Pliocene (MN 15-16) of Ivanovce I – Slovakia (ŠVEC in FEJFAR & HEINRICH 1985; MLÍKOVSKÝ 2002); also from Csarnóta 2 – Hungary (Lower Pliocene, MN 15), (JÁNOSSY 1979a; KESSLER 2010); from the Early Pliocene (MN 15) of Beremend 26 – Hungary (KESSLER 2010a) and from Early Pleistocene (MQ1-MQ2) in some other localities of the Carpathian Basin: Betfia 9 – Romania (GÁL 2002); Deutsch Altenburg 4B –Austria (JÁNOSSY 1981; DÖPPES & RABEDER 1997; MLÍKOVSKÝ 1998a.); Beremend 17 (KESSLER 2010); Nagyharsányhegy 1-4 - Hungary (LAMBRECHT 1916, 1933; JÁNOSSY 1979). On the recent species was reported: *Turdus torquatus* (LINNAEUS), 1758 in Betfia 9 – Romania (Lower Pleistocene, MQ1) (GÁL 2002); *Turdus merula* LINNAEUS, 1758 in Betfia 13-Romania (Upper Pliocene, MN 16-17) (KESSLER 1975, GÁL 2002); Betfia 2 – Romania (Lower Pleistocene, MQ1) (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979; KESSLER 1975; GÁL 2002); Betfia 9-Romania (Lower Pleistocene, MQ1) (KESSLER 1975; GÁL 2002); *Turdus philomelos* Brehm, 1831 Beremend 16 - Hungary (Upper Pliocene, MN 16-17) (Jánossy 1991, 1992); Betfia 2- Romania (Lower Pleistocene, MQ1) (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979; KESSLER 1975; Gál 2002); Betfia 9 -Romania (Lower Pleistocene, MQ1) (KESSLER 1975; Gál 2002); Deutsch Altenburg -Ausztria (Lower Pleistocene, MQ1) (JÁNOSSY 1981); *Turdus iliacus* LINNAEUS, 1766 from Polgárdi 4 - Hungary (Upper Miocene, MN 13) (JÁNOSSY 1991, 1995); Betfia 2-Romania (Lower Pleistocene, MQ1) (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979; KESSLER 1975; GÁL 2002); Betfia 9 - Romania (Lower Pleistocene, MQ1) (KESSLER 1975; GÁL 2002); GÁL 2002); Q2: Nagyharsányhegy 1-4 (Lower Pleistocene Q2) (KESSLER 2010a); *Turdus viscivorus* LINNAEUS, 1758 from Csarnóta 2- Hungary (Lower Pliocene, MN15) (JÁNOSSY 1979); from Betfia 2 - Romania (Lower Pleistocene, MQ1) (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979; KESSLER 1975; GÁL 2002); from Betfia 9 - Romania (Lower Pleistocene, MQ1) (KESSLER 1975; GÁL 2002); Deutsch- Altenburg - Austria (Lower Pleistocene, MQ1) (JÁNOSSY 1981); *Turdus pilaris* LINNAEUS, 1758 from Betfia 2 - Romania (Lower Pleistocene, MQ1) (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979; KESSLER 1975; GÁL 2002); Betfia 9 - Romania (Lower Pleistocene, MQ1) (KESSLER 1975; GÁL 2002).

The genus it is known outside of the Carpathian Basin from Credinta –Romania (Middle Miocene, MN 8) as *Turdus* sp. (GÁL & KESSLER 2006), while from the Late Pliocene from Rebielice Królowskie I. – Poland (JÁNOSSY 1974), Varshets – Bulgaria (BOEV 1996, 2000), Sandalja I. - Croatia (V. MALEZ-BACIC 1979) and from the Early Pleistocene from some localities and countries in Europe (Austria, Bulgaria, Czech Republic, France, Germany, Romania, Spain, etc.) (TYRBERG 1998).

Fam. Oriolidae BOIE, 1826

Genus *Oriolus* LINNAEUS, 1758

Oriolus † *beremendensis* nova sp.

(Plate XI. Figure 44 A-E)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Carpometacarpus dext. (BKA)

Paratypes: Distal fragment of humerus sin.; ulna sin.; proximal fragment of ulna sin.; distal fragment of tibiotarsus sin. (BKA).

Measurements: 1. humerus E=2,76 mm; F=6,26 mm; G=3,14 mm; 2. ulna A=37,59 mm; B=4,58-4,87 mm; C=5,00-5,15 mm; E=2,68 mm; F=4,45 mm; G=3,17 mm; 3. carpometacarpus A=22,00 mm; B=19,36 mm; C=5,69 mm; E=4,01 mm; F=4,64 mm; 4. tibiotarsus E=1,81 mm; F=3,63 mm; G=3,60 mm.

Comparative material: *Oriolus oriolus* (MTM n=1: humerus E=3,10 mm; F=6,98 mm; G=4,11 mm; ulna A=40,26 mm; B=4,73 mm; C=5,17 mm; E=2,33 mm; F=4,83 mm; G=3,42 mm; carpometacarpus A=24,02 mm; B=21,01 mm; C=5,37 mm; E=3,89 mm; F=4,85 mm; tibiotarsus E=1,79 mm; F=3,78 mm; G=3,51 mm).

Diagnosis: On distal epiphysis of humerus in cranial view (Fig. 44A), the *tuberculum supracondylare ventrale* (a) is developed. *Epicondylus ventralis* (b) is rounded. *Processus flexorius* (c) is less protruding and has rounded end. *Condylus ventralis* (d) has oval shape. *Incisura intercondylaris* (e) is deep and wide. *Condylus dorsalis* (f) has bented oval shape. *Epicondylus dorsalis* (g) is rounded. *Proc. supracondylaris dorsalis* (h) is long and bented.

On proximal epiphysis of ulna in cranial view (Fig. 44B), the *oleocranon* (a) is long, with blunted end. *Cotyla dorsalis* (b) has asymmetrical conical shape. *Cotyla ventralis* (c) has circular shape. The *tuberculum lig. colat. ventralis* (d) and the *depressio m. brachialis* (e) are well developed.

On distal epiphysis in medial view of ulna (Fig. 44C), the *condylus dorsalis* (f) has wide and blunted claw-like shape. *Sulcus intercondylaris* (g) is wide and slightly concave. It is straighter than in recent species. *Condylus ventralis* (h) has wide and blunted conical shape. *Tuberculum carpale* (i) is semicircular-like protruding.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 44D), the *trochlea carpalis* (a) is

asymmetrical bulging. *Processus extensorius* (b) has blunted conical shape. *Processus alularis* (c) has distally rounded rectangular shape. *Fovea subalularis* (d) has acute angle shape. *Proeminentia metacarpalis* (e) is undeveloped and flatten. The basis of the *facies articularis digiti major* (f) has tiangle shape. The end of the *metacarpus minus* (g) is asymmetrical rounded

On tibiotarsus the distal epiphysis in cranial view (Fig. 44E), the *sulcus extensorius* (a) is narrow with rounded end. *Pons supratendinous* (b) is wide and oblique. *Condylus lateralis* (c) has oval shape. *Incisura intercondylaris* (d) has concave and wavy line. *Condylus medialis* (f) has reverse oval-like shape.

Name: Was named after the name of the localities.

Description: It corresponds partially with characteristics and size the recent species.

Distribution: The genus has no extinct species. The recent species *Oriolus oriolus* (LINNAEUS, 1758) is known from Betfia 9- Romania (Q1) (GÁL 2002); Vindija - Croatia (Q3) (M. MALEZ 1975; V. MALEZ 1984, 1988) and some localities from the Late Pleistocene in Europa (TYRBERG 1998)

Family Sylviidae VIGORS, 1825

Genus *Acrocephalus* NAUMANN, 1811

Acrocephalus † *major* nova sp.

(Plate XI. Figure 45 A-E)

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Ulna dext. (MÁFI V.11.107.1; V.29182).

Paratypes: Five humeri (one proximal fragment of sin. and 4 distal fragment – 2 sin. and 2 dext.), 19 ulnae (3 complete, 9 proximal and 5 distal fragments), 2 tibiotarsi sin. (distal fragments) (MÁFI V.11.87.26; V.29182).

Measurements: 1. humerus C=5.27 mm; E=1.62-1.92 mm; F=4.12-4.45 mm; G=2.32-2.44 mm; 2. ulna A=21.61-22.30 mm; B=2.64-3.23 mm; C=2.58-3.25 mm; E=1.42-1.69 mm; F=2.42-3.03 mm; G=1.71-2.06 mm; 3. tibiotarsus F=2.89-2.94 mm; G=1.74-2.06 mm.

Comparative material: *Acrocephalus arrundinaceus* (MTM n=1: 1. humerus C=5.71 mm; E=1.59 mm; F=4.12 mm; G=2.68 mm; 2. ulna A=24.25 mm; B=3.21 mm; C=3.42 mm; E=1.61 mm; F=2.71 mm; G=2.18 mm; 3. tibiotarsus F=3.14 mm; G=3.06 mm); *A. scirpaceus* (MTM n=1: 1. humerus A=19.05 mm; C=5.77 mm; E=1.77 mm; F=4.03 mm; 2. ulna A=23.54 mm; C=3.08 mm; E=1.58 mm; F=2.77 mm; 3. tibiotarsus F=3.17 mm).

Diagnosis: Corresponds in its characteristics and sizes to recent larger species of genus. On proximal epiphysis of humerus in caudal view (Fig. 45A), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and convex, but not outstanding. *Tuberculum ventrale* (c) is wide and stretched. *Crista bicipitalis*

(d) is mildly pointed and asymmetrically protruding. *Crus fossae* (e) is well developed, therefore *fossae pneumotricipitalis* (f) is divided in two. On distal epiphysis in cranial view (Fig. 45B), the *epicondylus ventralis* (g) is mildly convex. *Processus flexorius* (h) is strongly protruding and rounded. *Condylus ventralis* (i) has stretched oval shape. *Incisura intercondylaris* (j) is deeper and narrow. *Condylus dorsalis* (k) has bent and strongly oval shape. *Epicondylus dorsalis* (l) is rounded. *Processus supracondylaris dorsalis* (m) is short, blunt and mildly branches off. The widening between it and diaphysis is deep and narrow.

On proximal epiphysis in cranial view of ulna (Fig. 45C), the *oleocranon* (a) is long, thin and even. *Cotyla dorsalis* (b) has asymmetrical and rounded conical shape. *Cotyla ventralis* (c) has circular shape. *Tuberculum lig. colat. ventralis* (d) is well developed. On distal epiphysis in medial view (Fig. 45D), *condylus dorsalis* (e) is semicircular shaped. *Sulcus intercondylaris* (f) is slightly concave. *Condylus ventralis* (g) has wide conical shape. *Tuberculum carpale* (h) has semicircular shape.

On tibiotarsus the distal epiphysis in cranial view (Fig. 45E), the *tuberositas retinaculi m. fibularis* (a) is wide and flattened. *Sulcus extensorius* (b) is wide and even. *Pons supratendinous* (c) also is wide and even. *Condylus lateralis* (d) has oval shape. The line of *incisura intercondylaris* (e) is concave and wavy. *Condylus medialis* (f) has flattened oval shape.

Name: Was named after its larger dimensions.

Description: It corresponds in characteristics to recent greater species of genus. On proximal epiphysis of humerus the *crista pectoralis* is damaged.

Acrocephalus †*minor* n. sp.
(Plate XII. Figure 46 A-E)

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Humerus sin. (proximal epiphysis) (MÁFI V.11.71.1; V.29146).

Paratypes: One sin. and two humeri dext. (distal fragments); 2 ulnae sin. (proximal and distal fragments); tibiotarsus sin. (distal fragment) (MÁFI V.11.88.10; V.29163).

Measurements: 1. humerus C=4.67-4.81 mm; E=1.59-1.68 mm; F=3.88-3.99 mm; G=2.26-2.36 mm; 2. ulna E=1.43 mm-1.45; F=2.49-2.52 mm, G=1.67-1.71 mm; 3. tibiotarsus E=1.09 mm; F=2.03-2.25 mm; G=1.83-2.20 mm.

Comparative material: *Acrocephalus schoenobenus* (MTM n=1: humerus A=14.35 mm; C=4.26 mm; E=1.26 mm; F=3.21 mm; G=1.88; ulna A=15.42 mm; C=2.12 mm; E= 0.97 mm; F=2.03 mm; tibiotarsus F=2.29 mm; G=2.12 mm); *A. palustris* (MTM n=1: ulna F=2.07 mm; tibiotarsus F=2.29 mm);

Diagnosis: Corresponds in characteristics to smaller species of genus. On proximal epiphysis of humerus in caudal view (Fig. 46A), the *tuberculum*

dorsale (a) has angular shape. *Caput humeri* (b) is convex. *Tuberculum ventrale* (c) has outstanding cone-shape. *Crista bicipitalis* (d) is pointed and has asymmetrical protruding shape. *Crus fossae* (e) is well developed but it is short. *Fossae pneumotricipitalis* (f) is partly divided in two parts. On distal epiphysis in cranial view (Fig. 46B), the *epicondylus ventralis* (g) has convex shape. *Processus flexorius* (h) is protruding and rounded. *Condylus ventralis* (i) has stretched oval shape. *Incisura intercondylaris* (j) has acute angled pit shape. *Condylus dorsalis* (k) has bent oval shape. (*Processus supracondylaris dorsalis* (m) is damaged. The widening between it and diaphysis is deep and narrow).

On proximal epiphysis in cranial view of ulna (Fig. 46C), the *oleocranon* (a) is long, thin and slightly oblique. *Cotyla dorsalis* (b) has asymmetrical and rounded conical shape. *Cotyla ventralis* (c) has circular shape. *Tuberculum lig. colat. ventralis* (d) and the *depressio m. brachialis* (e) are well developed. On distal epiphysis in medial view, *condylus dorsalis* (e) has rounded claw-like shape. *Sulcus intercondylaris* (f) is slightly concave. *Condylus ventralis* (g) has wide conical shape. *Tuberculum carpale* (h) has semicircular shape. On distal epiphysis of ulna in medial view (Fig. 46D), the *condylus dorsalis* (a) is bented and rounded claw shaped. *Sulcus intercondylaris* (b) is slightly concave. *Condylus ventralis* (c) has blunted cone-shape. *Tuberculum carpale* (d) has wide and rounded conical shape.

On tibiotarsus the distal epiphysis in cranial view (Fig. 46E), the *tuberositas retinaculi m. fibularis* (a) is undeveloped and flat. *Sulcus extensorius* (b) is wide. *Pons supratendinous* (c) is wide and straight. *Condylus lateralis* (d) has pointed and flattened oval shape. Line of *incisura intercondylaris* (e) is concave, oblique and wavy. *Condylus medialis* (f) has rounded oval shape.

Name: Was named after its smaller dimensions.

Description: It corresponds in characteristics to smaller species of the recent genus. On humerus the *crista pectoralis* is damaged. *Processus supracondylaris dorsalis* is also damaged.

Acrocephalus †*kretzoi* nova sp.
(Plate XII. Figure 47 A-B)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Other locality: Beremend 26, Pliocene (MN 15-16).

Holotype: Carpometacarpus sin. (proximal fragment), (Csarnóta 2, MÁFI V.11.1.1; V.29076).

Paratypes: Two carpometacarpus sin (proximal fragments); tarsometatarsus dext. (distal fragment), (Csarnóta 2, MÁFI V.11.39.3; V.29144); distal fragments of the right and left side tarsometatarsus (Beremend 26, BKA).

Measurements: 1. carpometacarpus C=3.25-3.73 mm; 2. tarsometatarsus F=1,88 -2,07 mm; G=1,13-1,19 mm.

Comparative material: *Acrocephalus arrundinaceus* (MTM n=1; carpometacarpus: C=3.44 mm; tarsometatarsus: F=1.74 mm; G=1.07 mm).

Diagnosis: On proximal epiphysis of carpometacarpus in ventral view (Fig. 47A), the *trochlea carpalis* (a) is symmetrically bulging. It has strongly bulging conical shape with rounded end, than in recent species. *Proc. extensorius* (b) has obliquely blunted conical shape. *Processus alularis* (c) has rounded rectangle shape. *Fovea subalularis* (d) has blunted conical shape.

On distal epiphysis of tarsometatarsus in dorsal view (Fig. 47B), the edge between *fossa metatarsalis* I. and *trochlea metatarsi* II. (a) is strongly wavy. *Trochlea metatarsi* II. (b) has oblique and blunted conical shape. *Incisura intertrochlearis medialis* (b) has acute angle shape. *Trochlea metatarsi tertii* (d) is wide and with a bellow mildly concave end. *Incisura intertrochlearis lateralis* (e) is strongly wide. (*Trochlea metatarsi* IV. (f) is strongly damaged).

Name: Was named after Hungarian paleornithologist Miklós KRETZOI.

Description: Its characteristics correspond to recent genus, but in dimensions refer to a larger species.

Acrocephalus † *kordosi* nova sp.
(Plate XII. Figure 48)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Carpometacarpus dext. (proximal fragment), (MÁFI V.11.2.1; V.29077).

Measurements: Carpometacarpus C=2.88 mm.

Comparative material: *Acrocephalus schoenobenus* (MTM n=1; carpometacarpus: C=2.88 mm); *Acrocephalus palustris* (MTM n=1; carpometacarpus: C=2.82 mm);

Diagnosis: On proximal epiphysis of carpometacarpus in ventral view (Fig. 48), the *trochlea carpalis* (a) is symmetrically bulging. It has strongly bulging conical shape with rounded end, than in the recent species. *Proc. extensorius* (b) is obliquely blunted conical shaped with rounded lateral edge. *Processus alularis* (c) has rounded rectangle shape. *Fovea subalularis* (d) has blunted conical shape.

Name: Was named after Hungarian paleontologist László KORDOS.

Description: Its characteristics corresponds to recent genus, but in dimensions ist among from smaller species.

Distribution: The genus was reported from the Carpathian Basin as *Acrocephalus* sp. foss. indet. from the Late Miocene of Rudabánya - Hungary (MN 9) and the Early Pleistocene of Betfia 9 - Romania (MQ1) (GÁL 2002). The recent species *Acrocephalus*

palustris was reported from the Early Pleistocene of Betfia 2 -Romania (MQ1) (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979; KESSLER 1975, GÁL 2002).

Genus *Cettia* BONAPARTE, 1838

Cettia † *janossyi* nova sp.

(Plate XII. Figure 49).

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Humerus dext. (with damaged proximal epiphysis), (MÁFI V.11.100.2; V.29176).

Measurements: Humerus A=16,87 mm; C=aprox. 4,60 mm; E=1,66 mm; F=3,48; G=1,78 mm.

Comparative material: *Cettia ceti* (MTM n=1: humerus A=15,42 mm; C=5,04 mm; E=1,63 mm; F=3,54 mm; G=1,81 mm).

Diagnosis: Corresponds in its characteristics and sizes to recent species. On proximal epiphysis of humerus in cranial view (Fig. 49), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and convex. On distal epiphysis in cranial view, the *epicondylus ventralis* (c) is arches strongly. *Processus flexorius* (d) is protruding and rounded. *Condylus ventralis* (e) has lying oval shape. *Incisura intercondylaris* (f) is wide and concave. *Condylus dorsalis* (g) is oval shaped. *Epicondylus dorsalis* (h) is strongly arching in semicircular shape. *Processus supracondylaris dorsalis* (i) is long and its end branches off.

Name: Was named after the Hungarian paleontologist, Dénes JÁNOSSY.

Description: In generally it corresponds in its characters and sizes to recent species, but it is more slender.

Cettia † *kalmani* nova sp.
(Plate XII. Figure 50)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Distal fragment of the humerus dext. (MÁFI V.11.28.1; V.29103).

Measurements: Humerus F=4.45 mm; G=2.31 mm.

Comparative material: *Cettia ceti* (MTM n=1; humerus: F= 3.54 mm; G=1.81 mm) ,*Sylvia communis* (MTM n=1; humerus: F=3.48 mm; G=1.83 mm).

Diagnosis: On the distal epiphysis in cranial view of humerus (Fig. 50), the *tuberculum ventrale* (a) is well developed. The *epicondylus ventralis* (b) is strongly arches. *Processus flexorius* (h) is straighter protruding and asymmetrically rounded. *Condylus ventralis* (d) is extended oval shaped. *Incisura intercondylaris* (e) is deeper and pointed pit than in the recent genus.

Condylus dorsalis (f) is oval shaped and less oblique than in the recent species. *Epicondylus dorsalis* (g) is rounded. *Proc. supracondylaris*

dorsalis (h) is wide and oblique and has two short braches.

Name: Was named after Hungarian paleornithologist Kálmán LAMBRECHT.

Description: Its characteristics corresponds to recent species, but the fossil species is bigger in sizes than extinct species from Polgárdi *Cettia janossyi* or than the recent species.

Distribution: The genus was reported only from Polgárdi as *Cettia* sp. by D. JÁNOSSY (1991). This material was identified in this paper.

Genus *Hippolais* C. VON BALDENSTEIN, 1827

Hippolais †*veterior* nova sp.

(Plate XIII. Figure 51 A-C)

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Carpometacarpus sin. (MÁFI V.11.70.1; V.29145).

Paratypes: Three humeri dext. (distal fragments); carpometacarpus sin. (proximal fragment); one sin. and one dext. distal fragment of tibiotarsus (MÁFI V.11.84.5; V.29159).

Measurements: 1. carpometacarpus C=2.96-3.01 mm; 2. humerus F=3.86-4.01 mm; G=2.09-2.39 mm; 3. tibiotarsus E=1.14 mm; F=2.25-2.36 mm; G=2.06-2.26 mm.

Comparative material: *Hippolais icterina* (MTM n=1: carpometacarpus C=2.91 mm; humerus F=4.17 mm; G=2.13 mm; tibiotarsus E=1.11 mm; F=2.31 mm; G=2.11 mm); *H. pallida* (MTM n=1: carpometacarpus C=2.53 mm; humerus F=3.94 mm; tibiotarsus E=1.10 mm; F=2.22 mm).

Diagnosis: Its characteristics mostly correspond to those of recent genus. On distal epiphysis in cranial view of humerus (Fig. 51A), the *tuberculum supracondylare ventrale* (a) is well developed. *Epicondylus ventralis* (b) is more rounded than in the recent species. *Processus flexorius* (c) has semicircular shape. *Condylus ventralis* (d) has stretched oval shape *Incisura intercondylaris* (e) is profound and in acute angle hollow. *Condylus dorsalis* (f) is oval shaped. *Epicondylus dorsalis* (l) is rounded. *Processus supracondylaris dorsalis* (m) is short, blunt and mildly bented.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 51B), the *trochlea carpalis* (a) is rounded, symmetrically and strongly convex. *Processus extensorius* (b) is massive and asymmetrically conical. *Processus alularis* (c) is well developed and has rectangular shape. *Fovea subalularis* (d) is profound and conical. *Protuberantia metacarpalis* (e) is located in the external edge of the *os metacarpale majus* and forms undeveloped triangular bulge.

On tibiotarsus the distal epiphysis in cranial view (Fig. 51C), the *tuberositas retinaculi m. fibularis* (a) has blunt triangular shape. *Sulcus extensorius* (b) is wide. *Pons supratendineus* (c) is wide and straight.

Condylus lateralis (d) has oval shape. *Incisura intercondylaris* (e) has deeper concave line. *Condylus medialis* (f) is distally pointed and reverse oval shaped.

Name: Was named after its age (lat. *veterior*=old).

Description: Its characteristics and sizes mostly corresponds to recent species.

Distribution: The genus was reported only from France (Upper Pleistocene) (TYRBERG 1998).

Genus *Sylvia* SCOPOLI, 1769

Sylvia †*intermedia* nova sp.

(Plate XIII. Figure 52 A-E)

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Carpometacarpus dext. (missing *os metacarpale minus*), (MÁFI V.11.69.1; V.29144).

Paratypes: Three humeri dext. (on missed proximal epiphysis, on proximal and on distal fragment); 2 tibiotarsi dext. (distal fragments); 4 tarsometatarsi (3 sin. and 1 dext. distal fragments) (MÁFI V.11.86.9; V.29161).

Measurements: 1. humerus A=aprox.16-18 mm; C=5.24 mm; E=1.69mm; F=3.83-4.73 mm; G=2.09-2.47 mm; 2. carpometacarpus A=12.22 mm; C=2.97 mm; F=2.51 mm; 3. tibiotarsus E=1.07-1.08 mm; F=1.97-2.12 mm; G=1.83-2.07 mm; 4. tarsometatarsus E=1.01 mm; F=1.86-2.04 mm; G=1.06-1.13 mm.

Comparative material: *Sylvia atricapilla* (MTM n=1: humerus A=16.06 mm; C=5.03 mm; E=1.53 mm; F=3.71 mm; carpometacarpus A=1036 mm; C=2.38 mm; tibiotarsus E=0.96 mm; F=2.11 mm; tarsometatarsus E=0.84 mm; F=1.47 mm); *S. borin* (MTM n=1: humerus A=16.79; C=5.51mm; E=1.69mm; F=4.45 mm; G=2.28 mm; carpometacarpus A=12.71 mm; C=3.11 mm; F=2.83 mm; tibiotarsus E=1.27 mm; F=2.65 mm; tarsometatarsus E=1.11 mm; F=1.92 mm; G=1.18 mm); *S. communis* (MTM n=1: humerus A=16.41; C=4.90 mm; E=1.52 mm; F=3.70 mm; carpometacarpus A=11.62 mm; C=2.46 mm; tibiotarsus E=1.12 mm; F=2.28 mm; tarsometatarsus E=0.87 mm; F= 1.78 mm); *S. curruca* (MTM n=1: humerus A=13.46 mm; C=4.47 mm; E=1.34 mm; F=3.09 mm; carpometacarpus A=10.05 mm; C=2.52 mm; tibiotarsus E=1.05 mm; F=2.13 mm; G=1.99 mm; tarsometatarsus E=1.07 mm; F=1.52 mm).

Diagnosis: The bones belong to on middle size species. On proximal epiphysis of the humerus in caudal view (Fig. 52A), the *caput humeri* (a) is wide and convex. *Tuberculum ventrale* (b) has lying S-shape. *Crista bicipitalis* (c) is protruding with rounded end. *Crus fossae* (d) is developed, therefore *fossae pneumotricipitalis* (e) is divided in two. *Tuberculum dorsale* (f) is rounded. On distal epiphysis in cranial view (Fig. 52B), the *tuberculum supracondylare ventrale* (g) is developed. Lateral edge of *epicondylus ventralis* (h) is very mildly bulging. *Processus*

flexorius (i) is more protruding, slightly lopsided and more rounded than in the recent species. *Condylus ventralis* (j) has stretched oval shape. *Incisura intercondylaris* (k) has a profound pit. *Condylus dorsalis* (l) has a bent strongly oval shape, with pointed distal end. *Epicondylus dorsalis* (m) is rounded. (*Processus supracondylaris dorsalis* (n) is damaged. The widening between it and the diaphysis is deeper and more narrowed than in the recent species)

On proximal epiphysis of carpometacarpus in ventral view (Fig. 52C), the *trochlea carpalis* (a) is asymmetrically bulging, wide and flattened. It has rounded end, as the recent species. *Proc. extensorius* (b) has oblique beak-like shape with rounded end. *Processus alularis* (c) is weakly developed and has rectangle shape. Bellow it the *fovea subalularis* (d) is acute angled. *Protuberantia metacarpalis* (e) is wide and flat.

On tibiotarsus the distal epiphysis in cranial view (Fig. 52D), the *tuberositas retinaculi m. fibularis* (a) is weakly developed, bellow it the diaphysis narrowing. *Sulcus extensorius* (a) is wide, with rounded end. *Pons supratendinous* (c) is wide and straight. *Condylus lateralis* (d) is oval and flattened, with pointed end. Line of *incisura intercondylaris* (e) is concave. *Condylus medialis* (f) has reversed oval shape.

On distal epiphysis of tarsometatarsus in dorsal view (Fig. 52E), the edge (b) between *fossa metatarsi* I. (a) and *trochlea metatarsi* II. is wavy. *Trochlea metatarsi* II. (c) has lopsided conical shape. *Incisura intertrochlearis medialis* (d) is wide and weakly deep. *Trochlea metatarsi* III. (e) is wide and its end is slightly concave. *Incisura intertrochlearis lateralis* (f) is wide and deep. *Trochlea metatarsi* IV. (g) has short conical shape with blunted end.

Description: It is a medium-sized species. The *crista pectoralis* is damaged. The tibiotarsi are relatively smaller than the other bones.

Sylvia † *pussila* nova sp.
(Plate XIII. Figure 53 A-C)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Other locality: Beremend 26, Pliocene (MN 15-16).

Holotype: Carpometacarpus sin. (proximal fragment), (Csarnóta 2, MÁFI V.11.7.1; V.29082).

Paratypes: Carpometacarpus dext. (proximal fragment); one right and one left side tarsometatarsus (distal fragments), (Csarnóta 2, MÁFI V.11.108.3; V.29183); proximal fragment of humerus dext. (Beremend 26, BKA).

Measurements: 1. humerus B=5,03 mm; C=4,71 mm; D=3,37 mm; E=1,47 mm 2. carpometacarpus C=2,43-2,53 mm; 3. tarsometatarsus F=1.64-1.68 mm; G=1.09-1.27 mm.

Comparative material: *Sylvia atricapilla* (MTM n=1; humerus B=4,88 mm; C=5,07 mm; D=3,73 mm; E=1,48 mm; carpometacarpus: C=2.38 mm; tarsometatarsus: F=1.47 mm); *S. borin* (MTM n=1; humerus C=5,48 mm; E=1,69 mm; carpometacarpus: C=3.11 mm; tarsometatarsus: F=1.92 mm; G=1.18 mm); *S. communis* (MTM n=1; humerus C=4,90 mm; E=1,52 mm; carpometacarpus: C=2.46 mm; tarsometatarsus: F=1.78 mm); *S. curruca* (MTM n=1; humerus C=4,47 mm; E=1,34 mm; carpometacarpus: C=2.52 mm; tarsometatarsus: F=1.52 mm).

Diagnosis: On proximal epiphysis of humerus in cranial view (Fig. 53A), the *caput humeri* (a) is wide and less convex. *Tuberculum ventrale* (b) forms oval-like spur. *Crista bicipitalis* (c) is rounded and strongly protruding. *Crus fossae* (d) is well developed, therefore *fossae pneumotricipitalis* (e) is divided in two.

On proximal epiphysis of the carpometacarpus in ventral view (Fig. 53B), the *trochlea carpalis* (a) is symmetrically bulged conical shape. *Proc. extensorius* (b) is obliquely and strongly blunted conical shaped. *Processus alularis* (c) has rectangle shape. *Fovea subalularis* (d) has pointed conical shape.

On distal epiphysis of tarsometatarsus in dorsal view (Fig. 53C), the edge between *fossa metatarsalis* I. and *trochlea metatarsi* II. (a) is wavy. *Trochlea metatarsi* II. (b) is damaged. *Incisura intertrochlearis medialis* (c) has wide acute angle shape. *Trochlea metatarsi tertii* (d) is wide and with bellow concave end. *Incisura intertrochlearis lateralis* (e) is strongly wide. *Trochlea metatarsi* IV. (f) has asymmetrically rounded shape.

Name: Its name refers to smaller size of species.

Description: The bones become to one smaller size species. The *trochlea metatarsi* II. is damaged.

Distribution: The genus was described also from the Carpathian Basin as *Sylvia* sp. foss.indet. in the Late Miocene of Polgárdi (MN13) (JÁNOSSY 1991); from Csarnóta 2 and Beremend 26 - Hungary (Lower Pliocene, MN 15) (KESSLER 2010); and in the Early Pleistocene of Betfia 9-Romania (MQ1) (GÁL 2002). The recent species was reported also from the Early Pleistocene (MQ1) as *Sylvia atricapilla* (LINNAEUS, 1758) from Betfia 9-Romania (GÁL 2002) and Deutsch-Altenburg -Austria (JÁNOSSY 1981); *Sylvia communis* LATHAM, 1787 from Betfia 2-Romania (ČAPEK, 1917; LAMBRECHT 1933; JÁNOSSY 1979; KESSLER 1975; GÁL 2002); and from Betfia 9 - Romania (KESSLER 1975; GÁL 2002).

The genus it is known outside the Carpathian Basin from the Early Pleistocene of S'Onix - Mallorca, Spain (MN 18) (SONDAAR et al. 1995) with recent species.

Genus *Locustella* KAUP, 1829

Locustella † *kordosi* nova sp.

(Plate XIV. Figure 54 A-D)

Type locality and age: Polgárdi 4, 5; Late Miocene (MN 13).

Holotype: Humerus dext. (proximal fragment), (MÁFI V.11.104.1; V.29179).

Paratypes: Humerus sin. (proximal fragment); ulna sin. (distal fragment); 8 tibiotarsi (4 sin. and 4 dext. distal fragments), (MÁFI V.11.111.1, V.11.126.9; V.29186, V.29201).

Measurements: 1. humerus C=3.83-4.14 mm; 2. ulna F=2.36 mm, G=1.71 mm; 3. tibiotarsus E=1.09 mm; F=2.03-2.25 mm; G=1.83-2.20 mm.

Comparative material: *Locustella fluviatilis* (MTM n=1: ulna F=2.69 mm, G=1.89 mm; tibiotarsus E=1.14 mm; F=2.55 mm); *L. luscinia* (MTM n=1: humerus C=4.61 mm; ulna F=2.29 mm, G=1.67 mm; tibiotarsus E=1.13 mm; F=2.22 mm; G=2.17 mm); *L. naevia* (MTM n=1: humerus C=4.18 mm; ulna F=2.43 mm; tibiotarsus E=1.07 mm; F=2.16 mm).

Diagnosis: Corresponds in characteristics to species of recent genus. On proximal epiphysis of humerus in caudal view (Fig. 54A), the *tuberculum dorsale* (a) is angular. *Caput humeri* (b) is wide and convex. *Tuberculum ventrale* (c) is well developed and has one semicircular shape. *Crus fossae* (e) is well developed, therefore *fossae pneumotricipitalis* (f) is divided in two. In cranial view (Fig. 54B), the *crista bicipitalis* (d) is asymmetrically protruding and rounded.

On distal epiphysis of ulna in medial view (Fig. 54C), the *condylus dorsalis* (a) has claw-like shape. *Sulcus intercondylaris* (b) is less concave. *Condylus ventralis* (c) is wide and blunt, oblique, conical shaped. *Tuberculum carpale* (d) is protruding and has symmetrically rounded shape.

On tibiotarsus the distal epiphysis in cranial view (Fig. 54D), the *tuberositas retinaculi m. fibularis* (a) is weakly developed and flattened, below it the diaphysis is narrowing. *Sulcus extensorius* (b) is wide. *Pons supratendineus* (c) is narrow and slightly lopsided. *Condylus lateralis* (d) is oval. Line of *incisura intercondylaris* (e) is concave and slightly wavy. *Condylus medialis* (f) has flattened oval shape.

Name: Was named after László KORDOS, Hungarian paleontologist.

Description: It corresponds in characteristics and sizes to the recent species of the genus. On proximal epiphysis of humerus the *crista pectoralis* is damaged. On ulna the *condylus dorsalis* is more pointed than in the recent species.

Locustella † *janossyi* nova sp.

(Plate XIV. Figure 55 A-B)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Other locality: Beremend 26, Pliocene (MN 15-16).

Holotype: Tibiotarsus dext. (distal fragment), (Csarnóta 2, MÁFI V.11.35.1; V.29110).

Paratype: Distal fragment of humerus sin. (Beremend 26, BKA).

Measurements: humerus F=3,73 mm; G=2,08 mm; tibiotarsus E=1.14 mm; F=1.77 mm; G=2.02 mm.

Comparative material: *Locustella luscinia* (MTM n=1; tibiotarsus: E=1.16 mm; F=2.15 mm; G=2.28 mm); *Locustella naevia* (MTM n=1: humerus F=3,59 mm; G=1,90 mm; tibiotarsus: E=1.28 mm; F=3,31); *Locustella luscinioides* (MTM n=1: humerus F=2,91 mm; G=1,75 mm; tibiotarsus: E=1.23 mm; F=2,91).

Diagnosis: On distal epiphysis in cranial view of humerus (Fig. 55A), the *tuberculum ventrale* (a) is well developed. The *epicondylus ventralis* (b) is strongly arches. *Processus flexorius* (c) is less protruding and rounded. *Condylus ventralis* (d) has extended oval shape. *Incisura intercondylaris* (e) is deep and wide. *Condylus dorsalis* (f) has bented oval shape. *Epicondylus dorsalis* (g) is rounded. *Proc. supracondylaris dorsalis* (h) has pointed shape (but it is damaged).

On distal epiphysis of tibiotarsus in cranial view (Fig. 55B), the *tuberositas retinaculi m. fibularis* (a) is wide and flattened. *Sulcus extensorius* (b) is wide and distally rounded. *Pons supratendineus* (c) is wide and weakly obliquely. *Condylus lateralis* (d) is damaged, but has laterally flatted and distally pointed shape. Line of *incisura intercondylaris* (e) is concave and slightly wavy. *Condylus medialis* (f) is distally pointed and laterally flattened shaped.

Name: Was named after the Hungarian paleornithologist Dénes JÁNOSSY.

Description: Corresponds in its characteristics to recent genus and in dimensions with smaller sizes recent species. The extinct species identified from Polgárdi – Hungary (Upper Miocene, MN 13) as *L. kordosi* KESSLER, 2012 differ it in bigger size and in the shape of *pons tendineus* and *condylus medialis* (the previously is narrow and the latter is more stodgy than the Polgárdi specimen).

Locustella † *magna* nova sp.

(Plate XIV. Figure 56 A-B)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Humerus sin. (BKA)

Measurements: Humerus A=16,91 mm; B=7,11 mm; C=5,73 mm; D=4,68 mm; E=1,61 mm; F=4,48 mm; G=2,36 mm.

Comparative material: *Locustella luscinioides* (MTM n=1: humerus A=15,21 mm; B=5,43 mm; C=4,66 mm; D=3,81 mm; E=1,48 mm; F=3,69 mm; G=1,89 mm); *L. naevia* (MTM n=1: humerus

A=13,14 mm; B=mm; C=4,18 mm; D=mm; E=1,28 mm; F=3,34 mm).

Diagnosis: On proximal epiphysis of humerus in cranial view (Fig. 56A), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and convex. *Tuberculum ventrale* (c) forms semicircular spur. *Crista bicipitalis* (d) is asymmetrical rounded and strongly protruding. *Crus fossae* (e) is well developed, therefore *fossae pneumotricipitalis* (f) is divided in two.

On distal epiphysis in cranial view of humerus (Fig. 56), the *tuberculum ventrale* (g) is developed. The *epicondylus ventralis* (h) is rounded. *Processus flexorius* (i) is protruding and rounded. *Condylus ventralis* (j) has extended oval shape. *Incisura intercondylaris* (k) is deep and wide. *Condylus dorsalis* (l) has bent oval shape. *Epicondylus dorsalis* (m) is rounded. *Proc. supracondylaris dorsalis* (n) is wide with rounded end.

Name: Was named after its large size.

Description: Corresponds in its characteristics to recent species, but it is more larger in its sizes.

Distribution: The genus was reported as *Locustella* sp. foss.indet. from the Late Miocene of Rudabánya – Hungary (MN 9), (JÁNOSSY 1994) and as *Locustella fluviatilis* (WOLF, 1810) from the Early Pleistocene (MQ1) of Betfia 9 - Romania (GÁL 2002).

Outside of the Carpathian Basin the genus is known only from the Late Pleistocene of Czech Republic (TYRBERG 1998).

Genus *Regulus* VIEILLOT, 1807

Regulus † *plioaenicus* nova sp.

(Plate XIV. Figure 57)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Humerus sin. with damaged distal epiphysis (BKA).

Measurements: Humerus A=apr.11,50 mm; B=3,40 mm; C=3,36 mm; D=3,17 mm; E=1,20 mm; F= apr.2,60 mm; G=apr.1,50 mm.

Comparative material: *Regulus regulus* (MTM n=1: humerus A=10,27 mm; B=3,50 mm; C=2,90 mm; D=1,32 mm; E=0,98 mm; F=2,79 mm; G=1,24 mm).

Diagnosis: On proximal epiphysis of humerus in cranial view (Fig. 57), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and convex. *Tuberculum ventrale* (c) forms semicircular spur. *Crista bicipitalis* (d) is asymmetrical rounded. *Crus fossae* (e) is less developed, but *fossae pneumotricipitalis* (f) is divided into two. On distal epiphysis in cranial view of humerus, the *proc. supracondylaris dorsalis* (g) is located low and away from the corpus of epiphysis.

Name: Was named after the age of site.

Description: Corresponds in its characteristics to recent species, but it is larger in its sizes.

Distribution: The genus is known with the extinct species *Regulus bulgaricus* BOEV, 1999 from Varshets - Bulgaria (Late Pliocene, MN 17) (BOEV 1999). The recent species was reported from S'Onix - Mallorca, Spain (Early Pleistocene, Q1) (SONDAAR et al.1995) and from Hundsheim - Austria (Middle Pleistocene, Q3) (LAMBRECHT 1933; JÁNOSSY 1974, 1979) and from some sites of the the Late Pleistocene from Europa (TYRBERG 1998).

Genus *Phylloscopus* BOIE, 1826

Phylloscopus † *venczeli* nova sp.

(Plate XV. Figure 58 A-C)

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Carpometacarpus dext. (MÁFI V.11.74.1; V.29149).

Paratypes: Two ulnae sin. (one complete and one proximal fragment); carpometacarpus dext. (proximal fragment), (MÁFI V.11.89.4; V.29164).

Measurements: 1. carpometacarpus A=9.19 mm; C=2.21-2.42 mm; E=1.77 mm; F= 2.18 mm; 2. ulna A=14.73 mm; B=2.49-2.76 mm; C=2.09-2.46 mm; E= 1.09 mm; F=2.14 mm; G=1.66 mm;

Comparative material: *Phylloscopus collybita* (MTM n=1: 1. carpometacarpus A=9.51 mm; C=2.22 mm; 2. ulna A=16.73 mm; B=2.62 mm; C=2.23 mm; E=1.02 mm; F=2.09 mm; G=1.61 mm); *P.sibilatrix* (MTM n=1: 1. carpometacarpus A=9.17 mm; C=2.39 mm; E=1.78 mm; F=2.19 mm; 2. ulna A=16.66 mm; B=2.58 mm; C=2.44 mm; E= 1.18 mm; F=2.01 mm; G=1.53 mm); *P. trochilus* (MTM n=1: 1. carpometacarpus A=10.35 mm; C=1.95 mm; 2. ulna A=15.76 mm; C=2.14 mm; E=1.03 mm; F=1.97mm).

Diagnosis: Corresponds in its characteristics to recent species of the genus. On proximal epiphysis of ulna in cranial view (Fig. 58A), the *oleocranon* (a) is long, even and blunt. *Cotyla dorsalis* (b) has protruding symmetrically semicircular shape. *Cotyla ventralis* (c) has symmetrically circular shape. *Tuberculum lig. colat. ventralis* (d) and *depressio m. brachialis* (e) are developed. On distal epiphysis in medial view (Fig. 58B), *condylus dorsalis* (f) has rounded blunt claw shape. *Sulcus intercondylaris* (b) is slightly concave. *Condylus ventralis* (c) is oblique and blunt conical. *Tuberculum carpale* (f) has truncated conical shape.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 58C), the *trochlea carpalis* (a) is semicircular (but partially damaged). *Proc. extensorius* (b) is short, stout and oblique conical. *Processus alularis* (c) is small and rectangular shaped, below it, the *fovea subalularis* (d) is acute angle shaped. *Protuberantia metacarpalis* (e) is small and has triangular shape.

Name: Was named after the Hungarian paleontologist from Romania, Márton VENCZEL.

Description: It corresponds in characteristics and sizes to recent species of the genus. The genus was reported from Felsőtárkány–Hungary (Middle Miocene, MN 7/8) as *Phylloscopus miocaenicus* KESSLER et HÍR 2012 in basis of phalanga alae 1. dig. II. did, but this bone it is not in Polgardi's material. (KESSLER & HÍR 2012).

Phylloscopus †*pliocaenicus* nova sp.
(Plate XV. Figure 59)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Humerus dext. (with damaged proximal epiphysis), (MÁFI V.11.3.1; V.29078).

Measurements: Humerus A=aprox.13-14 mm; E=1.29 mm; F=3.55 mm; G=1.84 mm.

Comparative material: *Phylloscopus trochillus* (MTM n=1; humerus: A=13.25 mm; E=1.43 mm; F=3.25 mm; G=1.74 mm), *Phylloscopus collybita* (MTM n=1; humerus: A=12.30 mm; E=11.80 mm; F=3.01 mm; G=1.66 mm).

Diagnosis: On distal epiphysis in cranial view of humerus (Fig. 59), the *tuberculum ventrale* (a) is well developed. The *epicondylus ventralis* (b) is strongly arches. *Processus flexorius* (h) has semicircular shape. *Condylus ventralis* (d) has extended oval shape. *Incisura intercondylaris* (e) is deep and narrow. *Condylus dorsalis* (f) has oval shape and less oblique than in the recent species. *Epicondylus dorsalis* (g) is strongly rounded.

Name: Its name refers to age of sediment.

Description: Its characteristics corresponds to recent genus. The *proc. supracondylaris dorsalis* missed. On recent species it is long with blunted end. The hollow. between it and the diaphysis is wide.

Distribution: Outside of Carpathian Basin the genus is known the the Late Pliocene from Varsets (MN 17, Bulgaria) as *Phylloscopus* sp. (BOEV 1996, 2000); from Cerdzenica – Bulgaria (Lower Pleistocene, MQ1), (BOEV 2000) and from Israel (Middle Pleistocene) (TYRBERG 1998).

The family was identified in Neogene only from the Carpathian Basin.

Family Motacillidae (VIGORS, 1825)

Genus *Anthus* BECHSTEIN, 1807

Anthus †*hiri* nova sp.

Plate XV. Figure 60 A-C)

Type locality and age: Polgárdi 5, Late Miocene (MN 13).

Holotype: Carpometacarpus dext. (MÁFI V.11.98.1; V.29173).

Paratypes: Two carpometacarpi (proximal fragments dext. and sin.), tarsometatarsus sin. (distal fragment) (MÁFI V.11.122.3; V.29197).

Measurements: 1. carpometacarpus A=11.83 mm; C=2.61-3.09 mm; F=2.58 mm; 2. tarsometatarsus F=2.19 mm; G=1.38 mm.

Comparative material: *Anthus campetris* (MTM n=1: carpometacarpus A=15.13 mm; C=3.41 mm; F=3.22 mm; tarsometatarsus F=2.34 mm; G=1.39 mm); *A. pratensis* (MTM n=1: carpometacarpus A=14.28 mm; C=3.76 mm; F=2.93 mm; tarsometatarsus F=2.33 mm; G=1.35 mm); *A. spinoletta* (MTM n=1: carpometacarpus A=14.09 mm; C=3.48 mm; F=2.68 mm; tarsometatarsus F=2.37 mm; G=1.18 mm); *A. trivialis* (MTM n=1: carpometacarpus A=12.83 mm; C=3.15 mm; F=2.79 mm; tarsometatarsus F=2.14 mm; G=1.11mm).

Diagnosis: Its characteristics corresponds to recent *Anthus* genus, in sizes to smaller species as *A. spinoletta* and *A. trivialis*. On proximal epiphysis of carpometacarpus in ventral view (Fig. 60A), the *trochlea carpalis* (a) is symmetrically bulging semicircular. *Proc. extensorius* (b) is short, obliquely asymmetric and has rounded end. *Processus alularis* (c) is rectangular shaped, below it, *fovea subalularis* (d) has mangled conical shape (in dorsal view, Fig. 60B). The large *protuberantia metacarpalis* (e) is triangular.

On distal epiphysis of tarsometatarsus in dorsal view (Fig. 60C), *trochlea metatarsi II.* (a) has asymmetrical conical shape. *Incisura intertrochlearis medialis* (b) is acute angle shaped. *Trochlea metatarsi III.* (c) is wide, and its end is concave. *Incisura intertrochlearis lateralis* (d) is acute angle shaped. *Trochlea metatarsi IV.* (e) is wider claw-like.

Name: Was named after Hungarian paleontologist János Hír.

Description: It correspond in its characters to recent genus *Anthus* its sizes is between recent *A. spinoletta* and *A. trivialis*, id est belongs to the pipits with a smaller stature. The fossil species *Anthus antecedens* KESSLER et HÍR, 2012 from Middle Miocene of Felsőtárkány (MN 7/8) was identified based on one phalanga alae (KESSLER & HÍR 2012), otherwise it is assigned to pipits with larger stature.

Anthus †*baranensis* nova sp.
(Plate XV. Figure 61 A-B)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Coracoid dext. (cranial fragment) (MÁFI V.11.8.1; V.29083).

Paratypes: Ulna sin. (distal fragment) (MÁFI V.11.36.1; V.29111).

Measurements: 1. coracoid C=2.93 mm; D=2.49 mm; 2. ulna F=3.03 mm.

Comparative material: *Anthus trivialis* (MTM n=1; coracoid: C=3.15 mm; D=2.42 mm; ulna: F=2.86 mm).

Diagnosis: On medial side of coracoideum (Fig. 61A) in cranial end, the *acrocoracoideum* (a) has

symmetrical blunted cone shape. Its medial edge bulges mildly. End of *processus accessorius* (b) has elongated beak-like shape. Edge of *sulcus m. supracoracoideus* (c) is mildly flattened concave shape. *Facies articularis humeralis* (d) has cranial edge, strongly bulges and rounded. Point of *processus procoracoideus* (e) more exceeds the medial edge of corpus.

On distal epiphysis in medial view of ulna (Fig. 61B), the *condylus dorsalis* (a) is strongly rounded and has conical shape. *Sulcus intercondylaris* (b) is wide and slightly concave. *Condylus ventralis* (c) has asymmetrical semicircular shape. *Tuberculum carpale* (d) has asymmetrical blunted conical shape.

Etymology: Was named after the name of the Baranya County.

Description: It corresponds in its characteristics to smaller size recent species.

Distribution: The genus was reported also as *Anthus* sp. foss.indet. from Beremend 15 – Hungary (Late Pliocene, MN 16) by JÁNOSSY (1992); from Betfia 2 – Romania (Early Pleistocene, MQ1), (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979; KESSLER 1975; GÁL 2002); and from Betfia 9-Romania (Early Pleistocene, MQ1), (KESSLER 1975; GÁL 2002).

On outside the Carpathian Basin the genus is known from Rebielice Królowskie 1 – Poland (Upper Pliocene, MN 16) (JÁNOSSY, 1974); Varseths - Bulgaria (Upper Pliocene, MN 16, MN 17) (BOEV 1996, 2000) and with recent species from the Early Pleistocene of Bulgaria, Czech Republic, France and Spain (Tyrberg 1998). The fossil species *Anthus bosniackii* PYCRAFT, 1909 from Gabbro – Italy (Upper Miocene, MN 13) was put by MLÍKOVSKÝ into „*Family incertae sedis*” (MLÍKOVSKÝ 2002).

Genus *Motacilla* LINNAEUS, 1758

Motacilla †*intermedia* nova sp.

(Plate XVI. Figure 62 A-G)

Type locality and age: Polgárdi 4,5; Late Miocene (MN 13).

Holotype: Humerus sin. (proximal fragment) (MÁFI V.11.95.1; V.29170).

Paratypes: Humerus dext. (with damaged proximal epiphysis); 4 sin. and dext. humeri (distal fragments); 2 ulnae sin.(distal fragments); 3 dext. and one sin. complete carpometacarpus; one dext. and one sin. carpometacarpus (missing *os metacarpale minus*), 4 femura (distal fragments, 2 dext. and 2 sin.); tibiotarsi dext. (distal fragment); 4 tarsometatarsi sin. (distal fragments) (MÁFI V.11.114.7, V.11.119.9; V.29189, V.29154).

Measurements: 1.humerus A=14.75 mm; B=5.69 mm; C=5.79 mm; E=1.48-1.86 mm; F= 3.66-4.41 mm; G=1.98-2.38 mm; 2. ulna E=1.61 -1,91 mm; F=2.65-3.30 mm; G=1.69-2.22 mm; 3. carpometacarpus A=11.85-12.39 mm; C=2.84-2.97 mm; F=2.47mm; 4. femur E=1.18-1.33 mm; F=2.61-

2.93 mm; G=2.01-2.29 mm; 5. tibiotarsus F=2.36 mm; G=2.18 mm; 6. tarsometatarsus E=0.93-1.12 mm; F=2.05-2.19 mm; G=1.13-1.15 mm.

Comparative material: *Motacilla alba* (MTM n= 1: humerus A=18.50 mm; B=5.86 mm; C=5.99 mm; E=2.07 mm; F=4.54 mm; G=2.49 mm; ulna E=1.53 mm; F=2.99 mm; G=2.12 mm; carpometacarpus A=14.28 mm; C=3.53 mm; F= 2.81mm; femur E=1.34 mm; F=2.92 mm; G=2.33 mm; tibiotarsus F= 2.43 mm; G=2.38 mm; tarsometatarsus E=1.08 mm; F=2.21 mm; G=1,23 mm); *M. cinerea* (MTM n= 1: humerus A=17.40 mm; B=5.48 mm; E=1.48-1.86 mm; F=3.69 mm; G=2.44 mm; ulna E=1.38 mm; F=2.54 mm; G=1.83 mm; carpometacarpus A=12.63 mm; C=3.01 mm; F=2.62mm; femur E=1.01 mm; F=1.93 mm; G=1.85 mm; tibiotarsus F= 2.36 mm; G=2.18 mm; tarsometatarsus E=1.01mm; F=2.05-2.19 mm; G=1.13mm); *M. flava* (MTM n= 1: humerus A=17.04 mm; B=5.30 mm; C=6.04 mm; E=1.60 mm; F=4.83 mm; G=2.28 mm; ulna E=1.47 mm; F=2.64 mm; G=1.78 mm; carpometacarpus A=12.63 mm; C=3.82 mm; F=2.78 mm; femur E=1.18 mm; F=2.52 mm; G=2.00 mm; tibiotarsus F=2.36 mm; G=2.32 mm; tarsometatarsus E=1.48 mm; F=2.07 mm; G=1.16 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 62A), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and convex, but not too outstanding. *Tuberculum ventrale* (c) is semicircular and smaller than in recent species. *Crista bicipitalis* (d) is slightly pointed and has protruding beak shape. *Crus dorsale fossae* is weakly developed, therefore the two parts of *fossa pneumotricipitalis* (e) are shown together. On distal epiphysis in cranial view (Fig. 62B), the *tuberculum supracondylare ventrale* (f) is developed. *Epicondylus ventralis* (g) is rounded. *Processus flexorius* (h) is slightly lopsided and rounded. *Condylus ventralis* (i) is extended oval shaped. *Incisura intercondylaris* (j) is in acute angle. *Condylus dorsalis* (k) has strongly curved ovale shaped. *Epicondylus dorsalis* (l) is rounded. *Proc. supracondylaris dorsalis* (m) is slightly pointed.

On distal epiphysis of ulna in medial view (Fig. 62C), the *condylus dorsalis* (a) is laterally rounded and has a distally pointed claw-like shape. *Sulcus intercondylaris* (b) is concave. *Condylus ventralis* (c) has oblique conical shape. *Tuberculum carpale* (d) is asymmetrically rounded and protruding.

On proximal epiphysis of the carpometacarpus in ventral view (Fig. 62D), the *trochlea carpalis* (a) is symmetrically bulging. It is semicircular, as in the recent species. *Proc. extensorius* (b) has short, oblique conical-like shape with rounded end. *Processus alularis* (c) is conical, below it, the *fovea subalularis* (d) has acute angle shape. *Protuberantia metacarpalis* (e) is large and has triangular shape.

On distal epiphysis of femur in caudal view (Fig. 62E), the exterior side of *trochlea fibularis* (a) is rounded. Distal end of *condylus lateralis* (b) forms

one arc. *Incisura intercondylaris* (c) is concave. *Condylus medialis* (d) has oblique, strongly blunted conical shaped. *Epicondylus medialis* (e) is well developed.

On distal epiphysis of tibiotarsus in cranial view (Fig. 62F), the *tuberositas retinaculi m. fibularis* (a) is flat and underdeveloped. *Sulcus extensorius* (b) is narrow with rounded distal end. *Pons supratendinous* (c) is wide and straight. *Condylus lateralis* (d) has oval shape, with distally rounded end. Line of *incisura intercondylaris* (e) is concave and wavy. *Condylus medialis* (f) is distally rounded oval shaped.

On distal epiphysis of tarsometatarsus in dorsal view (Fig. 62G), the *trochlea metatarsi II.* (a) is distal widening conical, with cut-off end. *Incisura intertrochlearis medialis* (b) is narrow and deep. *Trochlea metatarsi III.* (c) is wide with mildly concave end. *Incisura intertrochlearis lateralis* (d) is deep and widening. *Trochlea metatarsi IV.* (e) is asymmetric conical with rounded end.

Name: Was named after its intermediate characteristics.

Description: The sizes is intermediate between to *M. alba* and *M. cinerea*, but in morphological characteristics it resembles *M. alba*. In several characters it exhibits the mixture of the characters of *Anthus* and *Motacilla* types.

Motacilla † *minor nova* sp.
(Plate XVI. Figure 63)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Carpometacarpus dext. (BKA).

Measurements: Carpometacarpus A=12,37 mm; B=10,28 mm; C=3,22 mm; F=2,30 mm.

Comparative material: *Motacilla alba* (MTM n=1: A=14,28 mm; C=3,53 mm; F= 2,81mm); *M. cinerea* (MTM n= 1: A=12,63 mm; C=3,01 mm; F= 2,62mm); *M. flava* (MTM n= 1: A=12,94 mm; C=3,82 mm; F=2,78 mm).

Diagnosis: On proximal epiphysis of carpometacarpus in ventral view (Fig. 26), the *trochlea carpalis* (a) has asymmetrically bulging conical shape. *Proc. extensorius* (b) is obliquely asymmetrical shaped with rounded end. *Processus alularis* (c) is rounded rectangle shaped, below it, *fovea subalularis* (d) has mangled conical shape. *Protuberantia metacarpalis* (e) is undeveloped.

Name: Was named after its small size.

Description: It corresponds in its characteristics with recent *Motacilla flava*, but has intermediate dimensions between *M. flava* and *M. cinerea*.

Motacilla † *robusta nova* sp.
(Plate XVI. Figure 64)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Proximal fragment of humerus sin. (BKA).

Measurements: Humerus B=7,31 mm; C=6,91 mm; E=2,18 mm.

Comparative material: *Motacilla alba* (MTM n=1: humerus B=6,91 mm; C=5,80 mm; E= 1,72 mm); *M. cinerea* (MTM n=1: humerus B=5,93 mm; C=5,23 mm; E=1,84 mm); *M. flava* (MTM n=1: humerus B=6,24 mm; C=5,21 mm; E=1,89 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 64), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and less convex, not too outstanding. *Tuberculum ventrale* (c) is semicircular and smaller than in the recent species. *Crista bicipitalis* (d) is protruding with pointed cut-off end. *Crus dorsale fossae* is weakly developed, therefore the two parts of *fossa pneumotricipitalis* (e) are shown together.

Name: Was named after its bigger dimensions.

Description: It is more robust than the recent species.

Distribution: In the Carpathian Basin the genus was reported also from Mátraszőlös 1 - Hungary (Middle Miocene, MN 7/8) as *Motacilla* sp. indet. based on a claw (KESSLER & HÍR 2012), from Csarnóta 2 - Hungary (Lower Pliocene, MN 15), (KESSLER 2010); from Beremend 26 - Hungary (Lower Pliocene, MN 15) (KESSLER 2010) and from Polgárdi (Upper Miocene, MN 13) by JÁNOSSY (1991). The recent species is known from the Early Pleistocene (MQ1) as *Motacilla alba* LINNAEUS, 1758 Q1 from Betfia 2 - Romania (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979a; KESSLER 1975; GÁL 2002); from Betfia 9 - Romania (KESSLER 1975; GÁL 2002); as *Motacilla flava* LINNAEUS, 1758; Q1 from Betfia 9 - Romania (GÁL 2002) and as *Motacilla cinerea* TUNSTALL, 1771; Q1 from Betfia 9 - Romania (GÁL 2002).

The genus was described outside of the Carpathian Basin from Varshets - Bulgaria (Upper Pliocene, MN 17) by BOEV (1996, 2000), and from Stránská skalá - Czech Republic (Lower Pleistocene, MQ1) by MLÍKOVSKÝ (1995). The fossil species *Motacilla humata* MILNE-EDWARDS 1871 and *Motacilla major* MILNE-EDWARDS 1871 (MILNE-EDWARDS 1871) from Saint-Gerand-le-Puy - France (Lower Miocene, MN 2) has a disputed situation (MLÍKOVSKÝ 2002).

Family Bombycillidae (SWAINSON), 1832

Genus *Bombycilla* (SWAINSON), 1832

Bombycilla † *brevia nova* sp.
(Plate XVII. Figure 65 A-C)

Type locality and age: Polgárdi 5, Late Miocene (MN 13).

Holotype: Coracoideum dext. (MÁFI V.11.96.1; V.29171).

Paratypes: Humerus dext. (with damaged proximal epiphysis); tibiotarsus sin. (distal fragment) (MÁFI V.11.120.2; V.29195).

Measurements: 1. coracoid A=17.95 mm; B=17.11 mm; C=2.48 mm; D=3.19 mm; E=1.56 mm; G=4.28 mm; 2. humerus A= approx. 22-23 mm; E=2.41 mm; F=5.91 mm; G=3.22 mm; 3. tibiotarsus F=2.94 mm; G=2.62 mm.

Comparative material: *Bombycilla garrulus* (MTM n=1: coracoid A=24.44 mm; B=23.96 mm; C=3.78 mm; D=4.55 mm; E=2.35 mm; G=6.39 mm; humerus A=26.12 mm; E=2.65 mm; F=6.53 mm; G=3.71 mm; tibiotarsus E=1.45 mm; F=3.28 mm; G=3.22 mm).

Diagnosis: Coracoid and tibiotarsus are smaller than in recent species. On the dorsal side of coracoid (Fig. 65A), the *acrocoracoid* (a) is short and has truncated conical shape. *Processus accessorius* (b) has short and blunted conical shape. Edge of *sulcus m. supracoracoidei* (c) forms strongly concave line. *Processus procoracoidei* (d) is triangular and its point strongly exceeds the medial edge of the corpus. *Facies aricularis humeralis* (e) has straight medial edge with a rounded cranial end.

On the distal epiphysis in cranial view of the humerus (Fig. 65B), the *tuberculum supracondylare ventrale* (a) is rounded and less bulged than in the recent species. *Processus flexorius* (b) is protruding and distally rounded. *Condylus ventralis* (c) is oval shaped with pointed end. *Incisura intercondylaris* (d) is concave and deep. *Condylus dorsalis* (e) has strongly curved oval shape, more than in the recent species. *Epicondylus dorsalis* (f) is less rounded than in recent genus. *Proc. supracondylaris dorsalis* (g) is short, blunt, forked, but the distal larger branch is shorter than in the recent species.

On tibiotarsus the distal epiphysis in cranial view (Fig. 65C), the *tuberositas retinaculi m. fibularis* (a) is wide and rounded, situated distantly the distal epiphysis. *Sulcus extensorius* (b) is wide. *Pons supratendinous* (c) is wide and straight. *Condylus lateralis* (d) is distally rounded oval. The line of *incisura intercondylaris* (e) is wavy. *Condylus medialis* (f) is distally rounded and laterally flattened oval.

Name: Its name is after the brevity of the bones last.

Description: The dimensions of the coracoid and tibiotarsus are much smaller than in the recent species. The humerus is already less. The tibiotarsus of the fossil species *Bombycilla hamori* KESSLER et HÍR, 2012 identified from Litke 2- Hungary (Lower Miocene, MN 5) is much larger than the Polgárdi specimen. (F=3,32 mm; G=3,03 mm). In the morphological characters the two species are similar in that the *tuberositas retinaculi musculus fibularis* is rounded; the distal end of *sulcus extensorius* is wide; the *incisura intercondylaris* forms a wavy line; but the

condylus lateralis and *condylus medialis* distally are not rounded but narrowing (KESSLER & HÍR 2012).

Bombycilla † *kubinyii* nova sp.
(Plate XVII. Figure 66 A-B)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Humerus sin. with missed proximal epiphysis (BKA);

Paratypes: Distal fragment of the left side tibiotarsus (BKA).

Measurements: Humerus E=2,88 mm; F=7,95 mm; G=3,64 mm; tibiotarsus E=1,80 mm; F=3,44mm; G=2,99 mm.

Comparative material: *Bombycilla garrulus* (MTM n=1: humerus E=2,65 mm; F=6,53 mm; G=3,71 mm; tibiotarsus E=1,45 mm; F=3,51 mm; G=3,31 mm).

Diagnosis: On distal epiphysis in cranial view of humerus (Fig. 66A), the *tuberculum supracondylare ventrale* (a) is rounded and less bulged than in the recent species. *Epicondylus ventralis* (b) is rounded. *Processus flexorius* (c) is protruding and distally rounded. *Condylus ventralis* (d) has oval shape. *Incisura intercondylaris* (e) is concave, wide and deep. *Condylus dorsalis* (f) is less rounded. *Epicondylus dorsalis* (g) is less rounded. *Proc. supracondylaris dorsalis* (h) is short, wide and blunt.

On tibiotarsus the distal epiphysis in cranial view (Fig. 66B), the *tuberositas retinaculi m. fibularis* (a) is small and flatted. *Sulcus extensorius* (b) is narrow and distally pointed. *Pons supratendinous* (c) is wide and straight. *Condylus lateralis* (d) is distally pointed ovalic. Line of *incisura intercondylaris* (e) is wavy. *Condylus medialis* (f) is distally rounded and laterally flattened oval shaped.

Name: Was named after the name of Hungarian paleontologist Ferenc KUBINYI.

Description: It corresponds in its characteristics and size to recent species.

Distribution: The family and genus are known in fossil material in the Neogene and Quaternary only from the Carpathian Basin as *Bombycilla* sp. foss. indet. from Csarnóta 2 –Hungary (Lower Pliocene, MN 15) (KESSLER 2010), Beremend 26 - Hungary (Lower Pliocene, MN 15) (KESSLER 2010); Beremend 17 (Lower Pleistocene, MQ1) (JÁNOSSY 1992) and Betfia 9 –Romania (Lower Pleistocene, MQ1) (GÁL 2002).

Family Troglodytidae VIEILLOT, 1807
Genus *Troglodytes* VIEILLOT, 1807
Troglodytes † *robustus* nova sp.
(Plate XVII. Figure 67 A-E)

Type locality and age: Polgárdi 4, 5; Late Miocene (MN 13).

Holotype: Humerus sin. (Polgárdi 4, MÁFI V.11.64.1; V.29139).

Paratypes: Ulna dext. (proximal fragment); carpometacarpus dext.; tibiotarsus sin. (distal fragment) (Polgárdi 5, MÁFI V.11.121.3; V.29196).

Measurements: 1. humerus A=12.91 mm; B=3.39 mm; C=3.74 mm; D=3.35 mm; E=1.22 mm; F=3.07 mm; G=1.54 mm; 2. ulna B=2.51 mm; C=2.13 mm; E=1.42 mm; 3. carpometacarpus A=8.49 mm; C=2.69 mm; E=2.14 mm; F=2.19 mm; 4. tibiotarsus F=2.22 mm; G=2.08 mm.

Comparative material: *Troglodytes troglodytes* (MTM n=1; humerus A=11.96 mm; B=2.67 mm; C=3.22 mm; D=2.39 mm; E=1.11 mm; F=3.12 mm; G=1.55 mm; ulna B=2.38 mm; C=1.81 mm; E=1.26 mm; carpometacarpus A=7.97 mm; C=2.03 mm; E=2.06 mm; F=1.97 mm; tibiotarsus F=1.97 mm; G=1.83 mm).

Diagnosis: The fossil species differs of the recent in larger sizes and robustness of the bones. On the proximal epiphysis of humerus in caudal view (Fig. 67A), the *tuberculum dorsale* (a) is cut-off laterally. *Caput humeri* (b) is wide, convex and flat. *Tuberculum ventrale* (c) is well developed and forms ovale-like spur. *Crista bicipitalis* (d) is rounded and protruding. *Crus dorsale fossae* (e) is weakly developed and short, therefore the two parts of *fossa pneumotricipitalis* (f) are visible together. On distal epiphysis in cranial view of humerus (Fig. 67B), the *tuberculum supracondylare ventrale* (g) is well developed. *Epicondylus ventralis* (h) is mildly arched. *Processus flexorius* (i) is claw-like bent, its end is protruding and rounded. *Condylus ventralis* (j) is well developed and has symmetrical oval shape. *Incisura intercondylaris* (k) is a wide pit. *Condylus dorsalis* (l) is distally rounded. *Epicondylus dorsalis* (m) is rounded and well developed. *Processus supracondylaris dorsalis* (n) is wide, short and bented.

On proximal epiphysis of ulna in cranial view (Fig. 67C), the *oleocranon* (a) has long and blunted conical shape. *Cotyla dorsalis* (b) is asymmetrically rounded. *Cotyla ventralis* (c) has mildly stretched circular shape. The *tuberculum lig. colat. ventralis* (d) is undeveloped. *Depressio m. brachialis* (e) is developed.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 67D), the *trochlea carpalis* (a) is asymmetrically bulging. It has conical shape, but less blunted than in the recent species. *Proc. extensorius* (b) is short, with rounded end. *Processus alularis* (c) has rounded rectangular shape, below it the *fovea subalularis* (d) is acute angle shaped. *Protuberantia metacarpalis* (e) is a wide, blunt odontoid spur.

On tibiotarsus the distal epiphysis in cranial view (Fig. 67E), the *tuberositas retinaculi m. fibularis* (a) is conical, but pointed than in the recent species. *Sulcus extensorius* (b) is arched and its distally end is wide. *Pons supratendinous* (c) is wide and straight. *Condylus lateralis* (d) is wide ovalic, the distally end

weakly narrowed. Line of *incisura intercondylaris* (e) is strongly concave and wider than in the recent specis. *Condylus medialis* (f) is asymmetrically reverse oval shaped. *Arrow transverses* (g) is developed.

Name: Its name is after the robustness of the bones.

Description: The fossil species differs to the recent in its larger size.

Distribution: The family and genus are known only to recent species from S'Onix- Mallorca – Spain (Early Pleistocene, MN 18) (SONDAAR et al. 1995).

Family Cinclidae (CABANIS, 1847)

Genus *Cinclus* BORKHAUSEN, 1897

Cinclus † *gaspariki* nova sp.

(Plate XVIII. Figure 68)

Type locality and age: Polgárdi 5, Late Miocene (MN 13).

Holotype: Carpometacarpus sin. (proximal epiphysis) (MÁFI V.11.99.1; V.29174).

Measurements: Carpometacarpus C=3,79 mm.

Comparative material: *Cinclus cinclus* (MTM n=1: C=3,72 mm).

Diagnosis: The fossil bone differs from the recent species in a small difference in size. On proximal epiphysis of carpometacarpus in ventral view (Fig. 68), the *trochlea carpalis* (a) is symmetrical but lopsided blunt conical. *Proc. extensorius* (b) has obliquely, rounded beak-like shape. Larger than in recent species. *Processus alularis* (c) has rectangular shape. More developed than in the recent species. *Fovea subalularis* (d) is acute-angled and deep.

Name: Was named after Hungarian paleontologist Mihály GASPARIK.

Description: The remanins in generally correspond in characters to the recent species. The fossil species *Cinclus major* KESSLER et HÍR, 2012 was identified in the Early Miocene (MN 5) from Litke 2 (Hungary) based from on one fragment of a carpometacarpus. It is larger than the Polgardi specimen (C=4,54 mm), (KESSLER & HÍR 2012b).

Cinclus † *minor* nova sp.

(Plate XVIII. Figure 69)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Ulna dext. (distal fragment) (MÁFI V.11.9.1, V.29084).

Measurements: Ulna F=2.78 mm; G=1.78 mm.

Comparative material: *Cinclus cinclus* (MTM n=1; ulna: F= 3.41 mm; G=2.52 mm).

Diagnosis: On distal epiphysis of ulna in medial view (Fig. 69), the *condylus dorsalis* (a) has blunted claw-like shape. *Sulcus intercondylaris* (b) is wide and concave. *Condylus ventralis* (c) has symmetrical but

oblique conical shape. *Tuberculum carpale* (d) has flattened semicircular shape.

Name: Its name refers to smaller dimensions of species.

Description: It is smaller than the recent species. The extinct species *Cinclus* †*gaspariki* from Polgárdi – Hungary (Upper Miocene, MN 13) has also small sizes, but it was described from one carpometacarpus and its age is older than the Csarnotánian specimen.

Distribution: The fossil species *Cinclus major* KESSLER et HÍR, 2012 was identified in the Early Miocene (MN 5) Litke 2 (Hungary) (KESSLER & HÍR 2012b). It is larger than the Polgárdi and the Csarnotánian specimen.

The recent species *Cinclus cinclus* (LINNAEUS, 1758) was described from Betfia 9 - Romania (Lower Pleistocene, MQ1) (GÁL 2002). It is also known in the Middle Pleistocene from localities in France and Germany (TYRBERG 1998).

Family Prunellidae RICHMOND, 1908

Genus *Prunella* VIEILLOT, 1818

Prunella †*freudenthali* nova sp.

(Plate XVIII. Figure 70 A-C)

Type locality and age: Polgárdi 5, Late Miocene (MN 13)

Holotype: Humerus sin., proximal fragment (MÁFI V.11.101.1, V.29176).

Paratypes: Two humeri sin. (proximal fragments); 2 ulnae sin. (with damaged proximal epiphysis); femur dext. (distal fragment) (MÁFI V.11.123.5; V.29198).

Measurements: 1. humerus B=4.65-4.95 mm; C=5.25-5.54 mm; D=4.57-5.52 mm; 2. ulna A approx. 18-approx. 22; E=1.14-1.34 mm; F=2.07-2.28 mm; G=1.63-1.77 mm; 3. femur F= 2.67 mm; G=1.92 mm.

Comparative material: *Prunella modularis* (MTM n=1: humerus B=4.85 mm; C=5.52 mm; D=5.41 mm; ulna E=1.35 mm; F=2.56 mm; G=1.65 mm; femur F=3.22 mm; G=2.56 mm); *P. collaris* (MTM n=1: humerus B=4.85 mm; C=5.52 mm; D=5.41 mm; ulna E=2.19 mm; F=3.42 mm; femur F=4.13 mm).

Diagnosis: Dimensions of humerus correspond to recent *P. modularis*. On proximal epiphysis of humerus in caudal view (Fig. 70A), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and slightly bulging. *Tuberculum ventrale* (c) forms asymmetrical circular spur. *Crista bicipitalis* (d) is protruding with rounded end. *Crus dorsale fossae* (e) is underdeveloped, therefore the two parts of *fossa pneumotricipitalis* (f) are visible together

On distal epiphysis of ulna in medial view (Fig. 70B), the *condylus dorsalis* (a) is claw shaped. *Sulcus intercondylaris* (b) is slightly concave. *Condylus ventralis* (c) is lopsided blunt conic shaped. *Tuberculum carpale* (d) is semicircular.

On distal epiphysis of femur in caudal view (Fig. 70C), the *trochlea fibularis* (a) is rounded. Distal end of *condylus lateralis* (b) forms one arc. *Incisura intercondylaris* (c) is strongly concave. *Condylus medialis* (d) is oblique and blunt conical. *Epicondylus medialis* (e) is protruding and rounded.

Name: Was named after the Dutch paleontologist, Mathias FREUDENTHAL.

Description: The sizes of the humerus corresponds to the recent species *P. modularis*. The sizes of ulna and femur is slightly smaller than in the recent species.

Prunella †*kormosi* nova sp.

(Plate XVIII. Figure 71 A-D)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Other locality: Beremend 26, Pliocene (MN 15-16).

Holotype: Coracoideum sin. (cranial fragment), (Csarnóta 2, MÁFI V.11.4.1; V.29079).

Paratypes: Humerus dext. (proximal epiphysis); 2 right and 2 left side ulnae (distal fragments) (Csarnóta 2, MÁFI V.11.40.5; V.29155); distal fragment of the tarsometatarsus dext. (Beremend 26, BKA).

Measurements: 1. coracoid C=2.97 mm; D=2.74 mm; E=1.77 mm; 2. humerus B=4.37 mm; C=5.67 mm; D=5.14 mm; 3. ulna E=1.31 mm; F=2.54-2.84 mm; G=1.67-1.97 mm; 4. tarsometatarsus E=1,31mm; F=2,95 mm; G=1,73 mm.

Comparative material: *Prunella collaris* (MTM n=1; humerus: B=4.85 mm; C=5.52 mm; D=5.41 mm; tarsometatarsus E=1,03 mm; F= 2,66 mm; G=1,77 mm); *Prunella modularis* (MTM n=1; coracoid: C=2.87 mm; D=2.51 mm; E=1,01 mm; humerus: B=4.85 mm; C=5.52 mm; D=5.41 mm; ulna: E=1.35 mm; F=2.57 mm; G= 1.81 mm; tarsometatarsus E=0,94 mm; F= 2,23 mm).

Diagnosis: On medial side of coracoideum in cranial end (Figure 71A), the *acrocoracoideum* (a) has symmetrical blunted cone shape. Its medial edge bulges mildly. *Processus accesorius* (b) has elongated claw-like shape with cut-off end. Edge of *sulcus m. supracoracoideum* (c) is asymmetrically concave shape. *Facies articularis humeralis* (d) has cranial edge strongly bulges and rounded. Point of *processus procoracoideum* (e) more exceeds the medial edge of corpus.

On proximal epiphysis of humerus in caudal view (Figure 71B), the *tuberculum dorsale* (a) is asymmetrical rounded. *Caput humeri* (b) is wide and convex, but not too outstanding. *Tuberculum ventrale* (c) is protruding, but it is damaged. *Crista bicipitalis* (d) is protruding and rounded. *Fossa pneumotricipitalis* (e) is not divided in two parts.

On distal epiphysis of ulna in medial view (Figure 71C), the *condylus dorsalis* (a) has rounded and blunted claw-like shape. *Sulcus intercondylaris* (b) is

wide and concave. *Condylus ventralis* (c) has obliquely blunt conical shape. *Tuberculum carpale* (d) has protruding semicircular shape.

On distal epiphysis of tarsometatarsus in dorsal view (Fig. 71D), the edge between metatarsus I. and the *trochlea metatarsi* II. (a) is wavy. *Trochlea metatarsi* II. (b) has rectangular shape. *Incisura intertrochlearis medialis* (c) is narrow and deep. *Trochlea metatarsi* III. (d) is wide and with bellow mildly concave end. *Incisura intertrochlearis lateralis* (e) is wide and deep. *Trochlea metatarsi* IV. (f) has curved and rounded conical shape.

Name: Was named after Hungarian paleontologist Tivadar KORMOS.

Description: It is larger than recent *P.modularis*, but smaller than *P.collaris*.

Distribution: The genus is known outside of the Carpathian Basin only with recent species from the Early Pleistocene (MQ1) as *Prunella modularis* (LINNAEUS, 1758) from S'Onix Mallorca - Spain (SONDAAR et al.1995) and Boxgrove-Quarry 2 - England (HARRISON & STEWART 1999); and as *P. collaris* (SCOPOLI, 1769) from Stránská skála - Czech Republic (Lower Pleistocene, MQ1) (JÁNOSSY 1972).

Family Laniidae SWAINSON, 1834

Genus *Lanius* LINNAEUS, 1758

Lanius †*capeki* nova sp.

(Plate XIX. Figure 72)

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Coracoideum dext. (cranial fragment) (MÁFI V.11.54.1; V.29129).

Measurements: Coracoid C=2.93 mm; D=3.48 mm; E=1.45 mm.

Comparative material: *Lanius collurio* (MTM n=1: C=2.99 mm; D=3.32 mm; E=1.35 mm); *L.excubitor* (MTM n=1: C=4.52 mm; D=4.37 mm; E=1.50 mm); *L.minor* (MTM n=1: C=3.33 mm; D=3.80 mm; E=1.49 mm).

Diagnosis: Corresponds in characteristics and sizes to recent smaller species of genus. On dorsal side of coracoid (Fig. 72), the *acrocoracoid* (a) is blunt conical shape, and its medial edge weakly bulges. *Processus accessorius* (b) is elongated and narrowed claw-like, with more pointed end than in the recent species. Edge of *sulcus m. supracoracoidei* (c) has flattened concave shape. The edge of the *facies articularis humeralis* (d) is straight and its cranial end is strongly rounded. Point of *processus procoracoidei* (e) exceeds the medial edge of the corpus, as is recent *L. excubitor* LINNAEUS, 1758, but it is missing in others species of genus.

Name: Was named after Czech paleornitologist Waclav ČAPEK.

Description: In general it corresponds in characters and sizes to the recent *L. collurio* LINNAEUS, 1758. The fossil species *Lanius schreteri* KESSLER ET

HÍR 2012 from Felsőtárkány- Felnémet 2/3 – Hungary (Middle Miocene, MN 7/8) was described based of the other types of bones (scapula) and is much larger than the Polgárdi species. *Lanius minor* GMELLIN, 1788 was reported also from Polgárdi 2 by JÁNOSSY (1991), but presumably those are the remains described in this paper.

Lanius †*hungaricus* nova sp.

(Plate XIX. Figure 73 A-E)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Coracoid sin. (cranial fragment), (MÁFI V.11.5.1; V.29080).

Paratypes: Coracoid sin. (cranial fragment); scapula sin. (cranial fragment); carpometacarpus sin. (proximal fragment), (MÁFI V.1.41.2; V.29116).

Measurements: 1. coracoid C= 3.02-3.09 mm; D=2.64-2.66 mm; 2. scapula B=3.65 mm; D=1.86 mm; E=1.95 mm; 3. carpometacarpus C=3.16 mm.

Comparative material: *Lanius collurio* (MTM n=1; coracoid: C=2.97 mm; D=3.32 mm; scapula: B=3.65 mm; D=2.01 mm; E= 1.92 mm; carpometacarpus: C=3.19 mm).

Diagnosis: On medial side of coracoideum in cranial end (Fig. 73A), the *acrocoracoideum* (a) has asymmetrical and pointed cone shape. Its medial edge is bulges. *Processus accessorius* (b) has elongated and pointed claw-like shape with curved end. Edge of *sulcus m. supracoracoidei* (c) is asymmetrically concave shape. *Facies articularis humeralis* (d) has rounded cranial edge. On lateral side (Fig. 73B), the point of *processus procoracoidei* (e) is not exceeds the medial edge of corpus.

On cranial end of scapula (Fig. 73C), the lateral branch (a) has wide and rounded end. Edge between the two branches (b) forms wide but oblique concave line. Medial branch (c) is short and wide blunted conical shape. *Facies articularis humeralis* (d) has an asymmetrical circular shape, with conical proeminence in medial part.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 73D), the *trochlea carpalis* (a) has symmetrically bulged conical shape. *Proc. extensorius* (b) is obliquely and strongly blunted conical. *Processus alularis* (c) is rectangular shape. On dorsal view (Fig. 73E), the *fovea subalularis* (d) has rectangular shape.

Etymology: Was named after the name of the country.

Description: It corresponds in size to recent *Lanius collurio*.

Lanius †*major* nova sp.

(Plate XIX. Figure 74 A-D)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Humerus dext. (BKA).

Paratypes: Distal fragments of humerus sin. and dext.; carpometacarpus sin.; distal fragment of tarsometatarsus sin. (BKA).

Measurements: 1. humerus A=25,62 mm; B=8,64 mm; C=7,30 mm; D=7,48 mm; E=2,12-2,28 mm; F=6,18-6,23 mm; G=2,95-3,05 mm; 2. carpometacarpus B=17,15 mm; C=5,63 mm; D=3,05 mm; E'=2,22 mm; tarsometatarsus E=1,93 mm; F=3,64 mm; G=2,10 mm.

Comparative material: *Lanius excubitor* (MTM n=1: humerus A= 27,00 mm; B=10,00 mm; C=8,34 mm; E=2,53 mm; F=6,91 mm; G=3,36 mm; carpometacarpus B=16,43 mm; C=4,34 mm; D=2,20mm; E'=1,67 mm; tarsometatarsus E=1,41 mm; F=2,72 mm; G=1,73 mm); *L.minor* (MTM n=1: humerus A=23,35 mm; B=10,22 mm; C=7,18 mm; D=6,21 mm; E=1,98 mm; F=5,64 mm; G=3,13 mm; carpometacarpus B=14,08 mm; C=3,80 mm; D=2,02 mm; E'=1,57 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 74A), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and convex. *Tuberculum ventrale* (c) is large and has semicircular sape. *Crista bicipitalis* (d) is less protruding and rounded. *Crus dorsale fossae* is developed, therefore the *fossa pneumotricipitalis* (e) is divided into two parts.

On distal epiphysis of humerus in cranial view (Fig. 74B), the *tuberculum supracondylare ventrale* (a) is rounded and less bulged than in the recent *L. excubitor*. *Epicondylus ventralis* (b) is rounded. *Processus flexorius* (c) is protruding and distally rounded. *Condylus ventralis* (d) has oval shape. *Incisura intercondylaris* (e) is concave, wide and deep. *Condylus dorsalis* (f) is rounded distally. *Epicondylus dorsalis* (g) is rounded. *Proc. supracondylaris dorsalis* (h) is short, wide and pointed.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 74C), the *trochlea carpalis* (a) has asymmetrically bulged conical shape. *Proc. extensorius* (b) is obliquely and strongly blunted conical. *Processus alularis* (c) is asymmetrical rectangular shape. *Fovea subalularis* (d) has acute-angle shape. *Protuberantia metacarpalis* (e) is wide and flattened,

On distal epiphysis of tarsometatarsus in dorsal view (Fig. 74D), the edge (a) between trochlea metatarsi I. and *trochlea metatarsi* II. is wavy. *Trochlea metatarsi* II. (b) has bent asymmetrical conical shape. *Incisura intertrochlearis medialis* (c) is wide and deep. *Trochlea metatarsi* III. (d) is wide and with bellow mildly concave end. *Incisura intertrochlearis lateralis* (e) is narrow and deep. *Trochlea metatarsi* IV. (e) has rounded conical shape.

Etymology: Was named after its larger dimensions.

Description: The remains derived from two different sizes specimen. The humerus is mostly smaller than the recent *L. excubitor*, the carpometacarpus and tarsometatarsus derived from the large specimens.

Lanius † *intermedius* nova sp.
(Plate XX. Figure 75 A-B)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Carpometacarpus dext. (BKA).

Paratypes: Proximal fragment of humerus dext. (BKA).

Measurements: 1. humerus C=5,53 mm; D=4,34 mm; 2. carpometacarpus A=14,61 mm; B=12,07 mm; C=3,67 mm; D=2,20 mm; E=2,88 mm; F=3,39 mm.

Comparative material: *L.collurio* (MTM n=1: humerus C=5,94 mm; D=4,98 mm; carpometacarpus A=14,10 mm; B=11,80 mm; C=3,30 mm; D=1,45 mm; E=2,18 mm; F=3,07 mm); *L.minor* (MTM n=1: humerus C=7,18mm; D=6,21 mm; carpometacarpus A=17,09 mm; B=14,23 mm; C=3,99 mm; D=2,99 mm; E=3,01 mm; F=3,57 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 75A), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and convex. *Tuberculum ventrale* (c) is big and has semicircular sape. *Crista bicipitalis* (d) is protruding and rounded. *Crus dorsale fossae* (e) is developed, therefore the *fossa pneumotricipitalis* (f) is divided into two parts.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 75B), the *trochlea carpalis* (a) has asymmetrically bulged conical shape. *Proc. extensorius* (b) is obliquely and has asymmetrically blunted conical shape. *Processus alularis* (c) has rectangular shape. *Fovea subalularis* (d) has concave shape. *Protuberantia metacarpalis* (e) is wide and flattened,

Description: It has intermediate dimensions between recent species *L. minor* and *L. collurio* and differs in characters to much smaller *L. hungaricus* KESSLER, 2012 from Csarnóta.

Distribution: In the Carpathian Basin the genus was described as *Lanius* sp. foss. indet. from Subpiatra 2-Romania (Middle Miocene, MN 6) (KESSLER & VENCZEL 2009); from Csarnóta 2 – Hungary (Lower Pliocene, MN 15) (KESSLER 2010) and from Beremend 26 – Hungary (Lower Pliocene, MN 15) (KESSLER 2010a). The recent species are known as *Lanius excubitor* LINNAEUS, 1758 from Betfia 9-Romania (Lower Pleistocene, MQ1) (GÁL 2002); as *Lanius collurio* LINNAEUS, 1758 from Betfia 13-Romania (Upper Pliocene, MN 16) (KESSLER 1975, GÁL 2002); from Betfia 7-Romania (Lower Pleistocene, MQ1-2) (KESSLER 1975, GÁL 2002); as *Lanius minor* GMELIN, 1788 from Betfia 2-Romania (Lower Pleistocene, MQ1) (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979a; KESSLER 1975; GÁL 2002);

Betfia 9 - Romania (Lower Pleistocene, MQ1) (KESSLER 1975; GÁL 2002).

The family and genus are known outside the Carpathian Basin from the Late Pliocene from of Varshets (MN 17, Bulgaria) as *Lanius* sp. (BOEV 1996, 2000); from Petralona 24 - Greece (Lower Pleistocene) as *Lanius* cf. *minor* GMELLIN, 1788 by Miklós KRETZOI (1977). The fossil species *Lanius miocaenus* MILNE-EDWARDS, 1871 (MILNE-EDWARDS 1969-71) from Saint-Gérard-le-Puy - France (Lower Miocene, MN 2) was put into „*Family incertae sedis*” by MLÍKOVSKÝ (2002).

Family Sturnidae VIGORS, 1825

Genus *Sturnus* LINNAEUS, 1758

Sturnus † *brevis* nova sp.

(Plate XX. Figure 76 A-C)

Type locality and age: Polgárdi 4, 5; Late Miocene (MN 13).

Holotype: Coracoideum dext. (Polgárdi 4, MÁFI V.11.55.1, V.29130).

Paratype: Humerus dext. (damaged proximal epiphysis), (Polgárdi 5); tibiotarsus dext. (distal fragment) (Polgárdi 5), (MÁFI V.11.115.2; V.29190).

Measurements: 1. coracoid C=3.37 mm; D=4.11 mm; E=1.33 mm; 2. humerus A=aprox. 23-24 mm; E=2.47 mm; F=5.27 mm; G=3.38 mm; 3. tibiotarsus F=2.94 mm; G=2.62 mm.

Comparative material: *Sturnus vulgaris* (MTM n=1: coracoid C=4.11 mm; D=5.32 mm; E=1.69 mm; humerus A= 26.86 mm; E=2.76 mm; F=6.61 mm; G=3.81 mm; tibiotarsus F=3.61 mm; G=3.33 mm); *S. roseus* (MTM n=1: coracoid D=5.52 mm; humerus A=27.95 mm; E=2.78 mm; F=6.47 mm; tibiotarsus F=4.55 mm).

Diagnosis: The new species differs to recent species in its sizes. On dorsal side of coracoid (Fig. 76A), the *acrocoracoid* (a) has slightly asymmetrical blunt conical shape. *Processus accesorius* (b) is hook-like with cut-off end. Edge of *sulcus m. supracoracoidei* (c) forms strongly concave line. Edge of *facies articularis humeralis* (d) is straight. *Processus procoracoidei* (e) is well developed.

On distal epiphysis of humerus in cranial view (Fig. 76B), the *tuberculum supracondylare ventrale* (a) is bulging. *Epicondylus ventralis* (b) is flat. *Processus flexorius* (c) has oblique conical shape. *Condylus ventralis* (d) has oval shape. *Incisura intercondylaris* (e) is well developed, the its acute angle hollow. is in point than in the recent species. The *condylus dorsalis* (f) has curved ovalic shape. *Epicondylus dorsalis* (g) is rounded. *Processus supracondylaris dorsalis* (h) is short and blunt and has two unequal branches.

On tibiotarsus the distal epiphysis in cranial view (Fig. 31C), the *tuberositas retinaculi m. fibularis* (a) is weakly developed and flat. *Sulcus extensorius* (b) is wide. *Pons supratendinous* (c) is wide and straight.

Condylus lateralis (d) is oval (but damaged). *Incisura intercondylaris* (e) has flattened concave shape. *Condylus medialis* (f) is laterally flattened and asymmetrically conical.

Name: Was name after its shape (Lat. *brevis*=short).

Description: It differs in its smaller sizes from the recent species. The fossil species *Sturnus kretzoii* KESSLER et HÍR, 2012 (KESSLER & HÍR 2012) from Rudabánya - Hungary (Upper Miocene, MN 9) was described based on a carpometacarpus is also smaller than the recent species.

Sturnus † *plioaenicus* nova sp.

(Plate XX. Figure 77 A-C)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Humerus dext., with damaged proximal epiphysis (BKA).

Paratypes: Proximal and distal fragments of humerus dext.; distal fragments of tarsometatarsus dext. (BKA).

Measurements: Humerus A=aprox. 28,50-29,00 mm; B=9,96 mm, C=9,33 mm; D=8,25 mm; E=2,6-2,92 mm; F=6,55-7,68 mm; G=3,60-4,15 mm; tarsometatarsus E=1,63 mm; F=3,39-3,46 mm; G=2,02-2,04 mm.

Comparative material: *Sturnus vulgaris* (MTM n=1: humerus A=26,86 mm; B=9,59 mm, C=8,64 mm; D=7,59 mm; E=2,76 mm; F= 6,61 mm; G=3,81 mm; tarsometatarsus E=1,65 mm; F=3,28 mm; G=2,13 mm); *S. roseus* (MTM n=1: humerus A=27,95 mm; B=9,83 mm, C=8,85 mm; D=7,53 mm; E=2,78 mm; F=6,47 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 77A), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and convex. *Tuberculum ventrale* (c) is large and has semicircular sape, while in the recent genus. *Crista bicipitalis* (d) is less protruding. *Crus dorsale fossae* (e) is weakly developed, therefore the *fossa pneumotricipitalis* (f) is divided into two parts.

On distal epiphysis of humerus in cranial view (Fig. 77B), the *tuberculum supracondylare ventrale* (g) is bulging. *Epicondylus ventralis* (h) is rounded. *Processus flexorius* (i) is protruding and rounded. *Condylus ventralis* (j) has oval shape. *Incisura intercondylaris* (k) is wide in acute-angle. The *condylus dorsalis* (l) has curved oval shape. *Epicondylus dorsalis* (m) is weakly rounded. *Processus supracondylaris dorsalis* (n) is long, wide with two unequal branches.

On distal epiphysis of tarsometatarsus in dorsal view (Figure 77C), the edge (a) between trochlea metatarsi I. and *trochlea metatarsi* II. is wavy. *Trochlea metatarsi* II. (b) has bented rectangular shape. *Incisura intertrochlearis medialis* (c) is narrow. *Trochlea metatarsi* III. (d) is wide and with bellow

mildly concave end. *Incisura intertrochlearis lateralis* (e) is wide and deep. *Trochlea metatarsi* IV. (e) has pointed conical shape.

Name: Was named after the age of the site. .

Description: It differs to known extinct and recent species with much larger dimensions.

Sturnus † *baranensis* nova sp.
(Plate XX. Figure 78 A-B)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Proximal fragment of humerus dext. (BKA)

Paratype: Distal fragment of humerus dext. (BKA)

Measurements: Humerus B=8,91 mm; C=8,47 mm; D=7,48 mm; E= 2,78 mm, F=5,65 mm; G=2,95 mm.

Comparative material: *Sturnus vulgaris* (MTM n=1: humerus B=9,59 mm, C=8,64 mm; D=7,59 mm; E=2,76 mm; F= 6,61 mm; G=3,81 mm); *S. roseus* (MTM n=1: humerus B=7.85 mm, C=8,36 mm; D=6,70 mm; E=2,78 mm; F=6,47 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 78A), the *tuberculum ventrale* (a) is big and has semicircular sape, while in the recent genus. *Crista bicipitalis* (b) is less protruding. *Crus dorsale fossae* (c) is weakly developed, therefore the *fossa pneumotricipitalis* (d) is divided into two parts.

On distal epiphysis of humerus in cranial view (Fig. 78B), the *tuberculum supracondylare ventrale* (e) is bulging. *Condylus ventralis* (f) has oval shape. *Incisura intercondylaris* (g) is wide in acute-angle shaped. The *condylus dorsalis* (h) has curved oval shape. *Epicondylus dorsalis* (i) is weakly rounded. *Processus supracondylaris dorsalis* (j) is long, wide with two unequal branches.

Name: Was named after the name of Baranya county.

Description: It differs from recent and extinct species in its dimensions.

Distribution: In the Carpathian Basin the genus was reported as *Sturnus* sp. foss. indet. from Beremend 16, 17 - Hungary (Lower Pleistocene, MQ1) by JÁNOSSY (1991, 1992), and the recent *Sturnus vulgaris* LINNAEUS, 1758 is known from Betfia 2 - Romania (Lower Pleistocene, MQ1-2) (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979; KESSLER 1975; GÁL 2002); Betfia 9 - Romania (KESSLER 1975; Gál 2002); Betfia 5 - Romania (KESSLER 1975; JÁNOSSY 1979; GÁL 2002).

The family and genus were described outside the Carpathian Basin as *Sturnus* sp. in the Late - Pliocene and the Early Pleistocene localities from Varseths - Bulgaria (MN 17 - MQ1) by BOEV (1996, 2000), West Runtun and Boxgrove - England (HARRISON 1979, HARRISON & STEWART 1999) and Prezletice - Czech Republic (ČAPEK 1917, JÁNOSSY 1983, 1992).

Family Passeridae (ILLIGER, 1811)

Genus *Passer* KOCH, 1816

Passer † *hiri* nova sp.

(Plate XXI. Figure 79 A-C)

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Ulna sin. (proximal fragment) (MÁFI V.11.61.1, V.29136).

Paratypes: Three carpometacarpi sin. (missing os metacarpale minus); tibiotarsus sin. (distal fragment) (MÁFI V.11.78.4; V.29153).

Measurements: 1. ulna B=3.28 mm; C=2.85 mm; E=1.61 mm; 2. carpometacarpus A=11.74-12.56 mm; C=3.04-3.14 mm; F=2.71-2.81 mm; 3. tibiotarsus F=2.32 mm; G=2.05 mm.

Comparative material: *Passer domesticus* (MTM n=1: ulna B=3.49 mm; C=3.06 mm; E=1.61 mm; carpometacarpus A= 11.12 mm; C=3.03 mm; F=2.74 mm; tibiotarsus F=2.89 mm; G=2.65 mm); *P. montanus* (MTM n=1: ulna B=2.96 mm; C=2.96 mm; E=1.49 mm; carpometacarpus A= 11.29 mm; C= 2.46 mm; tibiotarsus F=2.45mm; G=2.32 mm).

Diagnosis: It is smaller than the recent species, but corresponds with its in morphological characteristics. On the proximal epiphysis of ulna in cranial view (Fig. 79A), the *oleocranon* (a) is long, straight and blunt ended. *Cotyla dorsalis* (b) is asymmetrically conical shaped, with rounded lateral edge. *Cotyla ventralis* (c) has slightly flattened circular shape. *Tuberculum lig. colat. ventralis* (d) is mostly developed. *Depressio m.brachialis* (e) has circular shape.

On the proximal epiphysis of carpometacarpus in ventral view (Fig. 79B), the *trochlea carpalis* (a) is symmetrically bulging. *Proc. extensorius* (b) has obliquely and asymmetrically conical-like shape. *Processus alularis* (c) has rectangular shape. *Fovea subalularis* (d) has acute angle pit shape. *Protuberantia metacarpalis* (e) is small and pointed.

On tibiotarsus the distal epiphysis in cranial view (Fig. 79C), the *tuberositas retinaculi m. fibularis* (a) is underdeveloped. *Sulcus extensorius* (a) is wide. *Pons supratendinous* (c) is moderately wide and straight. *Condylus lateralis* (d) is laterally flattened and distally pointed oval. *Incisura intercondylaris* (e) is slightly concave-like line. *Condylus medialis* (f) has wider egg shape.

Name: Was named after Hungarian paleontologist János HÍR.

Description: Its size is smaller than the recent species, but corresponds to it in its characters.

Passer † *minusculus* nova sp.
(Plate XXI. Figure 80)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Coracoid dext. (cranial fragment), (MÁFI V.11.6.1; V.29081).

Measurements: C=2.54 mm; D=2.14 mm.

Comparative material: *Passer montanus* (MTM n=1; coracoid: C=3.28 mm; D=2.62 mm); *Passer domesticus* MTM n=1; coracoid: C=3.05 mm; D=2.79 mm).

Diagnosis: On medial side of coracoideum in cranial end (Fig. 80), the *acrocoracoideum* (a) has bulged symmetrical and blunted cone shape. *Processus accessorius* (b) is damaged. Edge of *sulcus m. supracoracoidei* (c) has flattened concave shape. *Facies articularis humeralis* (d) has rounded cranial edge. Point of *processus procoracoidei* (e) is more exceeds the medial edge of corpus.

Name: The name refers to very smaller dimensions of species.

Description: Ist very little in comparison to recent species of genus, but corresponds it in its characteristics. The *processus accessorius* is partially damaged.

Passer † *panonicus* nova sp.
(Plate XXI. Figure 81)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Carpometacarpus sin. (BKA)

Measurements: Carpometacarpus: A=12,23 mm; B=9,63 mm; C=2,78 mm; E=2,32 mm; F=3,06 mm.

Comparative material: *Passer domesticus* (MTM n=1: carpometacarpus A=11,12 mm; C=3,03 mm; F=2,74 mm); *P. montanus* (MTM n=1: carpometacarpus A=11,29 mm; C=2,46 mm; F=2,43 mm).

Diagnosis: On proximal epiphysis of carpometacarpus in ventral view (Fig. 81), the *trochlea carpalis* (a) is symmetrically bulging. *Processus alularis* (b) is large and has rectangular shape. *Fovea subalularis* (c) has asymmetrical acute angle pit shape. *Protuberantia metacarpalis* (d) is developed and pointed. Basis of the *facies articularis digiti major* (e) is asymmetrical rounded. End of the *metacarpus minus* (f) is less concave.

Name: Was named after the Pannonia region.

Description: It corresponds mostly in dimensions and characteristics to recent species. The extinct species from Polgardi and Csarnóta are smaller. The missing of *proc. extensorius* not prevent the determination.

Distribution: The earliest report of family and genus is from Saint-Gérard-le-Puy - France (Lower Miocene, MN 2) as *Passer* sp. (MOURER-CHAUVIRÉ 1995), but it is not known in other localities from Neogene. The recent species outside the Carpathian Basin is known from the Middle Pleistocene in Europe.

The recent species *Passer montanus* (LINNAEUS, 1758) was described from the sites of Betfia –

Romania (Lower Pleistocene, MQ1): Betfia 2 (MQ1) (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979; KESSLER 1975; GÁL 2002); Q2: Betfia 5 (MQ1) (KESSLER 1975; JÁNOSSY 1979; GÁL 2002).

Family Fringillidae LEACH, 1820

Genus *Fringilla* LINNAEUS, 1758

Fringilla † *kormosi* nova sp.

(Plate XXI. Figure 82 A-C)

Type locality and age: Polgárdi 4, 5; Late Miocene (MN 13).

Holotype: Humerus dext. (Polgárdi 4, MÁFI V.11.56.1; V.29131).

Paratype: Coracoideum sin. (cranial fragment) (Polgárdi 5, MÁFI V.11.75.1; V.29150).

Measurements: 1. coracoid D=3.04 mm. 2. humerus A=20.95 mm; B=5.87 mm; C=6.21 mm; D=5.92 mm; E=1.97 mm; F=5.46 mm; G=2.98 mm. *Comparative material*: *Fringilla coelebs* (MTM n=1: coracoid D=2.62 mm; humerus A=18,12 mm; B=6.35 mm; C=6.09 mm; D=5.22 mm; E=1.70 mm; F=4.62 mm; G=2.57 mm); *F. montifringilla* (MTM n=1: coracoid D=2.89 mm; humerus A=19.28 mm; B=5.43 mm; C=6.22 mm; D=5.34 mm; E=1.83 mm; F=5.04 mm; G=1.69 mm.).

Diagnosis: Although basically its sizes it is similar to that of *Pyrrhula* and *Loxia* genera, but in its characteristics corresponds to the genus *Fringilla*.

On coracoid in dorsal view (Fig. 82A), the *acrocoracoid* (a) is asymmetrical blunted conical shaped and has bulging medial edge. *Processus accessorius* (b) is hook-like and has blunted end. Edge of *sulcus m. supracoracoidei* (c) forms strongly concave shape. *Facies articularis humeralis* (d) has rounded cranial end. Point of *processus procoracoidei* (e) does not exceed the medial edge of corpus.

On proximal epiphysis of humerus in cranial view (Fig. 82B), the cranial end on *crista pectoralis*, *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and slightly convex. *Tuberculum ventrale* (c) is well developed. *Crista bicipitalis* (d) forms rounded beak-like shape. *Crus dorsale fossae* is underdeveloped and the two parts of *fossa pneumotricipitalis* (e) can not be separated (Fig. 82C., in caudal view). On distal epiphysis in cranial view (Fig. 82B), the *tuberculum supracondylare ventrale* (f) is developed. *Epicondylus ventralis* (g) is rounded. *Processus flexorius* (h) is protruding and weakly rounded. *Condylus ventralis* (i) has lying oval shape. *Incisura intercondylaris* (j) has acute angle hollow.. *Condylus dorsalis* (k) is strongly bent oval. *Epicondylus dorsalis* (l) is rounded. *Processus supracondylaris dorsalis* (m) is developed and has two small prominences. The widening between it and the diaphysis is deep.

Name: Was named after Hungarian paleontologist, Tivadar KORMOS.

Description: It is large size *Fringilla* species. The genus was described as *Fringilla* sp. indet. from Litke 2 –Hungary (Lower Miocene, MN 5) and Mátraszőlös 2 (Middle Miocene, MN 7/8) on the basis of a one distal fragment of a humerus respectively one a proximal fragment of a radius, with larger sizes (humerus F=5.26 mm; G=2.59 mm; radius: C=1.72 mm; E=1.04 mm). (KESSLER & HÍR 2012). While the *processus accessorius* of the humerus is damaged and the radius is missing in the Polgárdi material, they can not regarded as referred materials.

Fringilla † *petenyii* nova sp.
(Plate XXI. Figure 83 A-B)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Tibiotarsus dext. (distal fragment), (MÁFI 11.49.1; V.29124).

Paratype: Tarsometatarsus dext. (distal fragment), (MÁFI V.11.29.1; V.29104).

Measurements: 1. tibiotarsus E=1.12 mm; F=2.35 mm; G=2.16 mm; 2. tarsometatarsus F=2.04 mm; G=1.29 mm.

Comparative material: *Fringilla fringilla* (MTM n=1; tibiotarsus: E=1.09 mm; F=2.38 mm; G=2.30 mm; tarsometatarsus: F=2.04 mm; G=1.21 mm); *Fringilla montifringilla* (MTM n=1; tibiotarsus: E=1.13 mm; F=2.42 mm; G=2.39 mm; tarsometatarsus: F=2.06 mm; G=1.21 mm).

Diagnosis: On distal epiphysis of tibiotarsus in cranial view (Figure 83A), the *tuberositas retinaculi m. fibularis* (a) is wide and flattened. *Sulcus extensorius* (b) is more wide and distally pointed. *Pons supratendineus* (c) is narrow and weakly obliquely. *Condylus lateralis* (d) has laterally rounded shape. The line of *incisura intercondylaris* (e) is concave. *Condylus medialis* (f) is distally and laterally rounded shaped.

On distal epiphysis of tarsometatarsus in dorsal view (Figure 83B), the *trochlea metatarsi* II. (a) has oblique conical shape. *Incisura intertrochlearis lateralis* (b) has wide acute angle shape. *Trochlea metatarsi* III. (c) is wide and with slightly concave end. *Incisura intertrochlearis medialis* (d) is wide. *Trochlea metatarsi* IV. (f) has rounded conical shape.

Name: Was named after hungarian paleontologist Salamon János PETÉNYI.

Description: Its characteristics and dimensions corresponds to recent genus.

Distribution: In the Carpathian Basin it was described as *Fringilla* † sp. foss. indet. from Litke 2 – Hungary (Lower Miocene, MN 5) and from Mátraszőlös 2 - Hungary (Middle Miocene, MN 7/8) (KESSLER & HÍR 2012) and as Fringillidae gen et sp. foss. indet. from Csarnóta 2 - Hungary (Lower Pliocene, MN 15), (KESSLER 2010). The recent species of the genus it is known from the Early Pleistocene (MQ1-2) as *Fringilla montifringilla*

LINNAEUS, 1758 from Betfia 2-Romania (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979; KESSLER 1975; GÁL 2002) and Betfia 9-Romania (KESSLER 1975; GÁL 2002) and as *Fringilla coelebs* Linnaeus, 1758 from Betfia 2-Romania (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979; KESSLER 1975; GÁL 2002); Betfia 9-Romania (KESSLER 1975; GÁL 2002) and Chișcău-Bear Cave 2-Romania (KESSLER 1982; JURCSÁK & KESSLER 1988; GÁL 2002).

The genus is known outside of the Carpathian Basin from the Lower Pliocene (MN 16) from Hostalets de Pierola- Spain as *Fringilla* sp. (VILLALTA 1963), from the Late Pliocene – Early Pleistocene (MN 17-MQ1) from Varshets – Bulgaria (BOEV 1996, 1997); S'Onix (Mallorca) – Spain (SONDAAR et al. 1995) and Tarchankut-Ukraine (VOJINTSVENS'KY 1967) as *F. cf. coelebs* LINNAEUS, 1758. The other genera are known as *Serinus* sp. from Beremend 15-Hungary (Late-Pliocene, MN 16), (JÁNOSSY 1992); from Saint-Gerand-le Puy – France (Lower Miocene, MN 2), (MOURER-CHAUVIRÉ 1995). Fringillidae gen. et sp. indet. was reported from Csarnóta 2 – Hungary (Lower Pliocene, MN 15) (KESSLER 2010).

Genus *Carduelis* BRISSON, 1760
Carduelis † *kretzoi* nova sp.
(Plate XXII. Figure 84 A-F)

Type locality and age: Polgárdi 4, 5; Late Miocene (MN 13).

Holotype: Humerus dext. (Polgárdi 5, MÁFI V.V.11.91.1; V.29166).

Paratypes: Two coracoidea sin. (cranial fragments), (Polgárdi 5); 12 humeri (2 completes sin., 9 proximal fragments dext. and sin., one distal fragment sin.), (Polgárdi 4, 5); carpometacarpus dext. (Polgárdi 4); femur dext. (distal fragment) (Polgárdi 5); 2 tibiotarsi sin. (distal fragments) (Polgárdi 5), (MÁFI V.11.112.9; V.11.116.7; V.29187, V.29191).

Measurements: 1. coracoid C=2.41-2.56 mm; D=2.61-2.84 mm; 2. humerus A=15.54-17.52 mm; B=4.17-5.01 mm; C=4.22-5.46 mm; E=1.51-1.87 mm; F=3.43-3.98 mm; G=2.07-2.13 mm; 3. carpometacarpus A=9.93 mm; C=3.04 mm; E=2.16 mm; F=2.31 mm; 4. femur E=1.32 mm; F=2.48 mm; G=1.93 mm; 5. tibiotarsus F=2.26-2.34 mm; G=2.04-2.16 mm;

Comparative material: *Carduelis carduelis* (MTM n=1: coracoid C=3.00 mm; D=2.52 mm; E=0.92 mm; humerus A=16.55 mm; C=5.57 mm; E=1.65 mm; F=4.46 mm; G=2.32 mm; ulna F=2.60 mm; carpometacarpus A=10.37 mm; C=2.86 mm; E=1.99 mm; F=2.66 mm; femur E=1.24 mm; F=2.54 mm; tibiotarsus F=2.29 mm; G=2.12 mm); *C. flammea* (MTM n=1: coracoid C=2.93 mm; D=2.44 mm; humerus A=12.82 mm; C=4.76 mm; E=1.45 mm; F=3.75 mm; G=2.28 mm; ulna F=2.29 mm; G=1.90 mm; carpometacarpus A=12.17 mm; C=3.19 mm; E=2.84 mm; F=2.28 mm; femur E=1.14 mm, F=2.30

mm; G=1.57 mm; tibiotarsus F=2.15 mm); *C. canabina* (MTM n=1: coracoid C=2.90 mm; D=3.19 mm; humerus A=16.83 mm; C=5.84 mm; E=1.78 mm; F=4.09 mm; G=2.22 mm; ulna F=2.77 mm; carpometacarpus A=12.11 mm; C=3.55 mm; E=2.35 mm; F=2.46 mm; femur E=1.03 mm; F=2.41 mm; G=1.91 mm; tibiotarsus F=2.22 mm; G=1.96 mm); *C. flavirostris* (MTM n=1: coracoid C=2.38 mm; D=2.99 mm; humerus A=15.67 mm; C=5.37 mm; E=1.59 mm; F=4.14 mm; G=2.21 mm; ulna F=2.50 mm; carpometacarpus A=11.65 mm; C=2.84 mm; E=2.44 mm; F=2.49 mm; femur E=1.09 mm; F=2.41 mm; tibiotarsus F=1.99 mm; G=1.78 mm); *C. spinus* (MTM n=1: coracoid C=2.59 mm; D= 2.91 mm; humerus A=13.49 mm; C=5.02 mm; E=1.73 mm; F=3.85 mm; G=1.90 mm; ulna F=2.59 mm; G=1.79 mm; carpometacarpus A=10.38 mm; C=2.68 mm; E=2.44 mm; F=2.34 mm; femur E=1.16 mm; F= 2.44 mm; G=2.09 mm; tibiotarsus F=1.99 mm; G=1.78 mm).

Diagnosis: Basically its sizes it is between smaller species such as *C. carduelis*, *C. flammea* and *C. spinus*. On coracoid in dorsal view (Fig. 84A), the *acrocoracoid* (a) is blunted conical shaped. *Processus accesorius* (b) is short and hook-like (but with damaged end). Edge of *sulcus m. supracoracoidei* (c) has flattened arched shape. Edge of *facies articularis humeralis* (d) is straight. Point of *processus procoracoidei* (e) exceed the medial edge of the corpus.

On proximal epiphysis of humerus in caudal view (Fig. 84B), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and convex. *Tuberculum ventrale* (c) forms asymmetrical semicircular spur. *Crista bicipitalis* (d) is protruding with rounded end. *Crus dorsale fossae* is underdeveloped and the two parts of *fossa pneumotricipitalis* (e) can not be separated. On distal epiphysis of humerus in cranial view (Fig. 84C) the *tuberculum supracondylare ventrale* (f) is flattened but well developed. *Epicondylus ventralis* (g) is rounded. *Processus flexorius* (h) has cut-off end and it is much shorter than in the recent genus. *Condylus ventralis* (i) has stretched oval shape. *Incisura intercondylaris* (j) has wide and acute angled pit. *Condylus dorsalis* (k) has strongly bent oval shape. *Epicondylus dorsalis* (l) is rounded. *Processus supracondylaris dorsalis* (m) is short and has spherical shape. The widening between it and the diaphysis is deep.

On proximal epiphysis of carpometacarpus in ventral view (Fig. 84D), the *trochlea carpalis* (a) is rounded and it is slightly asymmetrically bulging. *Proc. extensorius* (b) has asymmetrical, oblique conical-like shape. *Processus alularis* (c) has asymmetrical protruding cone shape. *Fovea subalularis* (d) has acute angled pit. *Protuberantia metacarpalis* (e) is small and triangular.

On distal epiphysis of femur in caudal view (Fig. 84E), the *trochlea fibularis* (a) is rounded. Distal end

of *condylus lateralis* (b) constitutes one arc. *Incisura intercondylaris* (c) has deeply and widely concave shape. *Condylus medialis* (d) has oblique and blunt conical shape. *Epicondylus medialis* (e) is flat.

On tibiotarsus the distal epiphysis in cranial view (Fig.84F), the *tuberositas retinaculi m. fibularis* (a) is less developed and flattened. *Sulcus extensorius* (b) is wide, but its distal end is narrowing. *Pons supratendineous* (c) is wide and straight. *Condylus lateralis* (d) has narrow oval shape with pointed end. *Incisura intercondylaris* (e) is slightly concave and has wavy line. *Condylus medialis* (f) has distal rounded and regular ovalic shape.

Name: Was named after Miklós KRETZOI, Hungarian paleornithologist

Description: It corresponds in its sizes to recent smaller and medium size species of genus, such as *C. carduelis* (LINNAEUS, 1758), *C. flammea* (LINNAEUS, 1758) and *C. spinus* (LINNAEUS, 1758).

Carduelis † *lambrechti* nova sp.

(Plate XXII. Figure 85 A-C)

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Humerus sin. (MÁFI V.11.58.1; V.29133).

Paratypes: Coracoideum dext. and sin. (cranial fragments); humerus dext. and sin. (in the left side specimen the proximal epiphysis is damaged). (MÁFI V.11.77.4; V.29152).

Measurements: 1. humerus A=17.28-17.51 mm; C=5.32-5.39 mm; E=1.56-1.78 mm; F=3.92-4.32 mm; G=2.21-2.38 mm; 2. coracoid C=2.75-2.92 mm; D=3.48-3.55 mm; E=1.23 mm.

Comparative material: *Carduelis carduelis* (MTM n=1: 1. coracoid C=3.03 mm; D=2.52 mm; E=0.92 mm; 2. humerus A=16.55 mm; C=5.57 mm; E= 1.65 mm; F=4.46 mm; G=2.32 mm); *C. chloris* (MTM n=1: coracoid C=2.85 mm; D=3.53 mm; E=1.19 mm; humerus A=18.19 mm; C=6.14 mm; E=1.89 mm; F=4.13 mm).

Diagnosis: Its sizes corresponds to recent *Carduelis chloris*. On coracoid in dorsal view (Fig. 85A), the *acrocoracoid* (a) is blunted conical shaped, its medial edge slightly bulging. *Processus accesorius* (b) is hook-like with bent and pointed end. Edge of *sulcus m. supracoracoidei* (c) forms flattened concave line. Exterior edge of the *facies articularis humeralis* (d) is straight line. Point of *processus procoracoidei* (e) exceed the medial edge of corpus.

On proximal epiphysis of humerus in caudal view (Fig. 85B), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and slightly convex. *Tuberculum ventrale* (c) forms oval spur. *Crista bicipitalis* (d) is protruding and rounded. *Crus dorsale fossae* is underdeveloped and the two parts of *fossa pneumotricipitalis* (e) can not be separated. On distal epiphysis of humerus in cranial view (Fig.85C), the

tuberculum supracondylare ventrale (a) is weakly developed. *Epicondylus ventralis* (g) is rounded. *Processus flexorius* (h) is obliquely protruding and has rounded end. *Condylus ventralis* (i) has laying oval shape. *Incisura intercondylaris* (j) has acute angle hollow. *Condylus dorsalis* (e) has strongly bent oval shape. *Epicondylus dorsalis* (l) is rounded. *Processus supracondylaris dorsalis* (m) is long with semispherical end. The widening between it and the diaphysis is deep.

Name: Was named after Kálmán LAMBRECHT, Hungarian paleornithologist.

Description: Its size corresponds to recent *Carduelis chloris* (LINNAEUS, 1758)

Carduelis † *parvulus* nova sp.
(Plate XXIII. Figure 86 A-B)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Coracoideum dext. (cranial fragment), (MÁFI V.11.10.1; V.29085).

Paratype: Coracoideum dext. (cranial fragment); ulna sin. (distal fragment), (MÁFI V.11.37.1; V.29112).

Measurements: 1. coracoid C=2.34-2.46 mm; D=2.07- 2.16 mm; 2. ulna E=1.29 mm; F=2.33 mm; G=1.62 mm.

Comparative material: *Carduelis spinus* (MTM n=1; coracoid: C=2.70 mm; D=1.96 mm; ulna: E=1.38 mm; F=2.42 mm; G=1.79 mm); *Carduelis cannabina* (MTM n=1; coracoid: C=2.75 mm; D=2.41 mm; ulna: E=1.32 mm; F=2.56 mm; G=2.39 mm); *Carduelis flammea* (MTM n=1; coracoid: C=2.93 mm; D=2.29 mm; ulna: E=1.36 mm; F=2.66 mm; G=1.90 mm).

Diagnosis: On medial side of coracoideum in cranial end (Fig. 86A), the *acrocoracoideum* (a) has asymmetrical cone shape with cut-off end. *Processus accesorius* (b) has regular claw-like shape. Edge of *sulcus m. supracoracoidei* (c) has flattened concave shape. *Facies articularis humeralis* (d) has bulged and rounded cranial edge. Point of *processus procoracoidei* (e) exceeds the medial edge of corpus and has extended and flattened shape.

On distal epiphysis of ulna in medial view (Fig. 28 B), the *condylus dorsalis* (a) has rounded and proximal blunted claw-like shape. *Sulcus intercondylaris* (b) is wide and concave. *Condylus ventralis* (c) has obliquely blunt conical shape. *Tuberculum carpale* (d) has protruding semicircular shape.

Name: Was named after its dimensions.

Description: It corresponds in characteristics to genus and in dimensions to little sized species.

Carduelis † *medius* nova sp.
(Plate XXIII. Figure 87)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Coracoideum sin. (cranial fragment) (MÁFI V.11.11.1, V.29086).

Paratype: Coracoideum sin. (cranial fragment) (MÁFI V.11.38.1; V.29113).

Measurements: Coracoid C=2.67-3.37 mm; D=2.37-2.65 mm.

Comparative material: *Carduelis cannabina* (MTM n=1; coracoid: C=2.75 mm; D=2.41 mm); *Carduelis flammea* (MTM n=1; coracoid: C=2.93 mm; D=2.29 mm); *Carduelis carduelis* (MTM n=1; coracoid: C=3.00 mm; D=2.20 mm);

Diagnosis: On medial side of coracoideum in cranial end (Figure 87), the *acrocoracoideum* (a) has asymmetrical cone shape with slightly rounded end. *Processus accesorius* (b) has regular claw-like shape with rounded end. Edge of *sulcus m. supracoracoidei* (c) has flattened concave shape. *Facies articularis humeralis* (d) has bulged and rounded cranial edge. Point of *processus procoracoidei* (e) more exceeds the medial edge of corpus.

Name: Was named after its medium sizes.

Description: Corresponds in its characteristics and sizes with one medium sized recent species of genus.

Distribution: In the Carpathian Basin the genus was reported as *Carduelis* sp. from Beremend 17 – Hungary (Lower Pleistocene, MQ1) by JÁNOSSY (1992). Recent species are known from Betfia 9-Romania (Lower Pleistocene, MQ1) as: *Carduelis chloris* (LINNAEUS, 1758), *Carduelis carduelis* (LINNAEUS, 1758), *Carduelis spinus* (LINNAEUS, 1758) és *Carduelis cannabina* (LINNAEUS, 1758), (GÁL 2002).

The genus was described outside of the Carpathian Basin from the Late Pliocene – Early Pleistocene, (MN 17 – MQ1) in Varshets and Cerzenica – et al. Bulgaria by BOEV (1996, 2000), Quibas and S'Onix-Spain by MONTROYA et al. (1999) and SONDAAR et al. (1995); Mas Ramboult -France by MOURER-CHAUVIRÉ (1995) and Stránská skála- Czech Republic by JÁNOSSY (1972).

Genus *Pyrrhula* (LINNAEUS, 1758)

Pyrrhula † *gali* nova sp.
(Plate XXIII. Figure 88 A-C)

Type locality and age: Polgárdi 5, Late Miocene (MN 13).

Holotype: Humerus sin. (MÁFI V.11.129.1; V.29204).

Paratypes: Humerus sin.; ulna sin. (proximal fragment) (MÁFI V.11.129.1; V.29204/3).

Measurements: 1. humerus A=16.61-17.16 mm; B=4.43-4.69 mm; C=5.37-5.91 mm; D=4.33 mm; E=1.58 -1.68 mm; F=3.99- 4.05 mm; G=2.11-2.21 mm; 2. ulna B=3.39 mm; C=2.76 mm; E=1.36-1.38 mm;

Comparative material: *Pyrrhula pyrrhula* (MTM n=1: humerus A=19.68 mm; B=5.71 mm; C=6.61 mm; D=5.28 mm; E=1.96 mm; F=5.54 mm; G=2.71 mm; ulna C=2.76 mm; E=1.36 mm); *Pinicola enucleator* (MTM n=1: ulna C=2.76 mm; E=1.36 mm); *Loxia curvirostra* (MTM n=1: humerus A=18.58 mm; B=7.46 mm; C=7.15 mm; D=5.81 mm; E=2.05 mm; F=5.73 mm; G=3.02 mm; ulna B= 3.68 mm; C=2.76 mm; E=1.36 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 88A), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and slightly convex. *Tuberculum ventrale* (c) forms circular spur. *Crista bicipitalis* (d) is laterally protruding and has cut-off end. *Crus dorsale fossae* is underdeveloped and the two parts of *fossa pneumotricipitalis* (e) can not be separated. On the distal epiphysis of humerus in cranial view (Fig. 88B), the *tuberculum supracondylare ventrale* (f) is weakly developed. *Epicondylus ventralis* (g) is protruding. *Processus flexorius* (h) is obliquely protruding and has cut-off end. *Condylus ventralis* (i) has lying oval shape. *Incisura intercondylaris* (j) is wide acute angle hollow. *Condylus dorsalis* (e) has strongly bent oval shape. *Epicondylus dorsalis* (l) is rounded. *Processus supracondylaris dorsalis* (m) is short and has two unequal branches. The larger branches have semispherical end.

On proximal epiphysis of ulna in cranial view (Fig. 88C), the *oleocranon* (a) is long, thin and slightly bent. *Cotyla dorsalis* (b) has conical shape with a rounded end. *Cotyla ventralis* (c) has circular shape. *Tuberculum lig. colateralis ventralis* (d) is well developed. *Depressio m. brachialis* (e) is weakly hollow.

Name: Was named after Hungarian paleornithologist, Erika GÁL.

Description: Corresponds in its characters to recent species of the genus.

Pyrrhula † *minor* nova sp.
(Plate XXIII. Figure 89 A-C)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Humerus sin.(distal fragment), (MÁFI V.11.12.1, V.29087).

Paratípus: Coracoideum sin. (cranial fragment); ulna dext. (distal fragment), (MÁFI V.11.48.2; V.29123).

Measurements: 1. coracoid C=2.84 mm; D=2.36 mm; 2. humerus F=3.54 mm; G=2.31 mm; 3. ulna F=1.58 mm; G=2.85 mm; E=1.41 mm.

Comparative material: *Pyrrhula pyrrhula* (MTM n=1; coracoid: C=2.95 mm; D=2.54 mm; humerus: F=4.76 mm; G=2.55 mm; ulna: E=1.54 mm; F=3.03 mm; G=2.51 mm).

Diagnosis: On medial side of coracoideum in cranial end (Figure 89A), the *acrocoracoideum* (a) has symmetrical cone shape with rounded end. *Processus accessorius* (b) has regular claw-like shape with strongly rounded end. Edge of *sulcus m. supracondylaremei* (c) is deep concave shape. *Facies articularis humeralis* (d) has rounded cranial edge.

On distal epiphysis of humerus in cranial view (Figure 89B), the *tuberculum ventrale* (a) is well developed. *Epicondylus ventralis* (b) is strongly arched. *Processus flexorius* (h) has rounded claw-like shape. *Condylus ventralis* (d) has strongly bulged oval shape. *Incisura intercondylaris* (e) has deep and pointed pit. *Condylus dorsalis* (f) has curved oval shape. *Epicondylus dorsalis* (g) is rounded. *Proc. supracondylaris dorsalis* (h) is wide and oblique and has two short braches.

On distal epiphysis of ulna in medial view (Figure 89C), the *condylus dorsalis* (a) has strongly arched and wide edge. *Sulcus intercondylaris* (b) is concave in acute angle. *Condylus ventralis* (c) has regular semicircular shape. *Tuberculum carpale* (d) has asymmetrical conical shape with bulged lateral edge.

Name: Its name refers to smaller dimensions of species.

Description: Corresponds in its characteristics to recent genus, but differs in dimensions.

Distribution: The genus was reported as *Pyrrhula* sp. foss. indet. from Beremend 16, 17, - Hungary (Lower Pliocene – Lower Pleistocene, MN 15-MQ1) (KESSLER 2010) and as recent *Pyrrhula pyrrhula* LINNAEUS, 1758 from Betfia 9 –Romania (Lower Pleistocene, MQ1) (GÁL 2002).

The genus was reported outside the Carpathian Basin from the Late Pliocene – Early Pleistocene, (MN 17 – MQ1) in Varshets– Bulgaria by BOEV (1996, 1997) and Stránská skála- Czech Republic by JÁNOSY (1972).

Loxia † *csarnotanus* nova sp.
(Plate XXIV. Figure 90 A-C)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Other locality: Beremend 26, Pliocene (MN 15-16).

Holotype: Humerus dext. (distal fragment), (Csarnóta 2, MÁFI V.11.30.1; V.29105).

Paratype: Ulna sin. (distal fragment), (Csarnóta 2, MÁFI V.11.50.1, V.29125); two humeri sin, with damaged proximal epiphyses; distal fragment of tibiotarsus dext. (Beremend 26, BKA).

Measurements: 1. humerus F=4.48 mm; G=2.41 mm; 2. ulna F=3.27 mm; G=2.23 mm; E=2,10-2,14

mm; F=4,48--6,05 mm; G=2,41-2,92 mm. 2. tibiotarsus E=1,56 mm; F=3,03 mm; G=3,15 mm.

Comparative material: *Loxia curvirostra* (MTM n=1; humerus: F=5.59 mm; G=3.08 mm; ulna: F=3.45mm; G=2.45 mm; tibiotarsus E=1,53 mm; F=3,17 mm); *Loxia leucoptera* (MTM n=1; humerus: F=4.70 mm; G=2.60 mm; ulna: F=3.05mm; G=2.23 mm; tibiotarsus E=1,49 mm; F=2,79 mm).

Diagnosis: On distal epiphysis in cranial view of humerus (Fig. 90A), the *tuberculum ventrale* (a) is developed. *Epicondylus ventralis* (b) is rounded. *Processus flexorius* (h) has obliquely rounded conical shape. *Condylus ventralis* (d) has oval shape. *Incisura intercondylaris* (e) has wide and pointed pit. *Condylus dorsalis* (f) has oval shape (but damaged). *Epicondylus dorsalis* (g) is rounded. *Proc. supracondylaris dorsalis* (h) has asymmetrically blunted conical shape.

On distal epiphysis in medial view of ulna (Fig. 90B), the *condylus dorsalis* (a) has asymmetrically bulged conical shape. *Sulcus intercondylaris* (b) is slightly concave. *Condylus ventralis* (c) has blunt conical shape. *Tuberculum carpale* (d) has flattened semicircular shape.

On distal epiphysis of tibiotarsus in cranial view (Fig. 90C), the *tuberositas retinaculi m. fibularis* (a) is weakly developed. *Sulcus extensorius* (b) is narrow and distally rounded. *Pons supratendineus* (c) is narrow and oblique. *Condylus lateralis* (d) has laterally rounded shape. The line of *incisura intercondylaris* (e) is wavy. *Condylus medialis* (f) has distally pointed shape.

Name: Was named after the name of type locality.

Description: Its characteristics corresponds with recent genus, but has smaller dimensions.

Distribution: In the Carpathian Basin it is known only as *Loxia curvirostra* Linnaeus, 1758 from Betfia 9 –Romania (Early Pleistocene, Q1), (GÁL 2002); In outside of the Carpathian Basin was reported as *Loxia* sp. from Saint-Gerand-le Puy-France (Lower Miocene, MN 2) , (MOURER-CHAUVIRÉ 1995) and as *Loxia patevi* BOEV, 1999 from Varshets -Bulgary (Upper Pliocene, MN 17), (BOEV 1999).

Genus *Pinicola* VIEILLOT, 1807

Pinicola † *kubinyii* nova sp.

(Plate XXIV. Figure 91)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Scapula sin. (with damaged corpus), (MÁFI V.11.31.1; V.29106).

Measurements: Scapula B=4.19 mm; C=1.82 mm; D=2.74 mm; E=1.84 mm.

Comparative material: *Pinicola enucleator* (MTM n=1; scapula: B=5.23 mm; C=1.92 mm; D=2.83 mm; E=1.97 mm).

Diagnosis: On cranial end of scapula (Figure 91), the lateral branch (a) has wide and rectangular shape

with cut-off end. Edge between the two branches (b) forms wide concave line. Medial branch (c) is long and pointed. *Facies atricularis humeralis* (d) has reversed conical shape.

Name: Was named after the Hungarian geologist Ferenc KUBINYI.

Description: It is smaller in dimensions than the recent species.

Spreading: The genus *Pinicola* with recent species it is known only from the Pleistocene localities of Europa (TYRBERG 1998). In the Carpathian Basin was reported as *Pinicola enucleator* (Linnaeus, 1758) from Deutsch-Altenburg – Austria (Lower Pleistocene, Q1), (JANOSSY 1981).

Genus *Coccothraustes* BRISSON, 1760

Coccothraustes † *major* KESSLER, 2012

(Plate XXIV. Figure 92 A-F)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Proximal fragment of humerus sin. (BKA).

Paratypes: 8 fragments of mandibulae and maxillae; distal fragment of the right and left side humerus; distal fragment of the right and left side tarsometatarsus; (BKA).

Measurements: Humerus B=10,94 mm; C=8,97 mm; D=7,02 mm; E=2,46-2,69 mm; F=6,24-6,28 mm; G=3,42-3,46 mm; tarsometatarsus E=1,57-,67 mm; F=2,81-3,01 mm; G=1,64-1,70 mm.

Comparative material: *Coccothraustes coccothraustes* (MTM n=1: humerus B=8,36 mm; C=7,19 mm; D=6,70 mm; E=2,46 mm F=5,87 mm; G=3,33 mm; tarsometatarsus E=1,26 mm; F=2,80 mm; G=1,75 mm).

Diagnosis: The fragments of mandibulae (Fig. 92A,B) and maxillae (Fig. 92C) are typically for genus, but weakly bigger than in the recent species. On proximal epiphysis of humerus in caudal view (Fig. 92D), the *tuberculum dorsale* (b) is rounded. *Caput humeri* (a) is wide and asymmetrical convex. *Tuberculum ventrale* (c) forms semicircular spur. *Crista bicipitalis* (d) is protruding with cut-off end. *Crus dorsale fossae* is undeveloped and the two parts of *fossa pneumotricipitalis* (e) can be weakly separated. On distal epiphysis in cranial view (Fig. 92E) of humerus the *tuberculum supracondylare ventrale* (f) is developed. *Epicondylus ventralis* (g) is rounded. *Processus flexorius* (h) is protruding and rounded. *Condylus ventralis* (i) has oval shape. *Incisura intercondylaris* (j) has wide and acute angled pit. *Condylus dorsalis* (k) has strongly bent oval shape. *Epicondylus dorsalis* (l) is pointed. *Processus supracondylaris dorsalis* (m) is long, curved and pointed.

On distal epiphysis of tarsometatarsus in dorsal view (Figure 92F), the *trochlea metatarsi* II. (a) has rounded conical shape. *Incisura intertrochlearis*

lateralis (b) has wide acute angle shape. *Trochlea metatarsi* III. (c) is wide and with slightly concave end. *Incisura intertrochlearis medialis* (d) is narrow and deep. *Trochlea metatarsi* IV. (e) has asymmetrical cut-off end shape.

Name: Was named after its dimensions.

Description: It differs to recent species in its dimensions, more larger than in recent species, and corresponds much in its characters. It should be noted that do not meet with this genus in other songbirds-rich materials (Polgárdi, Csarnóta).

Distribution: The genus was reported with extinct species only from Bulgaria (Varshets and Slivnita, Upper Pliocene - Early Pleistocene, MN 17-Q1) as *Coccothraustes simeonovi* BOEV, 1998 and *C. balcanicus* BOEV, 1998 (BOEV 1998). The recent species is known of the Early Pleistocene from some localities in Europe (TYRBERG 1998).

Family Emberizidae VIGORS, 1831

Genus *Emberiza* VIGORS, 1831

Emberiza † *pannonica* nova sp.

(Plate XXV. Figure 93 A-D)

Type locality and age: Polgárdi 4, 5; Late Miocene (MN 13).

Holotype: Humerus dext. (proximal fragment) (Polgárdi 5, MÁFI V.11.92.1; V.29167).

Paratypes: Ulna sin. (proximal fragment) (Polgárdi 5); carpometacarpus dext. (missing *os metacarpale minus*), (Polgárdi 4); one right and 2 left side tibiotarsi (distal fragments), (Polgárdi 4), (MÁFI V.V.11.113.3, V.11.117.1; V.29188, V.29192).

Measurements: 1. humerus B=6.41 mm, C=7.23 mm; D=5.19 mm; 2. ulna B=3.61 mm; C=3.33 mm; E=1.55 mm; 3. carpometacarpus A=13.83 mm; C=3.33 mm; F=3.01 mm; 4. tibiotarsus F=2.57-3.08 mm; G=2.44-2.83 mm.

Comparative material: *Emberiza cyrlus* (MTM n=1: humerus C=5.98 mm; ulna C=3.18 mm; E=1.50 mm; carpometacarpus A=12.55 mm; C= 4.17 mm; tibiotarsus F=2.95 mm); *E. cia* (MTM n=1: humerus B=5.32 mm, C=6.53 mm; D=4.35 mm; ulna B=3.61 mm; C=3.43 mm; E=1.58 mm; carpometacarpus A=12.52 mm; C=3.39 mm; F=2.92 mm; tibiotarsus F=2.75 mm; G=2.41 mm); *E. citrinella* (MTM n=1: humerus B=6.30 mm; C=6.65 mm; D=5.55 mm; ulna C=3.44 mm; E=1.65 mm; carpometacarpus A=12.35 mm; C= 3.25 mm; F=2.88 mm; tibiotarsus F=2.72 mm; G=1.21 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 93A), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is wide and convex, but not too protruding. *Tuberculum ventrale* (c) has well developed circular shape. *Crista bicipitalis* (d) forms blunt beak-like shape. *Crus dorsale fossae* (e) is undeveloped and the two parts of *fossa pneumotricipitalis* (f) can not be separated.

On proximal epiphysis of ulna in cranial view (Fig. 93B), the *oleocranon* (a) is long, thin, straight and has blunt end. *Cotyla dorsalis* (b) has asymmetrically and rounded conical shape. *Cotyla ventralis* (c) has oblique oval shape. *Tuberculum lig. colat. ventralis* (d) is well developed. *Depressio m.brachialis* (e) is weakly developed.

On the proximal epiphysis of carpometacarpus in ventral view (Fig. 93C), the *trochlea carpalis* (a) is asymmetrically bulging and protruding. *Proc. extensorius* (b) has obliquely conical-like shape. *Processus alularis* (c) is rectangular shape and the *fovea subalularis* (d) has slightly acute angle pit. *Protuberantia metacarpalis* (e) is triangular bulge.

On tibiotarsus the distal epiphysis in cranial view (Fig. 93D), the *tuberositas retinaculi m. fibularis* (a) is rounded. *Sulcus extensorius* (a) has pointed distal end. *Pons supratendinous* (c) is wide and weakly oblique. *Condylus lateralis* (d) has pointed oval shape. *Incisura intercondylaris* (e) is concave and wavy line. *Condylus medialis* (f) has flattened oval shape.

Name: The name refers to Pannonia region.

Description: It corresponds to middle size recent species (*E. citrinella*, *E.cia*, *E.cyrlus*). The fossil species *Emberiza bartkoi* KESSLER et HÍR, 2012 from Litke 2 – Hungary (Lower Miocene, MN 5) seems similar in it sizes to Polgardi specimen, but was described from a distal fragment of a humerus. (KESSLER & HÍR 2012).

Emberiza † *polgardiensis* nova sp.

(Plate XXV. Figure 94 A-F)

Type locality and age: Polgárdi 4, 5; Late Miocene (MN 13).

Holotype: Tibiotarsus sin. (distal fragment) (Polgárdi 4, MÁFI V.11.61.1; 29137).

Paratypes: Four sin. and dext. humeri (1 proximal and 3 distal fragment), (Polgárdi 4,5); 4 ulnae (one right side with damaged proximal epiphysis, one right side and 2 left side distal fragments), (Polgárdi 5); 4 tibiotarsi sin. (distal fragments), (Polgárdi 4); 7 dext. and sin. tarsometatarsi (distal fragments), (Polgárdi 4),(MÁFI V.11.79.19; V.29154).

Measurements: 1. humerus A=16.61 mm; B=4.21-4.43 mm; C=5.26-5.37 mm; E=1.58 mm; F=3.66-3.99 mm; G=2.11-2.35 mm; 2. ulna F=2.41-2.59 mm; G=1.51-1.59 mm; 3. tibiotarsus E=1.25 mm; F=2.15-2.41 mm; G=2.01-2.18 mm; 4. tarsometatarsus E=1.16 mm; F=1.93-2.18 mm; G=0.93-1.19 mm.

Comparative material: *Emberiza schoeniclus* (MTM n=1: humerus A= 18.02 mm; B=4.65 mm; C=5.61 mm; E=1.71 mm; F=4.45 mm; G=2.42 mm; ulna B=3.34 mm; C=3.05 mm; E=1.52 mm; F=2.69 mm; G=1.93 mm; tibiotarsus E=1,09 mm; F=2,44 mm; G=2,36 mm; tarsometatarsus E=1.26; F=2.16 mm; G=1.22 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 94A), the *tuberculum dorsale* (a) is

obliquely rounded shape. *Caput humeri* (b) is wide and convex, but not too protruding. *Tuberculum ventrale* (c) is well developed and it forms oval-like spur. *Crista bicipitalis* (d) has blunt beak-like shape. *Crus dorsale fossae* (e) is underdeveloped and the two parts of *fossa pneumotricipitalis* (f) can not be separated. On distal epiphysis in cranial view (Fig. 38B), the *tuberculum supracondylare ventrale* (g) is weakly developed. *Epicondylus ventralis* (h) is rounded. *Processus flexorius* (i) is slightly protruding and pointing sideways. *Condylus ventralis* (j) has wide and blunted conical-shape. *Incisura intercondylaris* (k) is deep hollow. *Condylus dorsalis* (l) has bent oval shape. *Epicondylus dorsalis* (m) is rounded. *Processus supracondylaris dorsalis* (n) is short, wide and has two small branches. The widening between it and the diaphysis is wide.

On proximal epiphysis of ulna in cranial view (Fig. 94C), the *oleocranon* (a) is long, thin and even. *Cotyla dorsalis* (b) has asymmetrically and rounded conical shape. *Cotyla ventralis* (c) has circular shape. *Tuberculum lig. colat. ventralis* (d) is weakly developed. *Depressio m.brachialis* (e) is developed. On distal epiphysis of ulna in medial view (Fig. 94D), the *condylus dorsalis* (a) has claw-like shape. *Sulcus intercondylaris* (b) has concave shape. *Condylus ventralis* (c) is wide conical. *Tuberculum carpale* (d) has semicircular shape.

On tibiotarsus the distal epiphysis in cranial view (Fig. 94E), the *tuberositas retinaculi m. fibularis* (a) is flattened and less developed. *Sulcus extensorius* (a) is wide and has triangular distal end. *Pons supratendinous* (c) is wide and weakly oblique. *Condylus lateralis* (d) has flattened oval shape. *Incisura intercondylaris* (e) has slightly concave and obliquely wavy line. *Condylus medialis* (f) has oval shape.

On distal epiphysis of tarsometatarsus in dorsal view (Fig. 94F), the *trochlea metatarsi* II. (a) has wide and obliquely truncated rectangular shape. *Incisura intertrochlearis medialis* (b) has wide acute angle pit. *Trochlea metatarsi* III. (c) has concave end. *Incisura intertrochlearis lateralis* (d) has narrow acute angle pit. *Trochlea metatarsi* IV. (e) has flattened blunt conical shape.

Name: The name refers to the fossil locality.

Description: In its sizes it is similar to the smaller recent species (*E. schoeniclus*).

Emberiza † *media* nova sp.
(Plate XXVI. Figure 95 A-C)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Humerus sin. (MÁFI V.11.33.1; V.29108)

Paratype: Ulna dext. (distal fragment), (MÁFI V.11.51.1; V.29126).

Measurements: 1. humerus: A=18.72 mm; B=7.91 mm; C=5.50 mm; D=5.07 mm; E=1.84 mm;

F=4.67 mm; G=2.31 mm; 2. ulna F=3.18 mm; G=2.39 mm.

Comparative material: *Emberiza cia* (MTM n=1; humerus: A=18.65 mm; C=5.96 mm; E=1.96 mm; F=3.96 mm; ulna: F=2.97 mm; G=2.11 mm); *Emberiza citrinella* (MTM n=1; humerus: E=2.29; F=4.81 mm; ulna: F=2.88 mm; G=2.59 mm); *Emberiza schoeniclus* (MTM n=1: humerus: A=17.62 mm; C=5.63 mm; E=1.79 mm; F=4.38 mm; G=2.33 mm; ulna: F=2.69 mm; G=1.93 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 95A), the *tuberculum dorsale* (a) is bulged in conical shape. *Caput humeri* (b) is convex. *Tuberculum ventrale* (c) has oval shape. *Crista bicipitalis* (d) is protruding with cut-off end. *Fossa pneumotricipitalis* (e) is not divided in two parts. On distal epiphysis of humerus in cranial view (Fig. 95B), the *tuberculum ventrale* (f) is weakly developed. *Epicondylus ventralis* (g) is slightly rounded. *Processus flexorius* (h) has rounded rectangular shape. *Condylus ventralis* (i) has oval shape. *Incisura intercondylaris* (j) has wide concave pit. *Condylus dorsalis* (k) has oval shape. *Epicondylus dorsalis* (l) is less rounded. *Proc. supracondylaris dorsalis* (m) is short, wide and pointed.

On distal epiphysis of ulna in medial view (Fig. 95C), the *condylus dorsalis* (a) has asymmetrically bulged conical shape. *Sulcus intercondylaris* (b) is concave. *Condylus ventralis* (c) has semicircular shape. *Tuberculum carpale* (d) has asymmetrical conical shape.

Name: Its name refers to middle sized dimensions of species.

Description: It corresponds to characteristics of recent genus.

Emberiza † *parva* nova sp.
(Plate XXVI. Figure 96 A-C)

Type locality and age: Csarnóta 2, Pliocene (MN 15-16).

Holotype: Coracoideum dext. (cranial fragment), (MÁFI V.11.32.1; V.29107).

Paratypes: One right and 2 left side humeri (distal epiphysis); 2 right and 2 left side ulnae (distal fragments), (MÁFI V.11.52.6, V.29127).

Measurements: 1. coracoid C=2.87 mm; D=2.44 mm; 2. humerus F=3.54-3.55 mm; G=1.84-2.02 mm; 3. ulna F=2.59-2.95 mm; G=1.55-1.92 mm.

Comparative material: *Emberiza schoeniclus* (MTM n=1: coracoid C=2.99 mm; humerus: F=4.38 mm; G=2.33 mm; ulna: F=2.69 mm; G=1.93 mm).

Diagnosis: On medial side of coracoideum in cranial end (Fig. 96A), the *acroracoidium* (a) has symmetrical and bulged semicircular shape. *Processus accessorius* (b) has elonged and curved claw-like shape. Edge of *sulcus m. supracoracoidei* (c) has flattened concave shape. *Facies articularis humeralis* (d) has rounded and bulged edge. Point of the

processus prococarcoidalis (e) more exceeds the medial edge of corpus

On distal epiphysis of humerus in cranial view (Fig. 96B), the *tuberculum ventrale* (a) is well developed. *Epicondylus ventralis* (b) is slightly rounded. *Processus flexorius* (c) has short and wide rectangular shape. *Condylus ventralis* (d) has oval shape. *Incisura intercondylaris* (e) has wide concave pit. *Condylus dorsalis* (f) has oval shape. *Epicondylus dorsalis* (g) is bulged. *Proc. supracondylaris dorsalis* (h) is long, wide and with rounded end.

On distal epiphysis of ulna in medial view (Fig. 35 C), the *condylus dorsalis* (a) has bulged claw-like shape with rounded end. *Sulcus intercondylaris* (b) is concave. *Condylus ventralis* (c) has conical shape. *Tuberculum carpale* (d) has asymmetrical semicircular shape.

Name: Its name refers to smaller sized of species.

Description: Corresponds in its characteristics to recent genus.

Emberiza † *gaspariki* nova sp.
(Plate XXVI. Figure 97 A-C)

Type locality and age: Beremend 26, Pliocene (MN 15-16).

Holotype: Humerus sin. (BKA).

Paratypes: Distal fragment of humerus sin.; Three carpometacarpi dext. (BKA).

Measurements: 1. humerus: A=22,26 mm; B=6,99 mm; C=7,56 mm; D=6,18 mm; E=2,24 mm; F= 5,66-5,80 mm; G=2,68-3,17 mm; 2. carpometacarpus: A=16,84-17,49 mm; B=13,84-15,33 mm; C=4,27-4,63 mm; E=2,98-3,40 mm; F=3,76-4,11 mm;

Comparative material: *Emberiza calandra* (MTM n=1 humerus: A=24,99 mm; B=8,71 mm; C=8,05 mm; D=6,68 mm; E=2,32 mm; F=6,18 mm; G=3,48 mm; carpometacarpus: A=16,94 mm; B=13,67 mm; C=4,00 mm; E=3,15 mm; F=3,79 mm); *Emberiza cia* (MTM n=1 humerus: A=18,65 mm; C= 5,96 mm; E=1,96 mm; F=3,96 mm; carpometacarpus A=12,52 mm; C= 3,39 mm; F=2,92 mm); *Emberiza citrinella* (MTM n=1: humerus: E=2,29; F=4,81 mm; carpometacarpus A=12,35 mm; C= 3,25 mm; F=2,88 mm); *Emberiza schoeniclus* (MTM n=1: humerus: A=17,62 mm; C=5,63 mm; E=1,79 mm; F=4,38 mm; G=2,33 mm; carpometacarpus A=12,25 mm; C= 3,35 mm; F=2,92 mm).

Diagnosis: On proximal epiphysis of humerus in caudal view (Fig. 97A), the *tuberculum dorsale* (a) is rounded. *Caput humeri* (b) is convex. *Tuberculum ventrale* (c) is damaged. *Crista bicipitalis* (d) is protruding with rounded end. *Fossa pneumotricipitalis* (e) is not divided into two parts. On distal epiphysis of humerus in cranial view (Figure 97B), the *tuberculum ventrale* (f) is well developed. *Epicondylus ventralis* (g) is slightly rounded. *Processus flexorius* (h) has oblique and rounded rectangular shape. *Condylus*

ventralis (i) has oval shape. *Incisura intercondylaris* (j) has wide concave pit. *Condylus dorsalis* (k) has oval shape. *Epicondylus dorsalis* (l) is rounded. *Proc. supracondylaris dorsalis* (m) is short, wide and blunt.

On carpometacarpus in ventral view (Fig. 97C), the *trochlea carpalis* (a) is asymmetrically bulging and protruding. *Proc. extensorius* (b) has obliquely conical shape with cut-off end. *Processus alularis* (c) has rectangular shape and the *fovea subalularis* (d) has slightly acute angle pit. *Protuberantia metacarpalis* (e) has wide and flat triangular shape.

Name: Was named after the Hungarian paleontologist Mihály GASPARIK.

Description: It corresponds in its characteristics to recent species, but has larger dimensions.

Distribution: In the Carpathian Basin was described the fossil species *Emberiza bartkoi* KESSLER et HÍR, 2012 from Litke 2 – Hungary (Lower Miocene, MN 5) (KESSLER & HÍR 2012). The remains of *Emberiza* sp.foss. indet. it is known from Nagyharsányhegy 1-4 – Hungary (Lower Pleistocene, MQ2) (JÁNOSSY 1979). The recent species *Emberiza calandra* LINNAEUS, 1758 was identified from Betfia 2 - Romania (Lower Pleistocene, MQ1) (ČAPEK 1917; LAMBRECHT 1933; JÁNOSSY 1979a; KESSLER 1975; GÁL 2002) and Betfia 9 - Romania (KESSLER 1975; GÁL 2002) and *Emberiza citrinella* LINNAEUS, 1758 also from Betfia 9 - Romania (GÁL 2002).

The genus it is known outside the Carpathian Basin from the Late Pliocene - Early Pleistocene (MN 17- MQ1) sediments from Varshets and Slivnita - Bulgaria (BOEV 1996, 1997, 2000) and Stránská skála - Czech Republic (JÁNOSSY 1972).

Genus *Plectrophenax* STEJNEGER, 1882

Plectrophenax † *veterior* nova sp.
(Plate XXVI. Figure 98)

Type locality and age: Polgárdi 4, Late Miocene (MN 13).

Holotype: Tibiotarsus sin. (distal fragment) (MÁFI V.11.59.1; V.29134).

Measurements: Tibiotarsus E=1.64 mm; F=2.59 mm; G=2.31 mm.

Comparative material: *Plectrophenax nivalis* (MTM n=1: E=1.65 mm; F=2.65 mm; G=2.52 mm); *E. calandra* (MTM n=1: E=1.70 mm; F=3.40 mm); *E. citrinella* (MTM n=1: E=1.43 mm; F=1.88 mm; G=2.46 mm).

Diagnosis: Its characteristics corresponds those of the recent genus and species.

On tibiotarsus the distal epiphysis in cranial view (Fig. 98), the *tuberositas retinaculi m. fibularis* (a) is less developed and has lying shape. *Sulcus extensorius* (b) has deep and narrow distal end. *Pons supratendinous* (c) is straight and much wider than in the recent species. *Canalis extensorius* (d) has oval shape. *Condylus lateralis* (e) has flattened oval shape. *Incisura intercondylaris* (f) is wide and forms slightly

obliquely and wavy line. *Condylus medialis* (g) has less oval shape than in the recent species.

Name: The name refers to the age of the bone (Lat. *veterior*=old).

Description: It corresponds in its characters to the recent species.

Distribution: The genus is known only with recent species from Middle Pleistocene sediments from France and Ukraine (TYRBERG 1998).

Discussion

The fossil deposits on the W and SW of Hungary yielded extraordinarily rich passerine bone material in the 20th century. Identifying and classifying the material, however, has occurred to family and genus level at most, with the exception of the large Corvidae. Firstly, no such studies have been made globally for passerines and in consequence at the turn of the century only a couple of dozen extinct species had been identified, most of which were from large Corvidae and Menuridae families. Secondly, the skeletal parts of the fossil representatives of the order known only from the Upper Oligocene across Europe show morphologically unusually large homogeneity with recent material. The differences for both family and genus are very distinctive, which facilitates identification at this level. For this reason material of this kind has been reported from many sites across Europe, including Hungary through the good offices of Kálmán LAMBRECHT, Miklós KRETZOI and Dénes JÁNOSSY among others. However, very few attempts have been made at identification at species level and even these were received critically.

Mostly attempts were made to synonymise these with recent species (see MLIKOVSKY 2002).

This tendency does not take account of the laws of the process of evolution. Every living creature originates from its parents and modern specimens are separated from their ancestors by countless generations going backwards in time over millions of years. Since passerines, with the exception of larger birds such as Corvidae, reach sexual maturity at the age of one year old, we must count on at least a million generations over a million years. Due to the genetic characteristics inherited over so many generations, minimal differences between parent and offspring must surely arise in the area of morphology as well. Over many hundred thousand or a million generations these differences could be fairly large from both a morphological and biometrical viewpoint, and an individual from a generation a million years ago and one from today cannot be regarded as identical. All the less so because we are only able to study the skeletal traits without knowing anything about the other anatomical traits, such as the intestines, or the former characteristics of the plumage, behaviour and lifestyle.

In this paper this approach, as well as the morphological and size differences demonstrable in diagnoses are used to identify the parts of skeleton

suitable for classification at species level bearing in mind that the material from Polgárdi, Csarnóta and Beremend are separated from today's related recent species by about 3-6 million years. But even the extinct species of the small mammals determining Pleistocene stratigraphy, which could produce several generations a year, existed only for a time band lasting between a few tens of thousands of generations and a few hundred thousand generations. On this basis, we believe it is entirely justified to hold that the species longevity of passerines should be fixed at one million generations at least, while we do not accept criticism of this approach and hold that it is unsound to synonymise fossil taxa that are described from 10- to 15-million-year-old remains with recent species citing none too obvious differences.

The same principles were used to identify and describe the new taxa of passerine birds from the Neogene material. These principles were that passerines usually reach sexual maturity at the age of one year, thus there have been approximately 3-6 million generations between the recent and fossil material. In view of this, more than enough time has elapsed for there to be morphological and ethological differences between them which make the identification and description of new taxa possible.

The passerines which have already been classified at species level appeared as a new element in the fauna of the Upper Oligocene and Lower Miocene. This is a global novelty in avian palaeontology as, although most of the 9,000 extant species of bird are passerines (about 5,500 species), the fossil remains of only a couple of dozen have been described at species level. According to the current status of science, they spread after their traits had evolved from Australia and its environs to the whole world during the Oligocene. The earliest known Palaeartic remains come from the Upper Oligocene (MP 30) from sites at Coderet and Gannat (Allier) in France (MOURER-CHAUVIRÉ ET AL. 1989). Typically these finds already bear the osteomorphological signs indicating passerines. Thereafter, fossils from Europe, Asia, and also from North and South America are only known from the Lower Miocene. In the last of these continents passerine remains have been described from the Lower Miocene in Patagonia (NORIEGA & CHIAPPE 1993). This means that the spread of the passerines ended at this time.

Results and conclusions

From the territory of Hungary, new 113 extinct taxa represent Neogene Passeriformes including the material from Polgárdi (39 taxa), from Csarnóta (35 taxa) and from Beremend (24 taxa), as well as those described from North Hungary (KESSLER & HÍR 2012) (15 taxa).

The Late Miocene avian fauna at Polgárdi has been identified from extraordinarily rich material. From the several hundred bone finds (JÁNOSSY mentions 308), the three researchers who have studied the material to date have identified 955 bones from the three Polgárdi sites (2, 4, 5), (ČAPEK [in papers by KORMOS 1911, and LAMBRECHT 1912 and 1933], Jánossy, 1992, 1995; KESSLER 2010 and 2012). Of these one taxon only has been identified at class level (*Aves* indet.), 2 taxa at order level (Galliformes és Passeriformes indet.), 3 taxa at family level (Anatidae, Fringillidarum, Emberizidae), and 18 at genus level (see Table of Species).

It should be noted that on the last occasions classifications were made (2010, 2012) most of this material was identified at genus level at most. The passerines noted by Dénes JÁNOSSY in 1992 and 1995 and by the author in 2010, which were identified only at genus level, are in most cases classified at species level in this work. JÁNOSSY (1992) only listed 21 bones for passerines, but from this and the unidentified material 39 passerine taxa were identified at species level and a few at genus level. This is not to mention the unidentified material.

Of the total of 71 identified species, there were 63 extinct species and 2 extinct subspecies (*Falco tinnunculus atavus* and *Athene noctua veta*), and 48 of these species and 2 subspecies were from Polgárdi.

If the extinct species of passerines described from Polgárdi (39 species) are taken into account, together with the other 10 new extinct taxa (9 species: *Egretta polgardiensis* KESSLER, 2010; *Anas albae* JÁNOSSY, 1991; *Palaeocryptonix hungaricus* JÁNOSSY, 1991; *Porzana kretzoi* KESSLER, 2010, *Rallicrox polgardiensis* JÁNOSSY, 1991; *Calidris janossyi* KESSLER, 2010, *Charadrius lambrechtii* KESSLER, 2010, *Tyto campiterrae* JÁNOSSY, 1991; *Cuculus pannonicus* KESSLER, 2010 and one subspecies: *Porzana estramosi veterior* JÁNOSSY, 1991) described from there (a total of 49), the site's palaeontological significance and the extraordinary wealth and diversity of the former avian fauna of the area, as well as its endemic nature are proven.

Comparing the species list of the three sites, we may establish that in the case of Polgárdi 2, it is not possible to deduct more considerable inferences from the skimpy list of species.

The species list of the Polgárdi 4 and Polgárdi 5 not differ fundamentally, 29 species it is common, 24 species are not on the Polgárdi 5, but reversely it is

only 9. The species from aquatic/wetland environment differ and the list of Polgárdi 4 is richer from this viewpoint. Also differ the composition of the list in open grass and shrub land environment, while the species from forest and rocky habitats mostly correspond.

Most of the bone remains from Polgárdi sites originate from small birds; medium-sized birds account for an insignificant amount, and large birds are almost entirely absent from the fauna. The largest sized birds were two species of peacock (*Pavo*), as well as hawk (*Buteo*), bustard (*Otis*) and duck (*Anas*), and those in the small to medium-sized category were partridge (*Palaeortyx*), snipe (*Gallinago*), cuckoo (*Cuculus*) and crows (*Corvus*). All the rest were far smaller in size. Naturally, the two nocturnal predators, the medium-sized barn owl (*Tyto*) and the small-sized little owl (*Athene*) must not be forgotten. It is more than likely that the majority of the bones accumulated in the rock cavities and fissures of Szárhegy were due to their activity. In part their size determines the size of their prey animals as well.

The barn owl was well represented in the fossil material, with 17 bones from Site 4 and 93 from Site 5.

The composition of the list of species suggests very varied ecological conditions on the western shore of the Pannonian Lake, which was regressed and drying out, with habitats ranging from shoreline marshland, areas covered with reed beds and gallery forests to more open grassland and cliffs with woody vegetation.

Sixteen species (23%) indicate an aquatic/wetland environment, 19 species (27%) an open grass and shrub land environment, 27 species (37%) deciduous forests and 9 species (13%) rocky habitats if taxa identified at genus and species level are considered.

The Csarnóta sites (or more precisely Site 2 as only one species was classified from Site 4) yielded 63 taxa. Of these, 59 were identified at species level, 2 at genus level, and 2 at order or class level. 57 (53 species and 4 subspecies) of the 59 species are fossil or extinct taxa. Of these, 40 species were first recorded at Csarnóta. 61 recent taxa belong to 10 orders, 28 families and 52 genera.

As regards the ecotypes of the classified taxa, an aquatic/wetland environment was typical of 7 taxa (11%), an open grass and shrub land environment of 12 taxa (20%), a rocky environment of 6 taxa (10%), and forest and wooded areas of 36 taxa (59%). The percentages of open environment and rocky habitat species were approximately the same as those of the Late Miocene material (MN13) from Polgárdi, where the former was 23% and the latter 13%, but there was a significant difference for those of the wetland and forest species of avian fauna (23% and 27%

respectively). This clearly reflects the differences in environmental conditions before and after the Pannonian Lake silted up. There was a marked reduction of aquatic and wetland habitats (only one open water species is on the list of fauna), but the forest avian fauna doubled. Common related taxa are as follows: *Anas alba*, *Falco tinnunculus atavus*, *Palaeortyx brevipes*, *Rallixer polgardiensis*, *Porzana kretzoi*, *Otis kalmani*, *Galinago veterior*, *Athene noctua veta*, *Apus baranensis*, *Micorvus larteti*, whereas other extinct species of songbirds genera from Polgárdi (*Galerida*, *Lullula*, *Hirundo*, *Delichon*, *Anthus*, *Sitta*, *Certhia*, *Saxicola*, *Oenanthe*, *Turdus*, *Cettia*, *Acrocephalus*, *Locustella*, *Phylloscopus*, *Cinclus*, *Prunella*, *Lanius*, *Passer*, *Fringilla*, *Carduelis*, *Pyrrhula* és *Emberiza*) may be direct predecessors of the Csarnóta's species, considering the 2.5 to 3 million year difference in the age of the sites.

After NAGYMAROSSY and HÁMOR (2012) in the Pannonian Basin the Pliocene continental beds indicate an arid or semiarid climate, similar to the present desert. In contrast KRETZOI (1969) signaled that increased humidity and heat-intensive forest faunas existed in Csarnótanum.

The bird fauna from Csarnóta 2 confirmed this idea with 70% aquatic/wetland and forest areas ecotype species composition.

The Beremend 26 site yielded 66 taxa. Of these, 56 were identified at species level, 10 at genus level. 56 (52 species and 4 subspecies) of the 66 taxa are extinct taxa. The 66 taxa belong to 10 orders, 30 families and 53 genera.

Of these, 37 species were first recorded at Beremend 26 (24 species) and Csarnóta 2 (13 species, which are known from the holotype and which are paratypes in Beremend 26) . All 37 species belong to

the order Passeriformes. The five Corvidae taxa was signaled in 2010 (KESSLER 2010).

As regards the ecotypes of the classified taxa, an aquatic/wetland environment was typical of 11 taxa (17%), an open grass and shrub land environment of 12 taxa (18%, but this a rocky environment of 3 taxa, 4,5%), and forest and wooded areas of 43 taxa (65%). It proves that the KRETZOI's (1969) assumption regarding the climate of Csarnótanum was adequate.

Compared to the similar age bird fauna from Csarnóta – near only a few kilometers distant to the Beremend – we can be concluded that 25 taxa of the same (apr. 37-38%); the ecotypes are almost similar; in Beremend more the aquatic/wetland ecotype taxa, in Csarnóta more the rocky ecotypes.

However it should be noted, that while in the Csarnóta 2 the fully fossil material was examined, from Beremend 26 only a part of the fossil remains has been saved.

This may explain also that, while in the Csarnóta 2 faunas can be found of great stature *Bubo bubo* (that prey a larger-bodied birds), in Beremend this is missing, while in the fossil material can occur bustards, herons, black grouse and capercaillie.

The bones of some prey species compared to others are better represented in fossil material (*Delichon polgardiensis*, *Saxicola lambrechtii*, *Acrocephalus major*, *A. minor*, *Hippolais veterior*, *Sylvia intermedia*, *Locustella kordosi*, *Motacilla intermedia*, *Carduelis kretzoi* and *Emberiza polgardiensis* in Polgárdi; *Prunella kormosi* and *Emberiza parva* in Csarnóta; *Turdus major*, *T. medius*, *T. minor*, *Oriolus beremendensis*, *Lanius major*, *Sturnus pliocaenicus* and *Coccothraustes major* in Beremend), what on the one hand proved the density of individuals or preference of the predators.

Table 1. Songbirds bones from Hungarian Neogene. (Abbreviations: PC - Polgárdi complete bones; PF - Polgárdi fragmentary bones; PT - Polgárdi total bones; CsC - Csarnóta complete bones; CsF - Csarnóta fragmentary bones; CsT - Csarnóta total bones; BC - Beremend complete bones; BF - Beremend fragmentary bones; BT - Beremend total bones; TC - total complete bones; TG - total fragmentary bones; TG - total number bones).

Bones	PC	PF	PT	CsC	CsF	CsT	BC	BF	BT	TC	TF	TG
max+mand.								8	8		8	8
coracoid	6	9	15		14	14				6	23	29
scapula					2	2					2	2
humerus	16	47	63	2	11	13	10	34	44	28	92	120
ulna	10	46	56	1	22	23	1	2	3	12	70	82
carpomtcp.	16	5	21		13	13	13	3	16	29	21	50
ph.alae							2		2	2		2
femur	1	7	8							1	7	8
tibiotarsus		36	36		7	7		3	3		46	46
tarsometts.		18	18	1	9	10	3	7	10	4	34	38
Total	49	168	217	4	78	82	29	49	78	82	303	385

The above data suggest the following taphonomical conclusions:

1. The longest bones (tibiotarsi, tarsometatarsi) in most cases were fragmented. It refers to small- or medium-sized predators.

2. The number of complete bones from Polgárdi suggest medium-sized predators (*Tyto*, *Strix*, *Surnia*, *Asio*).

3. A small number of complete bones from Csarnóta suggest that they were prey to a small owl (probable *Athene noctua*).

4. Six types of bones (coracoid, humerus, ulna, carpometacarpus, tibiotarsus and tarsometatarsus) represented a overwhelming majority from fossil

remains (96% in Polgárdi, 90% in Csarnóta and 84% in Beremend).

5. Three wing bones (humeri, ulnae and carpometacarpī) represent 66% from total remains.

6. The rate of bones/species is 5,56 in Polgárdi, 2,34 in Csarnóta and 2,11 in Beremend.

The identification of 114 songbird taxa from Carpathian Basin (113 from Hungary and one from Romania: *Luscinia jurensis* KESSLER et VENCZEL 2011 from the Middle Miocene, MN 6 of Subpiatră, Bihor County[KESSLER & VENCZEL 2011]) means to start a new chapter in palaeornithology.

The author hopes that the research of the Neogene passeriformes will produce new and interesting results both in Europe and in other part of the world.

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References

- BAUMEL, J. J., KING, A. S., LUCAS, A. M., BREAZILE, J. E., EVANS, H. E. 1979: *Nomina anatomica avium*. Academic Press, London, 637 p.
- BOEV, Z. N. 1996: Tertiary avian localities of Bulgaria. In: MLIKOVSKY (ed): Tertiary avian localities of Europa. – *Acta Universitatis Carolinae, Geologica* 39, 541–545.
- BOEV, Z. N. 1997: *Chauvireria balcanica* gen. n., sp. n. (Phasianidae – Galliformes) from the Middle Villafranchian of Western Bulgaria. *Geologica Balcanica* 27, 69–78.
- BOEV, Z. N. 1998: Late Pliocene hawfinches (*Coccothraustes* Brisson, 1760) (Aves: Fringillidae) from Bulgaria. – *Historia Naturalis Bulgarica* 9, 87–99.
- BOEV, Z. N. 1999: Earliest finds of crossbills (genus *Loxia*) (Aves: Fringillidae) from Varshets (NW Bulgaria). – *Geologica Balcanica* 29(3–4), 51–57.
- BOEV, Z. N. 2000: Neogene avifaunas of Bulgaria. – *Vertebrata Palasiatica* 38, (Supplement): 2–10.
- BOEV, Z. N. 2012: Neogene Larks (Aves: Alaudidae (Vigors, 1825) from Bulgaria. – *Acta zoologica bulgarica*, 64 (3), 295–318.

- BRODKORB, P. 1960: How many species of birds have existed? – *Bulletin of the Florida State Museum, Biological Sciences* 5, 41–53.
- ČAPEK, V. 1917: A püspökfűrdői preglaciális madárfauna. – *Barlangkutató* 5, 66–74.
- CLOT, A., CHALINE, J., HEINTZ, E., JAMMOT, D., MOURER-CHAUVIRÉ, C. & RAGE, J.C. 1976: Montoussé 5 (Hautes-Pyrénées), un nouveau remplissage de fissure à faune de vertébrés du Pléistocène inférieur. – *Géobios* 9, 511–514.
- DÖPPES, D & RABEDER, G (eds) 1997. *Pliozäne und Pleistozäne Faunen Österreichs*. – Mitteilungen der Kommission für Quartärforschung der Österreichischen Akademie der Wissenschaften, Vol 10, Wien, pp. 411.
- DRIESCH, A. VON DEN. 1976: A guide to the measurements of animal bones from archaeological sites. – *Peabody Museum Bulletin* 1.
- FREUDENTHAL, M. & KORDOS, L. 1989: *Cricetus polgardiensis* sp.nov. and *Cricetus kormosi* SCHAUB, 1930 from the Late Miocene Polgárdi localities (Hungary). – *Scripta Geologica* 89, 71–95.
- GÁL, E. 2002: Avifauna pleistocena a României. [Not published doctoral thesis: Pleistocene birds faunas from Romania]. Bucuresti. 263 pp.
- GÁL E., HÍR J., KESSLER E., KÓKAY J. & VENCSEL M. (2000): Középső-miocén ősmaradványok a Mátraszőlős, Rákóczi-kápolna alatti útbevágásból. II. A Mátraszőlős 2. lelőhely. – *Folia Historico Naturalia Musei Matraensis* 24: 39–75.
- GÁL, E. & KESSLER, E. 2006. Songbird remains from the Miocene (Middle Sarmatian) site Credinta (Dobrogea, South-East Romania). In: Z. CSIKI (ed.) *Volume dedicated to Dan Grigorescu on his 65th birthday*. University of Bucharest Printing House.
- GILBERT, M. B., MARTIN, L.D. & SAVAGE, H.G 1981: *Avian Osteology*. Laramie, Wyoming. 240 pp.
- HARRISON, C.J.O. & STEWART, J.R. 1999: Avifauna. In: ROBERTS M.B. & PARFITT S.A. (eds): *Boxgrove. A middle Pleistocene hominid site at Earham Quarry, Boxgrove, West Sussex*. – English Heritage Archaeological Report (London) 17: 187–196.
- HARRISON C.J.O. (1979): Small non-passerine birds of the Lower Tertiary as exploiters of ecological niches now occupied by passerines. – *Nature* 281: 562–563.
- HIR, J. KÓKAY, J., VENCSEL, M., GÁL, E. & KESSLER, E. 2001. Előzetes beszámoló a felsőtárkányi „Gödör-kert” n. őslénytani lelőhelykomplex újravizsgálatáról. – *Folia Historico-Naturalia Musei Matraensis* 25: 41–65.
- HORÁČEK, I. 1985: Survey of the fossil vertebrate localities Včeláre 1–7. – *Časopis pro Mineralogii a Geologii* 30, 353–366.
- JÁNOSSY, D. 1965: Vogelreste aus den altpleistozänen Ablagerungen von Voigtstedt in Thüringen. – *Paläontologische Abhandlungen (A)* 2, 336–361.
- JÁNOSSY, D. 1972: Die mittelpleistozäne Vogelfauna der Stránská Skála. – *Anthropos* 21 (12), 35–64.
- JÁNOSSY, D. 1974: Die mittelpleistozäne Vogelfauna von Hundsheim (Niederösterreich). – *Sitzber. Österr. Akad. Wiss. Mathem.-Naturw. Kl., Abt. 1*, 182, 211–257.
- JÁNOSSY, D. 1978: Új finomrétegtani szint Magyarország pleisztocén őslénytani sorozatában. – *Földrajzi Közlemények* 26(1–3), 161–174.
- JÁNOSSY, 1979: Plio-pleistocene Bird Remains from the The Carpathian Basin. IV. Anseriformes, Gruiformes, Charadriiformes, Passeriformes. – *Aquila* 85, 11–39.
- JÁNOSSY, D. 1980: Plio-pleistocene Bird Remains from the The Carpathian Basin. VI. Systematical and Geographical Catalogue. – *Aquila* 87, 9–22.
- JÁNOSSY, D. 1981: Die altpleistozänen Vogelfaunen von Deutsch-Altenburg 2 und 4 (Niederösterreich). – *Beiträge zur Palaontologie von Österreich* 8, 375–391.
- JÁNOSSY, D. 1983: Die mittelpleistozäne Vogelfauna von Přezletice bei Prag (ČSSR). In: Heinrich W.-D. (ed.): *Wirbeltier-Evolution und Faunenwandel im Känozoikum*. – *Schriftenreihe für Geologische Wissenschaften* 19–20, 247–269.
- JÁNOSSY, D. 1986: *Pleistocene vertebrate faunas of Hungary*. Budapest: Akadémiai Kiadó & Amsterdam: Elsevier, pp. 208.
- JÁNOSSY, D. 1991: Late Miocene bird remains from Polgárdi (W-Hungary). – *Aquila* 98, 13–35.
- JÁNOSSY, D. 1992: Lower Pleistocene Bird Remains from Beremend (S-Hungary, Loc. 15. and 16.). – *Aquila* 99, 9–25.
- JÁNOSSY, D. 1993: Bird remains from the Upper Miocene (MN9) of Rudabánya (N-Hungary). – *Aquila* 100, 53–70.
- JÁNOSSY, D. 1995: A late Miocene avifauna from Polgárdi, western Hungary. In: Peters D.S. (ed.): *Acta palaeornithologica*. – *Courier Forschungsinstitut Senckenberg* 181, 203–206.
- JÁNOSSY, D. & KORDOS, L. 1976: Az Osztramos gerinces lelőhelyeinek faunisztikai és karszt-morfológiai áttekintése (1974-ig). – *Fragmenta Mineralogica et Paleontologica* 8, 39–92.
- JURCSÁK, T. & KESSLER, E. 1988. Evoluția avifaunei pe teritoriul României (III). – *Crisia* 18: 647–688.
- KESSLER, E. 1975: Contribuții noi la studiul avifaunei fosile de la Bettefa, jud. Bihor. – *Nymphaea*. 3, 53–59.
- KESSLER J. 2009a: Új eredmények a Kárpát-medence neogén és negyedidőszaki madárvilágához, I. rész. [New results with regard to the Neogene and Quaternary Avifauna of the Carpathian basin. Part I.] – *Földtani Közöny* 139/1, 67–82.
- KESSLER J. 2009b: Új eredmények a Kárpát-medence neogén és negyedidőszaki madárvilágához II.rész. [New results with regard to the Neogene and Quaternary Avifauna of the Carpathian basin. Part II.] – *Földtani Közöny*. 139/3, 251–271.
- KESSLER, J. 2010: Új eredmények a Kárpát-medence neogén és negyedidőszaki madárvilágához, III.rész [New results with regard to the Neogene and Quaternary Avifauna of the Carpathian basin. Part III.] – *Földtani Közöny*. 140/1, 53–72.
- KESSLER, J. 2012–2013: A Kárpát-medence madárvilágának őslénytani kézikönyve. [Palaeornithological Handbook of birds fauna from Carpathian Basin]. Könyvműhely Kiadó Miskolc, 458 p.+ 48 Táblakép.
- KESSLER J. & Hír, E. 2012: Észak-Magyarország madárvilága a miocénben II. rész. [The avifauna in North Hungary during the Miocene. Part II.] – *Földtani közöny*. – 142/2, 149–168.
- KESSLER, E. & Venczel, M 2009: Bird remains from the Middle Miocene of Subpiatră (W-Romania). – *Nymphaea, Folia naturae Bihariae* 36, 27–36 Oradea.
- KESSLER, E. & Venczel, M 2011: A new passeriform bird from the Middle Miocene of Subpiatră (W-Romania). – *Nymphaea, Folia naturae Bihariae*, Oradea 38, 17–22.
- KORDOS, L. 1991a: Mezőföld, Polgárdi, késő-miocén ősgerinces lelőhelyek [Late Miocene paleovertebrate

- localities, Polgárdi, Mezőföld]. *Magyarország Geológiai Alapszelvényei*, MÁFI Kiadvány. pp. 1–6.
- KORDOS, L. 1991b: Villányi-hegység, Villány, alsó-pleisztocén ősgérces lelőhelyek. *Magyarország geológiai alapszelvényei*, MÁFI Kiadvány, pp. 1–6.
- KORDOS, L. 2001: Beremendi alapszelvény. Gérces őslénytani vizsgálatok, [Kézirat], MÁFI, Budapest.
- KORDOS, L. 2004: *Beremend. Pliocén gerinces lelőhelyek*. Kirándulásvezető .7. Magyar Őslénytani Vándorgyűlés. P. 54–57.
- KORMOS, T. 1911: Die pliozäne Knochenfund bei Polgárdi (vorläufiger Bericht). – *Földtani Közöny* 41, 171–189.
- KORMOS, T. 1913: Kleinere Mitteilungen aus dem ungarischen Pleistocän. – *Centralblatt für Mineralogie, Geologie und Palaontologie* 1913: 13–17.
- KRETZOI, M. 1952: Die Raubtiere der Hipparion-fauna von Polgárdi. – *Jahrbuch Ungarische Geological Anstalt*, 40, 1–12.
- KRETZOI, M., 1956: A Villányi hegység alsó pleisztocén gerinces faunái. – *Geologica Hungarica. Series. Paleontologica*, 27: 1–264.
- KRETZOI, M., 1962: A csarnótai fauna és faunaszint. – *A Magyar Állami Földtani Intézet Évi Jelentése az 1959. évről* pp. 297–395.
- KRETZOI, M., 1969: A magyarországi quarter és pliocén szárazföldi biosztratigráfiájának vázlat. – *Földrajzi Közlemények*, 18 (3): 179–204.
- KRETZOI, M. 1977: The fauna of small vertebrates of the Middle Pleistocene at Petralona. – *Anthropos* (Athena) 4, 131–143.
- LAMBRECHT, K. 1912: Magyarország fossilis madarai. Die fossilen Vögel Ungarns. – *Aquila* 19, 288–320.
- LAMBRECHT, K. 1916: Az első magyar preglaciális madárfauna. Die erste ungarische pragglaziale Vogelfauna. – *Aquila* 22, 165–172.
- LAMBRECHT, K. 1933: *Handbuch der Palaornithologie*. Bornträger Edit. Berlin. pp. 1024.
- MALEZ, M. 1975: Ornitofauna iz kvartarnih naslaga velike pecine na ravnoj gori u sjeve-rozapadnoj Hrvatskoj. *Larus* 26/28: 45–54.
- MALEZ, V. 1984: Paleornitološki ostaci iz kvartarnih naslaga nekih spilja Hrvatske i Slovenije. In: *Deveti jugoslavenski speleoloski kongres*, Zbornik predavanja: 711–719.
- MALEZ, V. 1988: Pleistocenska ornitofauna iz spilje Vindije u sjeverozapadnoj Hrvatskoj. – *Rad Jugoslavenske Akademije Znanosti i Umjetnosti, Varazdin* 2: 31–203.
- MALEZ-BAČIĆ V. 1979. Pleistocenska ornitofauna iz Šandalje u Istri te njezino stratigrafsko i paleoekološko značenje, – *Palaontologia Jugoslavica* 21, 1–46.
- MILNE-EDWARDS, A. 1869–1871. *Recherches anatomiques et paléontologiques pour servir à l'histoire des oiseaux fossiles de la France*. Vol. 2. Paris: G. Masson, 627 pp. + pls. 97.
- MLÍKOVSKÝ J. 1989: Ptáci staršího a středního pleistocénu Československa: současný stav aperspektivný výzkumu In: SEITL, L. (ed.): *Současný stav a perspektivy 33 výzkumu kvartéru v ČSSR*. 63–67. Brno: Moravské muzeum & Universita J.E. Purkyně.
- MLÍKOVSKÝ, J. 1995: Early Pleistocene birds of Stránská skála: 1. Musil's talus cone. In: MUSIL, R. (ed.): *Stránská skála Hill: Excavations of open-air sediments 1964–1972*. – *Anthropos (Brno)* 26, 111–126.
- MLÍKOVSKÝ, J. (ed.) 1996. Tertiary avian localities of Europe. – *Acta Universitatis Carolinae, Geologica*. 39, 517–848.
- MLÍKOVSKÝ, J. 1998. Early Pleistocene birds of Deutsch-Altenburg, Austria. – *Acta Societatis Zoologicae Bohemicae* 62:135–141.
- MLÍKOVSKÝ, J. 2002: *Cenozoic Birds of the World. Part 1: Europe*. Ninox Press, Praha, 407 pp.
- MLÍKOVSKÝ, J. 2009: Middle Pleistocene birds of Hundsheim, Austria. – *Journal of the National Museum (Prague), Natural History Series* 177 (7): 69–82.
- MONTOYA, P. ET AL. 1999: La fauna del Pleistoceno inferior de la Sierra de Quibas (Abanilla, Murcia). – *Estudios Geológicos* 55, 127–161.
- MONTOYA, P. ET AL. 2001: Une faune très diversifiée du Pléistocène inférieur de la Sierra de Quibas (province de Murcia, Espagne). – *Comptes Rendus de l'Académie des Sciences (Paris), Sciences de la Terre et des Planètes* 332, 387–393.
- MOURER-CHAUVIRÉ, C. 1975: Les oiseaux du Pléistocène moyen et supérieur de France. – *Documents des Laboratoires de Géologie de la Faculté des Sciences de Lyon* 64, 1–624.
- MOURER-CHAUVIRÉ, C. 1995: Dynamics of the avifauna during the Paleogene and the Early Neogene of France. Settling of the recent fauna. – *Acta Zoologica Cracoviensia* 38(3): 325–342.
- MOURER-CHAUVIRÉ C., HUGUENEY M. & JONET P. 1989: Découverte de Passeriformes dans l'Oligocène supérieur de France. – *Comptes Rendus Hebdomadaires de l'Académie des Sciences (Paris), Sciences de la Terre et des Planètes* 309, 843–849.
- NORIEGA, J. I. & CHIAPPE, L. 1993: An Early Miocene Passeriform from Argentina. – *The Auk* 110(4), 936–938.
- PONGRÁCZ, L. 1999: A beremendi Szőlő-hegy természetudományi kutatásának 150 éve. *Petőnyi emlékkönyv*. Beremend.
- PORTIS, A. 1887: Contribuzioni alla ornitologia italiana. Parte II. – *Memorie Regia Accademia Scienze (Torino)* (2) 38, 181–203.
- SONDAAR, P.Y., MCMINN M., SEGUÍ, B. & ALCOVER J.A. 1995: Interès paleontològic del jaciments càrstic de les Gimnèsies i les Pitiüses. – *Endins* 20, 155–170
- ŠVEC, P. 1985: In: FEJFAR O. & HEINRICH W.-D. (Eds,) 1985: Zur Bedeutung der Wirbeltier fundstätten von Ivanovce und Hajnáčka für die Säugetierpaläontologie im Pliozän und frühen Pleistozän in Europa: Kenntnisstand und Probleme. – *Věstník Ústředního Ústavu Geologického* 60, 213–224.
- TCHERNOV, E. 1980: The Pleistocene Birds of Ubeidiya, Jordan Valley. In: *The Pleistocene of the Central Jordan Valley. The excavation at Ubeidiya*. The Israel Acad. of Sci., Humanities, Jerusalem, 1–83.
- TYRBERG T. 1998: *Pleistocene birds of the Palearctic: a catalogue*. Cambridge, Mass.: Nuttall Ornithological Club, ix + pp. 720.
- VILLALTA, J. F. de 1963. Las aves fósiles del Mioceno español. – *Boletín de la Real Sociedad Española de Historia Natural Geología* 61: 263–285
- ZELENKOV, N. 2011: *Neogene Birds of Central Asia*. Ph. D. Thesis, Paleontological Institute, RAN, Moscow, 1–304.
- ZELENKOV, V.N. & KUROCHKIN, E.N. 2012: The first representative Pliocene assemblages of passerine birds

in Asia (Northern Mongolia and Russian VOJINSTVENS'KYJ M. A. 1967: Iskopaemaja ornitofauna Transbaikalia). – *Geobios* 45 (2012) 323–334
 Ukrainy. – *Prirodnaja Obstanovka i Fauny Prošlogo* 3, 3–76.

Table 2. Species from Polgárdi localities (sp.foss= extinct species; sp.end. = endemic extinct species)

Taxa	Sp. foss.	Sp. end.	Capek (KORMOS, 1911)	JÁNOSSY 1991, 1995	KESSLER 2009a,b 2010	KESSLER in this paper	Polgárdi 2/4/5
<i>Egretta polgardiensis</i>	x	x			x		4
<i>Anas albae</i>	x	x	x	x			2
<i>A. clypeata</i>					x		4
Anatidae indet.					x		4,5
<i>Buteo</i> sp.					x		4
<i>Falco cherrug</i>					x		4
<i>F. tinnunculus atavus</i>	x				x		5
<i>Palaeocryptonix hungaricus</i>	x	x	x	x			2,4,5
<i>Pavo arhiaci</i>	x		x	x	x		2,4,5
<i>Palaeortyx gallica</i>	x				x		4,5
<i>P. brevipes</i>	x				x		4,5
Galliformes indet.	x				x		4,5
<i>Porzana estramosi veterior</i>	x	x		x			4,5
<i>P. estramosi</i>	x				x		4,5
<i>P. kretzoi</i>	x	x			x		4,5
<i>Rallicrox polgardiensis</i>	x	x		x	x		4,5
<i>Otis khosiatzki</i>	x			x			5
<i>O. kalmani</i>	x				x		4
<i>Gallinago</i> sp.				x			4
<i>G. veterior</i>	x				x		4
<i>Limosa</i> sp.					x		5
<i>Tringa</i> sp.				x	x		4
<i>Cursorius</i> sp.				x			4
<i>Calidris janossyi</i>	x	x			x		5
<i>Charadrius lambrechtii</i>	x	x			x		4
<i>Tyto campiterra</i>	x	x		x	x		4,5
<i>Athene noctua veta</i>	x		x		x		4
<i>Surnia robusta</i>	x				x		4,5
<i>Cuculus pannonicus</i>	x	x			x		4
<i>Apus baranensis</i>	x				x		4
<i>Chaetura baconica</i>	x			x	x		4,5
<i>Alauda tivadari</i>	x	x				x	4
<i>Calandrella gali</i>	x	x				x	4,5
<i>Lullula minor</i>	x	x				x	4,5
<i>Hirundo gracilis</i>		x					4,5
<i>Delichon polgardiensis</i>		x					5
<i>Riparia minor</i>		x					4
<i>Corvus</i> sp.				x	x		4
<i>C. pliocaenus</i>	x				x		5
<i>Micocorvus larteti</i>	x				x		4
<i>Motacilla</i> sp.				x	x		5
<i>M. intermedia</i>	x	x				x	4,5
<i>Anthus</i> sp.					x		4
<i>A. hiri</i>	x	x				x	5
<i>Bombycilla</i> sp.						x	4,5
<i>B. brevia</i>	x	x				x	5

Taxa	Sp. foss.	Sp. end.	Capek (KORMOS, 1911)	JÁNOSSY 1991, 1995	KESSLER 2009a,b 2010	KESSLER in this paper	Polgárdi 2/4/5
<i>Cinclus gaspariki</i>	x	x				x	5
<i>Troglodytes</i> sp.	x	x				x	4
<i>T. robustus</i>	x	x				x	4,5
<i>Turdus</i> sp.				x	x		4,5
<i>T. polgardiensis</i>	x	x				x	5
<i>T. miocaenicus</i>	x	x				x	5
<i>Turdicus pannonicus</i>	x	x				x	4,5
<i>Prunella</i> sp.					x		4
<i>P. freudenthali</i>	x	x				x	5
<i>Luscinia</i> sp.				x	x		4
<i>L. denesi</i>	x	x				x	4
<i>Muscicapa miklosi</i>	x	x				x	4
<i>Saxicola lambrechtii</i>	x	x				x	4,5
<i>Oenanthe kormosi</i>	x	x				x	5
Muscicapidae sp. indet.					x		5
<i>Tichodroma capeki</i>	x	x				x	4
<i>Certhia</i> sp.					x		4
<i>Sitta</i> sp.					x		5
<i>S. gracilis</i>	x	x				x	4
<i>Aegithalos gaspariki</i>	x	x				x	4,5
<i>Acrocephalus</i> sp.1.				x			5
A. sp.2				x			4
A. sp.					x		4
<i>A. major</i>	x	x				x	4
<i>A. minor</i>	x	x				x	4
<i>Hippolais veterior</i>	x	x				x	4
<i>Cettia</i> sp.				x			4
<i>C. janossyi</i>	x	x				x	4
<i>Sylvia</i> sp.				x			4
<i>S. intermedia</i>	x	x				x	4
<i>Locustella kordosi</i>	x	x				x	4,5
<i>Phylloscopus venczeli</i>	x	x				x	4
<i>Lanius</i> sp.			x	x	x		2,5
<i>L. capeki</i>	x	x				x	4
<i>Sturnus</i> sp.					x		4
<i>S. brevis</i>	x	x				x	4,5
<i>Passer hiri</i>	x	x				x	4
Fringillidarum indet.				x	x		5
<i>Fringilla kormosi</i>	x	x				x	4,5
<i>Carduelis kretzoi</i>	x	x				x	4,5
<i>C. lambrechtii</i>	x	x				x	4
<i>Pyrrhula gali</i>	x	x				x	5
Emberizidae indet.					x		5
<i>Emberiza polgardiensis</i>	x	x				x	4,5
<i>E. pannonica</i>	x	x				x	4,5
<i>Plectrophenax veterior</i>	x	x				x	4
Passeriformes indet.					x	x	4
Aves indet.			x		x	x	2,4,5

Table 3. Species from Csarnóta localities (subsp.= subspecies; sp.foss= extinct species; sp.end. = endemic extinct species)

Taxa	subsp.	sp.foss.	sp.end.	JÁNOSSY 1969, 79	KESSLER 2009, 10	KESSLER in this paper	Csarnóta 2,4.
<i>Podiceps csarnoanus</i>		x	x		x		2
<i>Anas albae</i>		x					2.15
<i>Falco tinnunculus atavus</i>	x	x			x		2
<i>Palaeortyx brevipes</i>		x			x		2,18; 2.21;
<i>Gallus beremendensis</i>		x			x		2
<i>Francolinus capeki</i>		x		x			2
<i>Tetrao paeurogallus</i>		x		x			2
<i>T. partium</i>		x			x		4
<i>Rallicrox polgardiensis</i>		x		x	x		2.15
<i>Porzana kretzoi</i>		x	x		x		2
<i>Otis kalmani</i>		x			x		2
<i>Galinago veterior</i>		x		x			2
<i>Cuculus csarnotanus</i>		x	x	x			2
<i>Bubo bubo</i>				x			2
<i>Aegolius</i> sp.				x			2
<i>Glaucidium baranensis</i>		x	x		x		2.13; 2.24;
<i>Athene noctua veta</i>	x	x			x		2.2
<i>Apus baranensis</i>		x			x		2
<i>Garrulus glandarius</i>				x			2
<i>Pyrrhocorax graculus vetus</i>	x	x		x			2
<i>Corvus harkanyensis</i>		x	x		x		2
<i>Miocorvus larteti</i>		x			x		2
<i>Pica pica major</i>	x	x			x		2
<i>Galerida pannonica</i>		x	x			x	2.22
<i>Lullula parva</i>		x	x			x	2.10
<i>Hirundo major</i>		x	x	x	x	x	2.22
<i>Delichon pusillus</i>		x	x			x	2.21
<i>Aegithalos congruis</i>		x	x			x	2.21
<i>Parus robustus</i>		x	x			x	2.16
<i>P. parvulus</i>		x	x			x	2
<i>Sitta pusilla</i>		x	x	x	x	x	2.21
<i>Certhia immensa</i>		x	x		x	x	2.21
<i>Saxicola baranensis</i>		x	x		x	x	2
<i>S. parva</i>		x	x		x	x	2
<i>Phoenicuros erikai</i>		x	x		x	x	2
<i>Oenanthe pongraczi</i>		x	x		x	x	2
<i>Turdus major</i>		x	x	x	x	x	2
<i>T. medius</i>		x	x		x	x	2.17
<i>T. minor</i>		x	x		x	x	2.17
<i>Turdoides borealis</i>		x		x			2
<i>Cettia kalmani</i>		x	x			x	2
<i>Acrocephalus kretzoi</i>		x	x			x	2.17
<i>A. kordosi</i>		x	x			x	2
<i>Sylvia pusilla</i>		x	x		x	x	2.18
<i>Locustella janossyi</i>		x	x			x	2.21
<i>Phylloscopus pliocaenicus</i>		x	x			x	2
<i>Bombycilla</i> sp.		?			x		2
<i>Anthus baranensis</i>		x	x			x	2

Taxa	subsp.	sp.foss.	sp.end.	JÁNOSSY 1969, 79	KESSLER 2009, 10	KESSLER in this paper	Csarnóta 2,4.
<i>Cinclus minor</i>		x	x		x	x	2
<i>Prunella kormosi</i>		x	x		x	x	2
<i>Lanius hungaricus</i>		x	x		x	x	2.10
<i>Passer minusculus</i>		x	x			x	2
<i>Carduelis parvulus</i>		x	x		x	x	2
<i>C. medius</i>		x	x		x	x	2
<i>Pyrrhula minor</i>		x	x		x	x	2
<i>Fringilla petényii</i>		x	x		x	x	2
<i>Loxia csarnotanus</i>		x	x		x	x	2
<i>Pinicola kubinyii</i>		x	x		x	x	2.06
<i>Emberiza media</i>		x	x		x	x	2
<i>E. parva</i>		x	x		x	x	2
Passeriformes indet.		?			x	x	2
Aves indet.		?			x	x	2

Table 4. Species from Beremend localities (subsp.= extinct subspecies; sp.foss= extinct species; sp.end. = endemic extinct species; Obs. Csarnóta= Species indeterminate also from Csarnóta)

Taxa	ssp. foss.	sp. foss.	sp. end.	KESSLER 2009a,b	KESSLER 2010	KESSLER 2012 and in this paper	Obs. Csarnóta
<i>Podiceps</i> sp.				x			
<i>Egretta</i> sp.				x			
<i>Accipiter</i> sp.				x			
<i>Falco tinnunculus atavus</i>	x			x			
<i>Falco</i> sp.				x			
<i>Tetrao praeurogallus</i>		x		x			
<i>Tetrao partium</i>		x		x			
<i>Gallus beremendensis</i>		x		x			
<i>Francolinus capeki</i>		x		x			
<i>Palaeocryptonix hungaricus</i>		x		x			
<i>Perdix perdix jurcsaki</i>	x			x			
<i>Rallix rex polgardiensis</i>		x		x			
<i>Miorallus major</i>		x		x			
<i>Porzana</i> sp.				x			
<i>Otis lambrechtii</i>		x		x			
<i>Otis kalmani</i>		x		x			
<i>Tringa</i> sp.				x			
<i>Chlidonias</i> sp.				x			
<i>Columba</i> sp.				x			
<i>Glaucidium baranensis</i>		x		x			
<i>Athene noctua veta</i>	x			x			
<i>Strix intermedia</i>		x		x			
<i>Picus pliocaenicus</i>		x	x			X (2012)	
<i>Dendrocopus praemedius</i>		x				X (2012)	
<i>Melanocorypha minor</i>		x	x			x	
<i>Galerida pannonica</i>		x				x	x
<i>Lullula parva</i>		x				x	x
<i>Lullula minuscula</i>		x	x			x	
<i>Delichon major</i>		x	x			x	
<i>Corvus pliocaenus</i>		x			X		
<i>Corvus</i> sp.					X		

Taxa	ssp. foss.	sp. foss.	sp. end.	KESSELER 2009a,b	KESSELER 2010	KESSELER 2012 and in this paper	Obs. Csarnóta
<i>Miocorvus larteti</i>		x			X		
<i>Pica pica major</i>	x				X		
<i>Nucifraga</i> sp.					X		
<i>Parus robustus</i>		x				x	x
<i>Parus medius</i>		x	x			x	
<i>Sitta villanyensis</i>		x	x			x	
<i>Muscicapa petényii</i>		x	x			x	
<i>Luscinia pliocaenica</i>		x	x			x	
<i>Phoenicurus baranensis</i>		x	x			x	
<i>Oenanthe pongraczi</i>		x				x	x
<i>Saxicola baranensis</i>		x				x	x
<i>Saxicola magna</i>		x	x			x	
<i>Erithacus minor</i>		x	x			x	
<i>Monticola pongraczi</i>		x	x			x	
<i>Turdus major</i>		x				x	x
<i>Turdus medius</i>		x				x	x
<i>Turdus minor</i>		x				x	x
<i>Oriolus beremendensis</i>			x			x	
<i>Acrocephalus kretzoi</i>						x	x
<i>Sylvia pusilla</i>						x	x
<i>Locustella magna</i>			x			x	
<i>Locustella janossyi</i>			x			x	x
<i>Regulus pliocaenicus</i>			x			x	
<i>Motacilla minor</i>			x			x	
<i>Motacilla robusta</i>			x			x	
<i>Bombycilla kubinyii</i>			x			x	
<i>Prunella kormosi</i>						x	x
<i>Lanius major</i>			x			x	
<i>Lanius intermedius</i>			x			x	
<i>Sturnus pliocaenicus</i>			x			x	
<i>Sturnus baranensis</i>			x			x	
<i>Passer pannonicus</i>			x			x	
<i>Coccothraustes major</i>			x			x	
<i>Loxia csarnotanus</i>						x	x
<i>Emberiza gaspariki</i>			x			x	

Plate I

Figure 1 A. *Alauda † tivadari* nova sp. – coracoid dext. (Polgárdi, MÁFI V.11.63.1; V.29138), caudal view, a. *acrocoracoid*; b. *processus accesorius*; c. *sulcus m. supracoracoidei*; d. *facies aricularis humeralis*; e. *processus procoracoidei*.

Figure 1 B. *Alauda † tivadari* nova sp. – tibiotarsus sin. (Polgárdi, MÁFI V.11.801; V.29155), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 2A. *Galerida † pannonica* nova sp. – humerus sin. (Beremend, BKA), cranial view: a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 2 B. *Galerida † pannonica* nova sp. – carpometacarpus sin. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*; f. *facies articularis digiti major*.

Figure 2 C. *Galerida † pannonica* nova sp. – tibiotarsus sin. (Csarnóta, MÁFI V.11.13.1; V.29088). cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 2 D *Galerida † pannonica* nova sp. – tarsometatarsus sin. (Beremend, BKA), dorsal view: a. *trochlea metatarsi II.*; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi III.*; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi IV.*

Figure 3 A. *Lullula † minor* nova sp. – humerus sin. (Polgárdi, MÁFI V.11.81.2; V.29156/1), cranial view, a. *tuberculum ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris ventralis*.

Figure 3 B. *Lullula † minor* nova sp. – ulna sin. (Polgárdi, MÁFI V.11.93.1; V.29168), cranial view, a. *oleocranon*; b. *cotyla dorsalis*; c. *cotyla ventralis*; d. *tuberculum lig. colat. ventralis*; e. *depressio m. brachialis*.

Figure 3 C. *Lullula † minor* nova sp. – ulna sin. (Polgárdi, MÁFI V.11.93.1; V.29168), medial view, f. *condylus dorsalis*; g. *sulcus intercondylaris*; h. *condylus ventralis*; i. *tuberculum carpale*.

Figure 3 D. *Lullula † minor* nova sp. – tarsometatarsus sin. (Polgárdi, MÁFI V.11.81.2; V.29156/2), dorsal view, a. *trochlea metatarsi II.*; b. *incisura intertrochlearis lateralis*; c. *trochlea metatarsi tertii*; d. *incisura intertrochlearis medialis*; e. *trochlea metatarsi IV.*

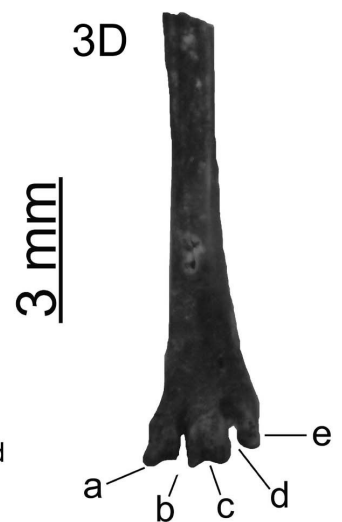
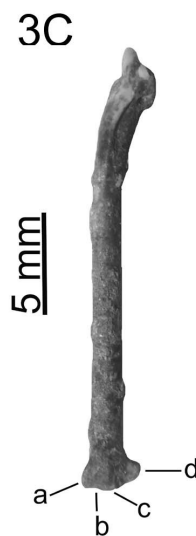
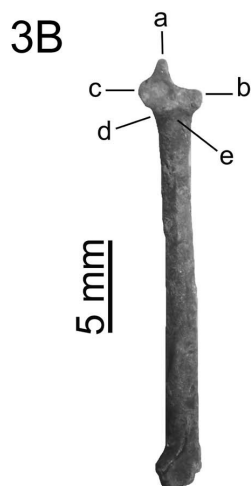
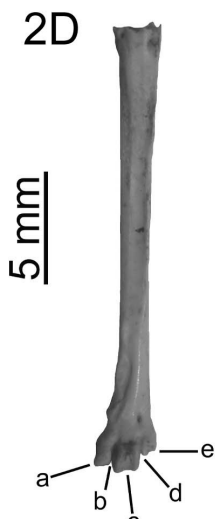
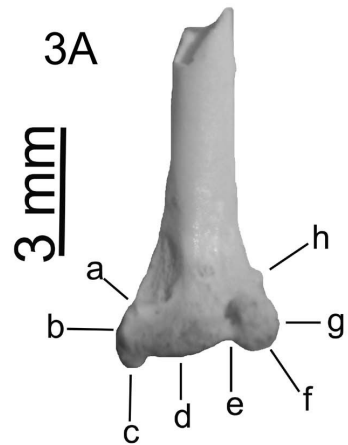
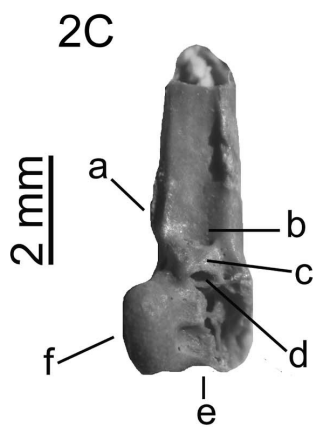
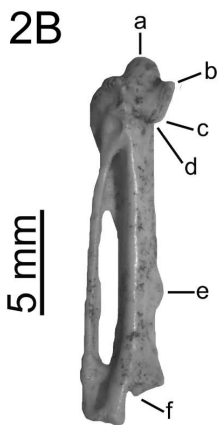
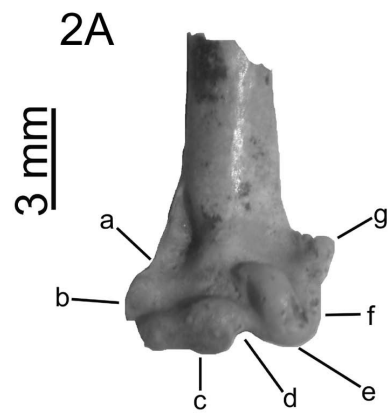
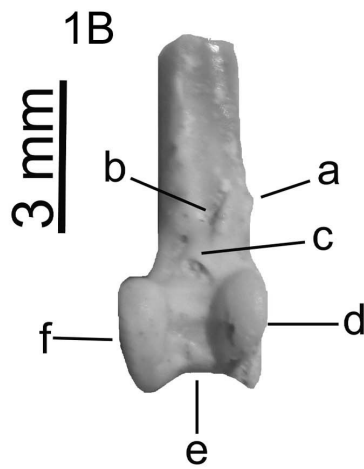
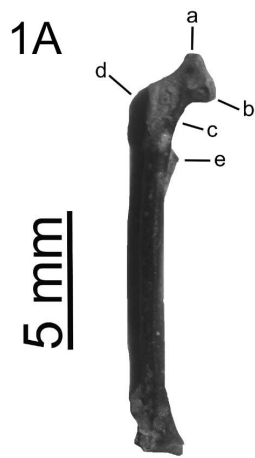


Plate II

Figure 4 A. *Lullula † parva nova* sp. – humerus dext. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 4 B. *Lullula † parva nova* sp. – humerus dext. (Beremend, BKA), cranial view: g. *tuberculum supracondylare ventrale*; h. *epicondylus ventralis*; i. *processus flexorius*; j. *condylus ventralis*; k. *incisura intercondylaris*; l. *condylus dorsalis*; m. *epicondylus dorsalis*; n. *processus supracondylaris dorsalis*.

Figure 4 C. *Lullula † parva nova* sp. – tibiotarsus sin. (Csarnóta, MÁFI V.11.20.1; V.29095), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 5 A. *Lullula † minuscula nova* sp. – humerus dext. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 5 B. *Lullula † minuscula nova* sp. – humerus dext. (Beremend, BKA), cranial view: f. *tuberculum supracondylare ventrale*; g. *epicondylus ventralis*; h. *processus flexorius*; i. *condylus ventralis*; j. *incisura intercondylaris*; k. *condylus dorsalis*; l. *epicondylus dorsalis*; m. *processus supracondylaris dorsalis*.

Figure 6 A. *Calandrella † gali nova* sp. – coracoid dext. (Polgárdi, MÁFI V.11.109.1; V.29184), dorsal view, a. *acroracoid*; b. *processus accesorius*; c. *sulcus m. supracoracoidei*; d. *facies aricularis humeralis*; e. *processus procoracoidei*.

Figure 6 B. *Calandrella † gali nova* sp. – humerus sin. (Polgárdi, MÁFI V.11.65.1; V.29140), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 6 C. *Calandrella † gali nova* sp. – humerus sin. (Polgárdi, MÁFI V.11.65.1; V.29140), cranial view, g. *epicondylus ventralis*; h. *processus flexorius*; i. *condylus ventralis*; j. *incisura intercondylaris*; k. *condylus dorsalis*; l. *epicondylus dorsalis*; m. *processus supracondylaris dorsalis*.

Figure 4 D. *Calandrella † gali nova* sp. – tibiotarsus dext. (Polgárdi, MÁFI V.11.127.1; V.29202), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

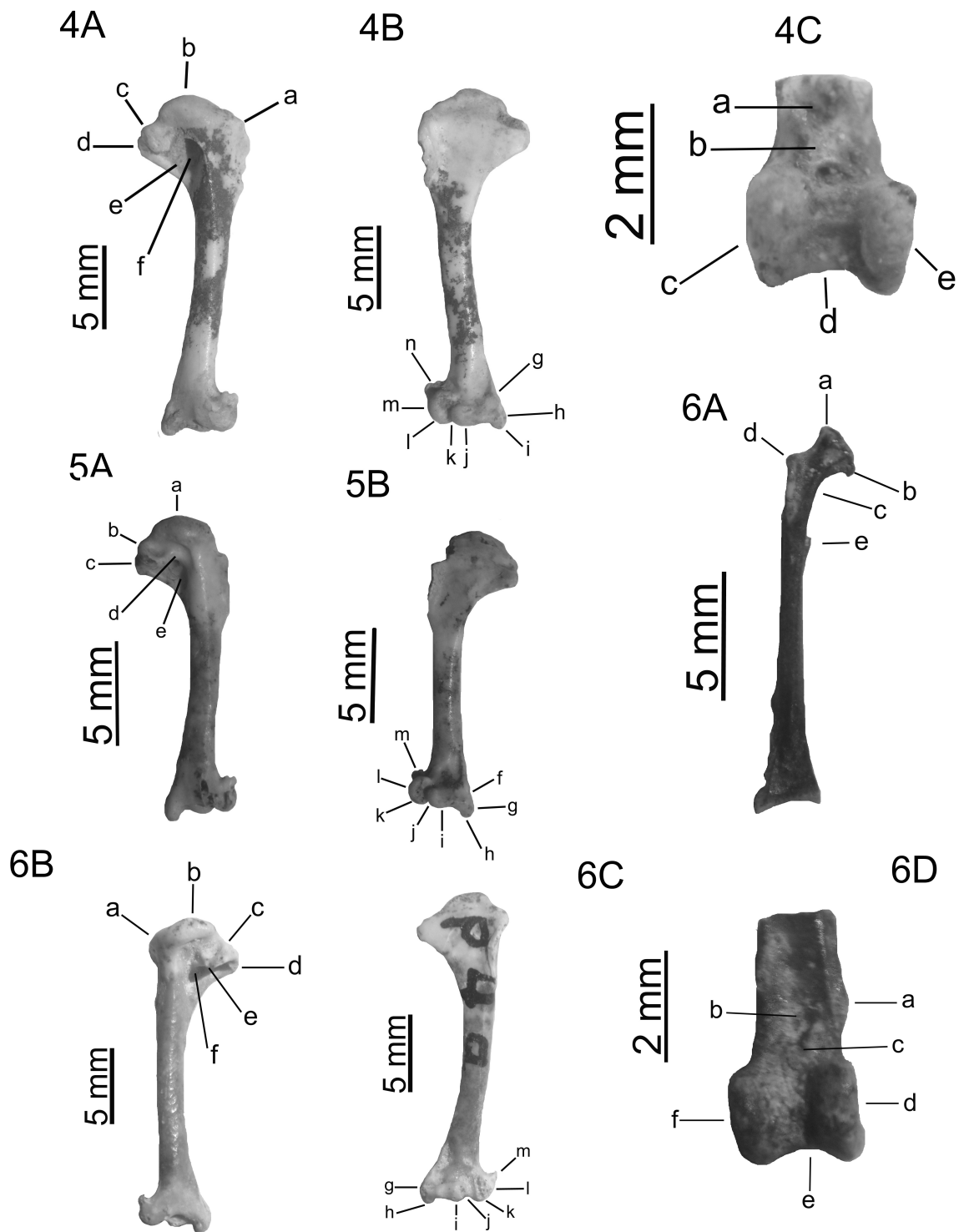


Plate III

Figure 7 A. *Melanocorypha* † *minor* nova sp. – humerus sin. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 7 B. *Melanocorypha* † *minor* nova sp. – humerus sin. (Beremend, BKA), cranial view: g. *tuberculum supracondylare ventrale*; h. *epicondylus ventralis*; i. *processus flexorius*; j. *condylus ventralis*; k. *incisura intercondylaris*; l. *condylus dorsalis*; m. *epicondylus dorsalis*; n. *processus supracondylaris dorsalis*.

Figure 8 A. *Hirundo* † *gracilis* nova sp. – left side ulna (Polgárdi, MÁFI V.11.97.1; V.29172), cranial view, a. *cotyla ventralis*; b. *tuberculum lig. colat. ventralis*.

Figure 8 B. *Hirundo* † *gracilis* nova sp. – right side ulna (Polgárdi, MÁFI V.11.82.1; V.29157), medial view, c. *condylus dorsalis*; d. *sulcus intercondylaris*; e. *condylus ventralis*; f. *tuberculum carpale*.

Figure 9 A. *Hirundo* † *major* nova sp. – ulna dext. (Csarnóta, MÁFI V.11.14.1; V.29089/1), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 9 B. *Hirundo* † *major* nova sp. – tibiotarsus dext. (distal fragment) (Csarnóta, MÁFI V.11.14.2; V.29089/2), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 10 A. *Delichon* † *polgardiensis* nova sp. – coracoid dext. (Polgárdi, MÁFI V.11.94.1; V.29169), dorsal view, a. *acrocoracoid*; b. *processus accesorius*; c. *sulcus m. supracoracoidei*; d. *processus procoracoidei*.

Figure 10 B. *Delichon* † *polgardiensis* nova sp. – ulna sin. (Polgárdi, MÁFI V.11.118.5; V.29193/1–5), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 11. *Delichon* † *pusillus* nova sp. – carpometacarpus sin. (Csarnóta, MÁFI V.11.21.1; V.29096), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 12. *Delichon* † *major* nova sp. – carpometacarpus dext. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*; f. basis of the *metacarpus majus*.

Plate III

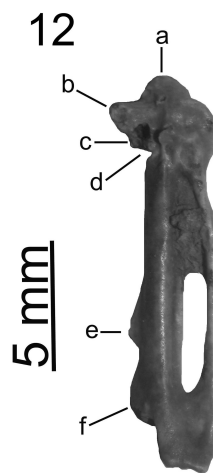
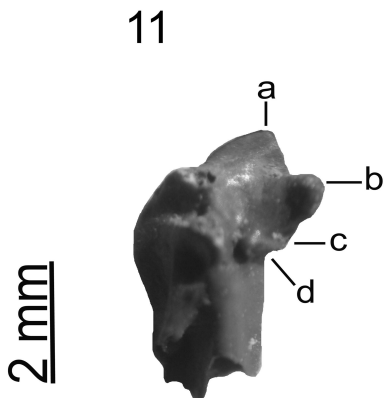
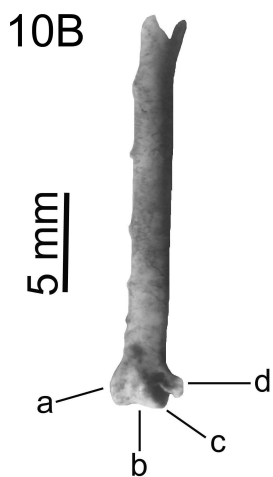
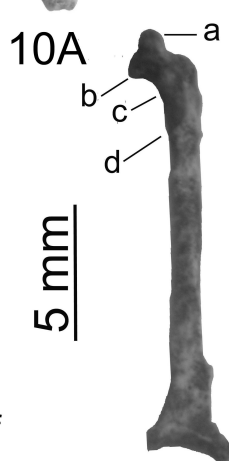
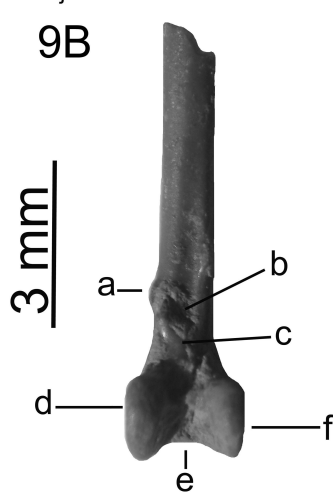
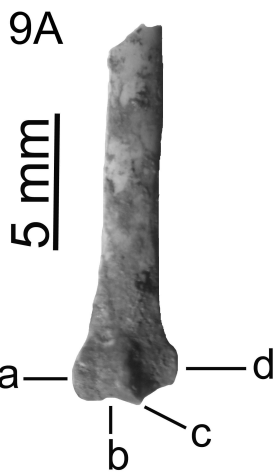
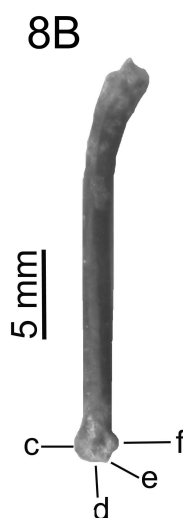
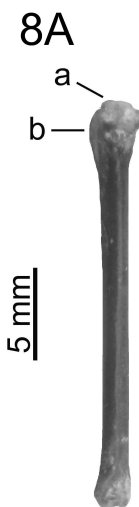
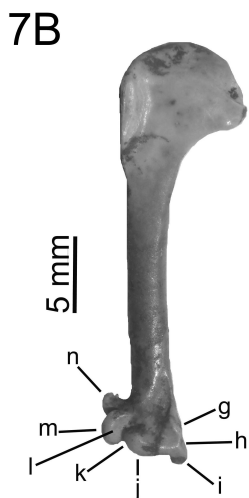
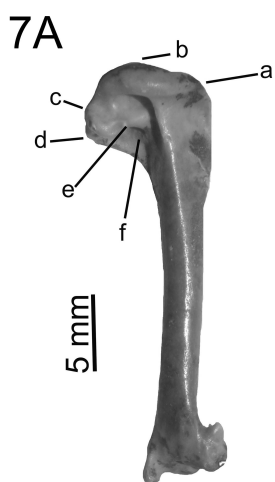


Plate IV

Figure 13 A. *Riparia †minor nova* sp. – coracoid sin. (Polgárdi, MÁFI V.11.66.1; V.29141), dorsal view, a. *acrocacoid*; b. *processus accessorius*; c. *sulcus m. supracoracoidei*; d. *processus procoracoidei*; e. *facies articularis humeralis*.

Figure 13 B. *Riparia †minor nova* sp. – ulna sin. (Polgárdi, MÁFI V.1.83.4; V.29158/1–4), cranial view, a. *cotyla ventralis*; b. *cotyla dorsalis*; c. *tuberculum lig. colat. ventralis*; d. *tuberculum biccipitale*; e. *incisura radialis*; f. *depressio m. brachialis*.

Figure 13 C. *Riparia †minor nova* sp. – ulna dext. (Polgárdi, MÁFI V.1.83.4; V.29158/1–4), medial view, g. *condylus dorsalis*; h. *sulcus intercondylaris*; i. *condylus ventralis*; j. *tuberculum carpale*.

Figure 14 A. *Aegithalos †gaspariki nova* sp. – humerus sin. (Polgárdi, MÁFI V.11.76.1; V.29151), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 14 B. *Aegithalos †gaspariki nova* sp. – carpometacarpus dext. (Polgárdi, MÁFI V.11.90.1; V.29165), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 15 A. *Aegithalos †congruis nova* sp. – coracoideum dext. (Csarnóta, MÁFI V.11.46.1; V.29121), dorsal view, a. *acrocacoidium*; b. *processus accessorius*; c. *sulcus m. supracoracoidei*; d. *processus procoracoidei*.

Figure 15 B. *Aegithalos †congruis nova* sp. – tibiotarsus dextr (MÁFI V.11.15.1; V.29090), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 16 A. *Parus †robustus nova* sp. – humerus dext. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 16 B. *Parus †robustus nova* sp. – humerus dext. (Beremend, BKA), cranial view: g. *tuberculum supracondylare ventrale*; h. *epicondylus ventralis*; i. *processus flexorius*; j. *condylus ventralis*; k. *incisura intercondylaris*; l. *condylus dorsalis*; m. *epicondylus dorsalis*; n. *processus supracondylaris dorsalis*.

Figure 16 C. *Parus †robustus nova* sp. – ulna sin. (Csarnóta, MÁFI V.11.16.1; V.29091) caudal view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 16 D. *Parus †robustus nova* sp. – carpometacarpus dext. (Csarnóta, MÁFI V.11.47.2; V.29122), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

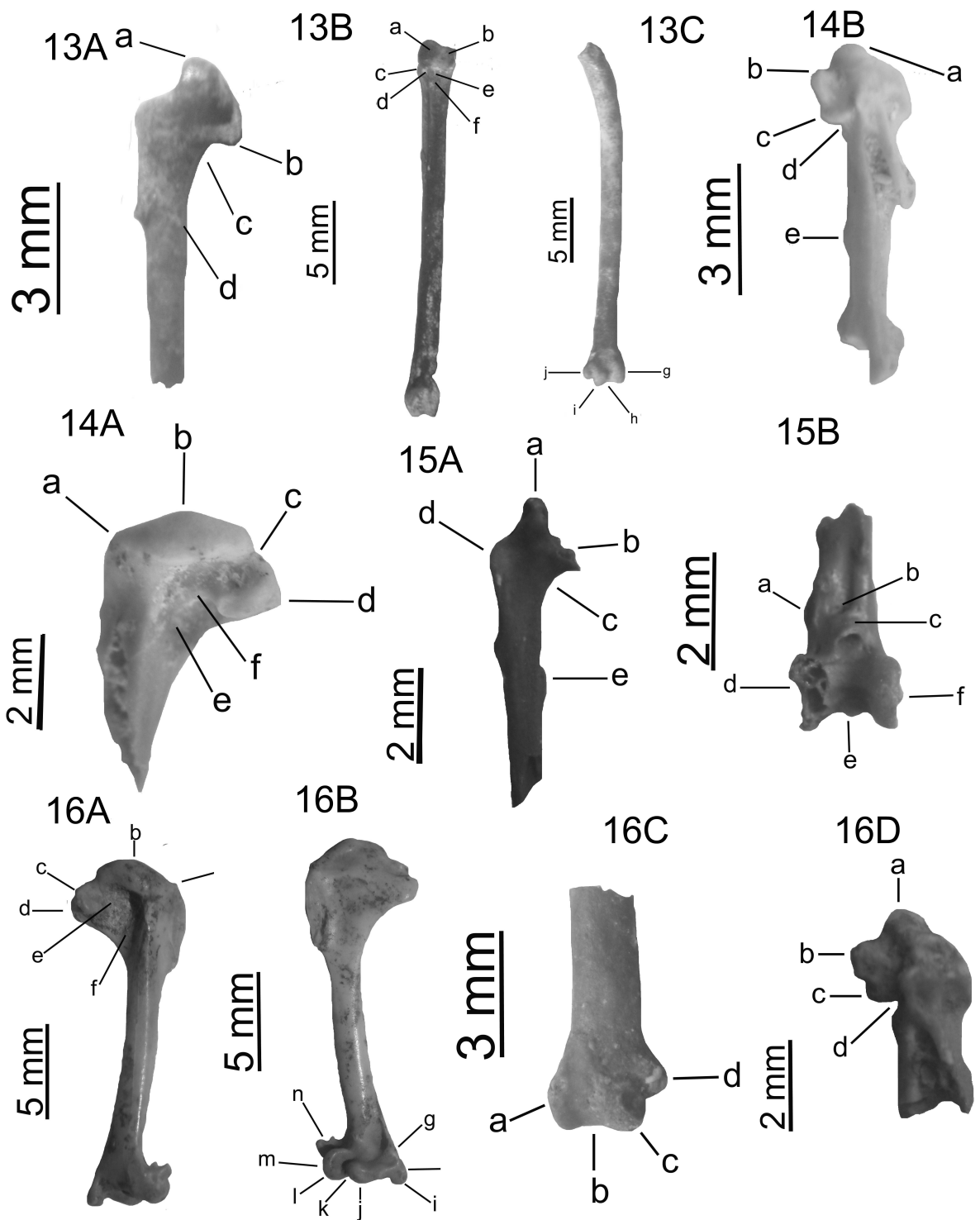


Plate V

Figure 17. *Parus* † *parvulus* nova sp. – coracoideum sin. (Csarnóta, MÁFI V.11.17.1; V.29092), dorsal view, a. *acroracoideum*; b. *processus accessorius*; c. *sulcus m. supracoracoidei*; d. *processus procoracoidei*.

Figure 18 A. *Parus* † *medius* nova sp. – humerus dext. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *fossae pneumotricipitalis*.

Figure 18 B. *Parus* † *medius* nova sp. – humerus dext. (Beremend, BKA), cranial view: f. *tuberculum supracondylare ventrale*; g. *epicondylus ventralis*; h. *processus flexorius*; i. *condylus ventralis*; j. *incisura intercondylaris*; k. *condylus dorsalis*; l. *epicondylus dorsalis*; m. *processus supracondylaris dorsalis*.

Figure 19. *Sitta* † *gracilis* nova sp. – carpometacarpus sin. (Polgárdi, V.11.60.1; V.29135), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*.

Figure 20 A. *Sitta* † *pusilla* nova sp. – carpometacarpus dext. (Csarnóta, MÁFI V.11.34.1; V.29109), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 20 B. *Sitta* † *pusilla* nova sp. – tarsometatarsus sin. (Csarnóta, MÁFI V.11.53.3; V.29128), dorsal view, a. *trochlea metatarsi* II.; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi* III.; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi* IV.

Figure 21. *Sitta* † *villanyensis* nova sp. – carpometacarpus dext. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*; f. basis of the *metacarpus majus*; g. end of the *os metacarpi minus*.

Figure 22 A. *Certhia* † *immensa* nova sp. – coracoideum dext. (Csarnóta, MÁFI V.11.22.1; V.29097), dorsal view, a. *acroracoideum*; b. *processus accessorius*; c. *sulcus m. supracoracoidei*; d. *processus procoracoidei*.

Figure 22 B. *Certhia* † *immensa* nova sp. – carpometacarpus dext. (Csarnóta, MÁFI V.11.42.3; V.29117), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 22 C. *Certhia* † *immensa* nova sp. – tarsometatarsus sin. (Csarnóta, MÁFI V.11.42.4; V.29117), dorsal view, a. *trochlea metatarsi* II.; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi* III.; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi* IV.

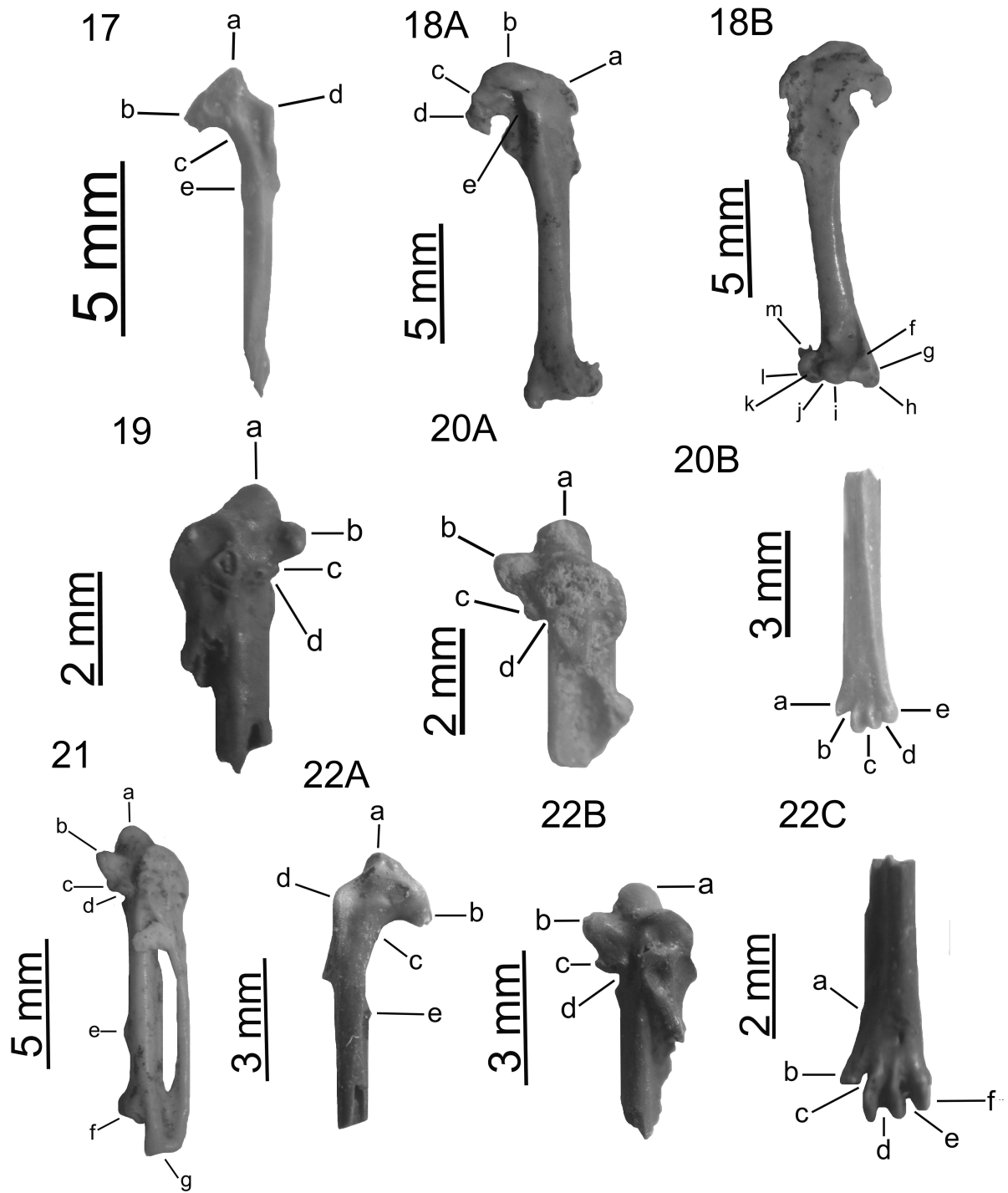


Plate VI

Figure 23 A. *Tichodroma* †*capeki* nova sp. – humerus dext. (Polgárdi, V.11.68.1; V29143), cranial view, a. *caput humeri*; b. *tuberculum dorsale*; c. *sulcus lig. transversus*; d. *crista bicipitalis*.

Figure 23 B. *Tichodroma* †*capeki* nova sp. – humerus dext. (Polgárdi, V.11.68.1; V29143), caudal view, e. *tuberculum ventrale*; f. *crus fossae*; g. *fossae pneumotricipitalis*.

Figure 24. *Muscicapa* †*miklosi* nova sp.– femur sin. (Polgárdi, MÁFI V.11.67.1; V.29142), caudal view, a. *trochlea fibularis*; b. *condylus lateralis*; c. *incisura intercondylaris*; d. *condylus medialis*; e. *epicondylus medialis*.

Figure 25. *Muscicapa* †*petényii* nova sp. – carpometacarpus dext. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*; f. basis of *metacarpus majus*; g. end of *os metacarpi minus*.

Figure 26. *Luscinia* †*denesi* nova sp. – humerus dext. (Polgárdi, MÁFI V.11.72.1; V.29147), cranial view, a. *epicondylus ventralis*; b. *processus flexorius*; c. *condylus ventralis*; d. *incisura intercondylaris*; e. *condylus dorsalis*; f. *epicondylus dorsalis*; g. *processus supracondylaris dorsalis*.

Figure 27A. *Luscinia* †*plioaenica* nova sp. – humerus dext. (Beremend, BKA), cranial view: a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 27 B. *Luscinia* †*plioaenica* nova sp. – carpometacarpus sin. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *fovea subalularis*; c. *protuberantia metacarpalis*; d. end of *os metacarpi minus*.

Figure 28 A. *Erithacus* †*minor* nova sp. – humerus dext. (Beremend, BKA), cranial view: a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 28 B. *Erithacus* †*minor* nova sp. – carpometacarpus dext. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*; f. basis of *metacarpus majus*; g. end of *os metacarpi minus*.

Plate VI

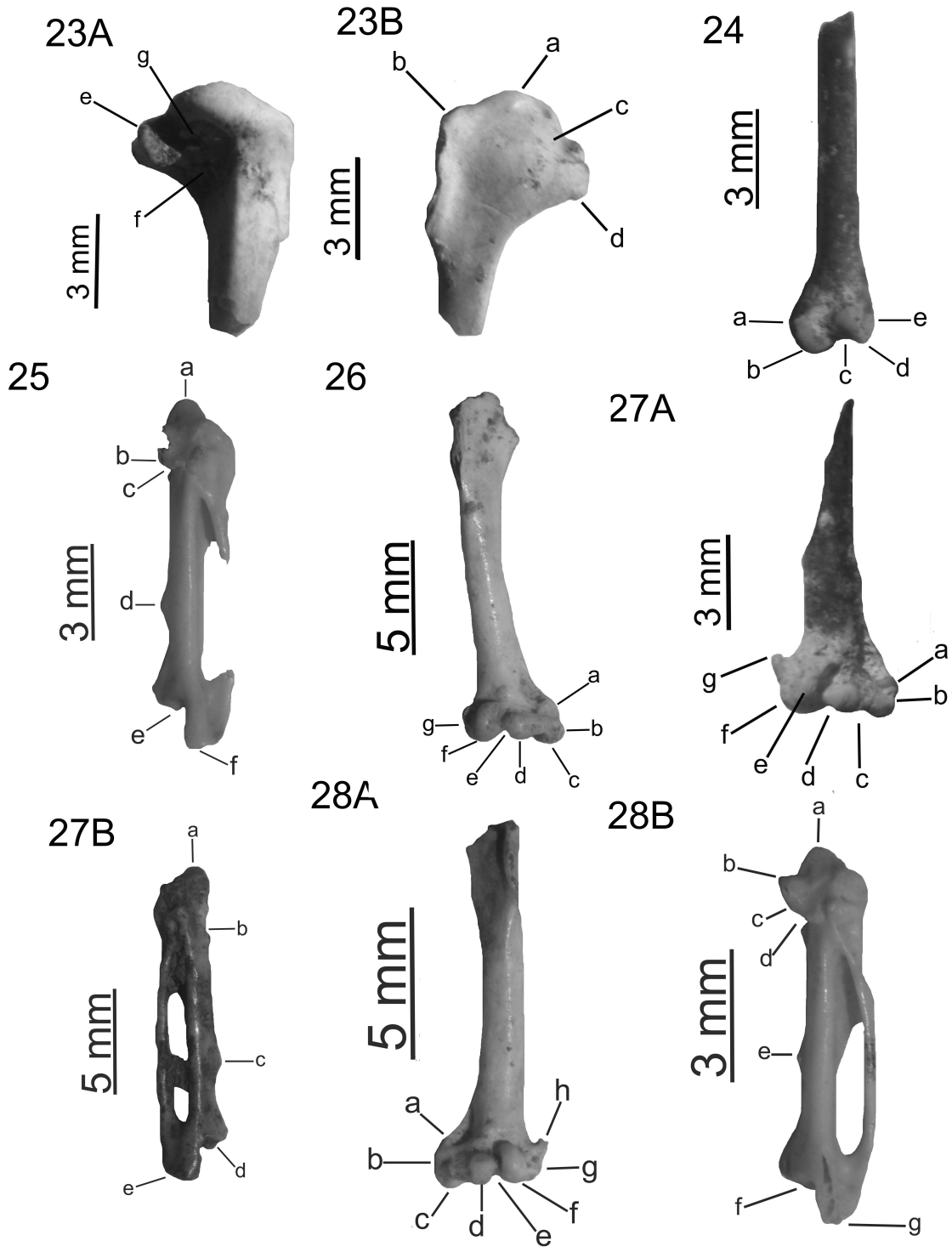


Plate VII

Figure 29. *Phoenicurus* † *erikai* nova sp. – ulna dext. (MÁFI V.11.25.1; V.29100), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 30. *Phoenicurus* † *baranensis* nova sp. – humerus dext. (Beremend, BKA), cranial view: a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 31. *Monticola* † *pongrazzi* nova sp. – humerus sin. (Beremend, BKA), cranial view: a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 32 A. *Saxicola* † *lambrechtii* nova sp. – humerus sin. (Polgárdi, MÁFI V.11.106.1; V.29181), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 32 B. *Saxicola* † *lambrechtii* nova sp. – humerus sin. (Polgárdi, MÁFI V.11.106.1; V.29181), cranial view, g. *tuberculum supracondylare ventrale*; h. *epicondylus ventralis*; i. *processus flexorius*; j. *condylus ventralis*; k. *incisura intercondylaris*; l. *condylus dorsalis*; m. *epicondylus dorsalis*; n. *processus supracondylaris dorsalis*.

Figure 32 C. *Saxicola* † *lambrechtii* nova sp. – ulna sin. (Polgárdi, MÁFI V.11.110.3, V.11.128.2), cranial view, a. *oleocranon*; b. *cotyla dorsalis*; c. *cotyla ventralis*; d. *tuberculum lig. colat. ventralis*; e. *depressio m. brachialis*.

Figure 32 D. *Saxicola* † *lambrechtii* nova sp. – tibiotarsus sin. (Polgárdi, MÁFI V.29185, V.29203), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 33 A. *Saxicola* † *baranensis* nova sp.– humerus dext. (Beremend, BKA), cranial view: a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 33 B. *Saxicola* † *baranensis* nova sp. – ulna dext. (Csarnóta, MÁFI V.11.18.1; V.29093), cranial view, a. *oleocranon*; b. *cotyla dorsalis*; c. *cotyla ventralis*; d. *tuberculum lig. colat. ventralis*; e. *depressio m. brachialis*.

Figure 33 C. *Saxicola* † *baranensis* nova sp.– ulna dext. (Beremend, BKA), caudal view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

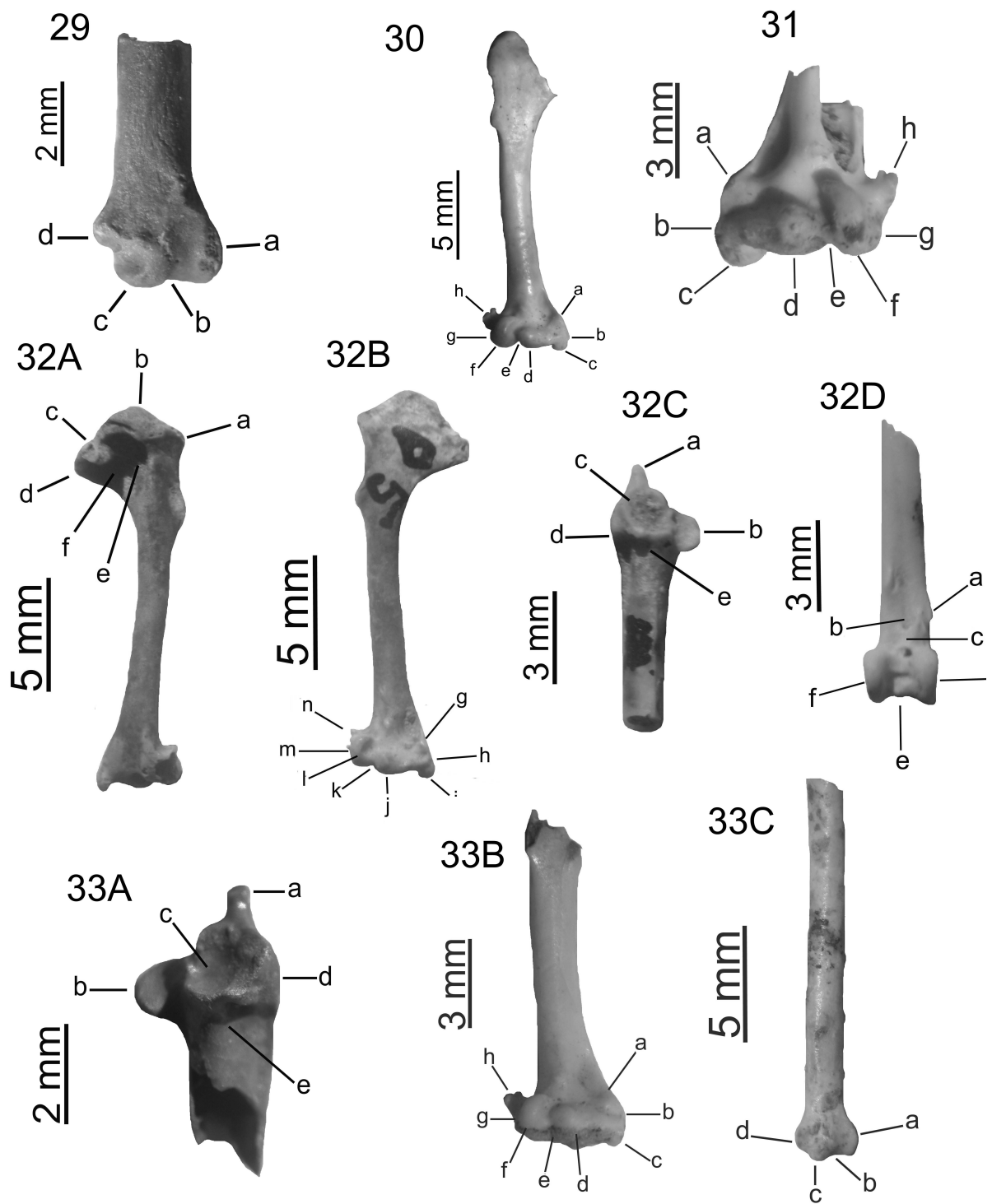


Plate VIII

Figure 34. *Saxicola* †*parva* nova sp. – ulna dext. (Csarnóta, MÁFI V.11.24.1; V.29099), cranial view, a. *oleocranon*; b. *cotyla dorsalis*; c. *cotyla ventralis*; d. *tuberculum lig. colat. ventralis*; e. *depressio m. brachialis*.

Figure 35. *Saxicola* †*magna* Nova sp.– humerus sin. (Beremend, BKA), cranial view: a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 36 A. *Oenanthe* †*kormosi* nova sp. – carpometacarpus dext. (Polgárdi, MÁFI V.11.125.3; V.29200/1), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*.

Figure 36 B. *Oenanthe* †*kormosi* nova sp. – femur dext. (Polgárdi, MÁFI V.11.103.1; V.29178), caudal view, a. *trochanter femoris*; b. *fossa trochanteris*; c. *facies articularis acetabularis*; d. *impressiones obturatoriae*; e. *trochlea fibularis*; f. *crista tibiofibularis*; g. *condylus lateralis*; h. *incisura intercondylaris*; i. *condylus medialis*; j. *epicondylus medialis*.

Figure 36 C. *Oenanthe* †*kormosi* nova sp. – tibiotarsus dext. (Polgárdi, MÁFI V.11.125.3; V.29200/2), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 36 D. *Oenanthe* †*kormosi* nova sp. – tarsometatarsus sin. (Polgárdi, MÁFI V.11.125.3; V.29200/3), dorsal view, a. *trochlea metatarsi* II.; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi* III.; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi* IV.

Figure 37A. *Oenanthe* †*pongrazzi* nova sp.– humerus sin. (Beremend, BKA), cranial view: a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 37 B. *Oenanthe* †*pongrazzi* nova sp. – ulna dext. (Csarnóta, MÁFI V.11.23.1; V.29098), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 37 C. *Oenanthe* †*pongrazzi* nova sp.– carpometacarpus sin. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *processus extensorius*; c. *fovea subalularis*; d. *protuberantia metacarpalis*; e. basis of the *facies articularis digiti major* f. end of the *os metacarpi minus*.

Figure 37 D. *Oenanthe* †*pongrazzi* nova sp.– phalanga alae 1. dig.II. (Beremend, BKA), a. ventral point; b. dorsal point; c. proximal edge; d. dorsal edge; e. distal edge.

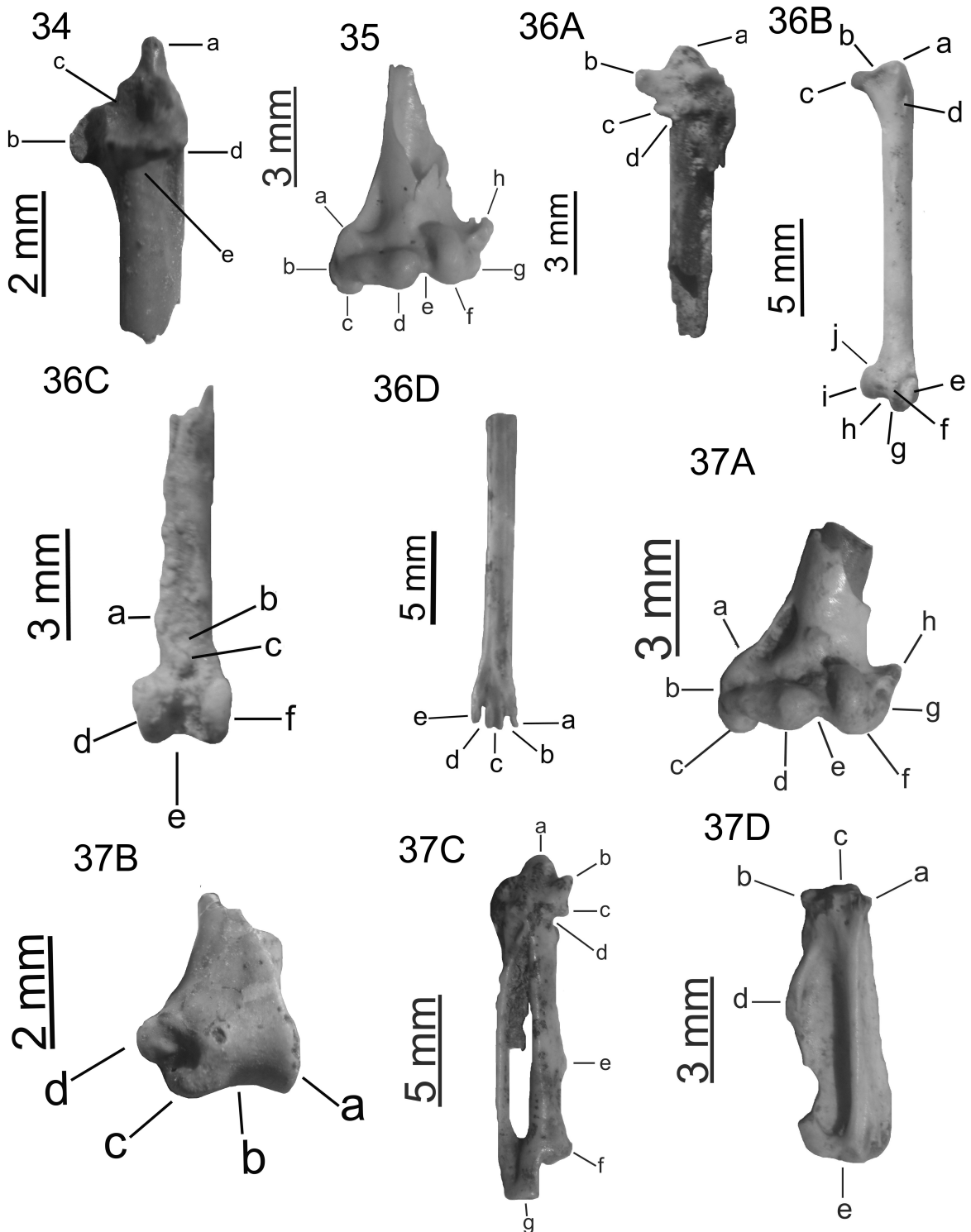


Plate IX

Figure 38 A. †*Turdicus pannonicus* n. sp. – ulna sin. (Polgárdi, MÁFI V.11.105.1; V.29180), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 38 B. †*Turdicus pannonicus* nova sp. – tibiotarsus dext. (Polgárdi, MÁFI V.11.85.1; V.29160), cranial view, craniális nézet, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 39 A. *Turdus* †*miocaenicus* nova sp. – coracoid sin. (Polgárdi, MÁFI V.11.124.1; V.29199), dorsal view, a. *acrocoracoid*; b. *facies aricularis humeralis*; c. *sulcus m. supracoracoidei*; d. *processus procoracoidei*.

Figure 39 B. *Turdus* †*miocaenicus* nova sp. – ulna sin. (Polgárdi, MÁFI V.11.102.1; V.29177), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 40 A. *Turdus* †*polgardiensis* nova sp. – ulna dext. (Polgárdi, MÁFI V.11.100.1; V.29175), cranial view, a. *cotyla dorsalis*; b. *cotyla ventralis*; c. *tuberculum lig. colat. ventralis*; d. *depressio m. brachialis*.

Figure 40 B. *Turdus* †*polgardiensis* nova sp. – ulna dext. (Polgárdi, MÁFI V.11.100.1; V.29175), medial view, e. *condylus dorsalis*; f. *sulcus intercondylaris*; g. *condylus ventralis*; h. *tuberculum carpale*.

Figure 41A. *Turdus* † *major* nova sp.– humerus dext. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 41 B. *Turdus* † *major* nova sp.– humerus sin. (Csarnóta, MÁFI V.11.19.1; V.29094), cranial view, a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 41 C. *Turdus* † *major* nova sp. – carpometacarpus sin. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *processus extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*; f. basis of the *facies articularis digiti major*; g. end of the *os metacarpi minus*.

Figure 41 D. *Turdus* † *major* nova sp. – phalanga alae 1. dig.II. (Beremend, BKA), a. ventral point; b. dorsal point; c. proximal edge; d. dorsal edge; e. distal edge.

Figure 41 E. *Turdus* † *major* nova sp. – tarsometatarsus sin. (Beremend, BKA), dorsal view: a. *trochlea metatarsi* II.; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi* III.; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi* IV.

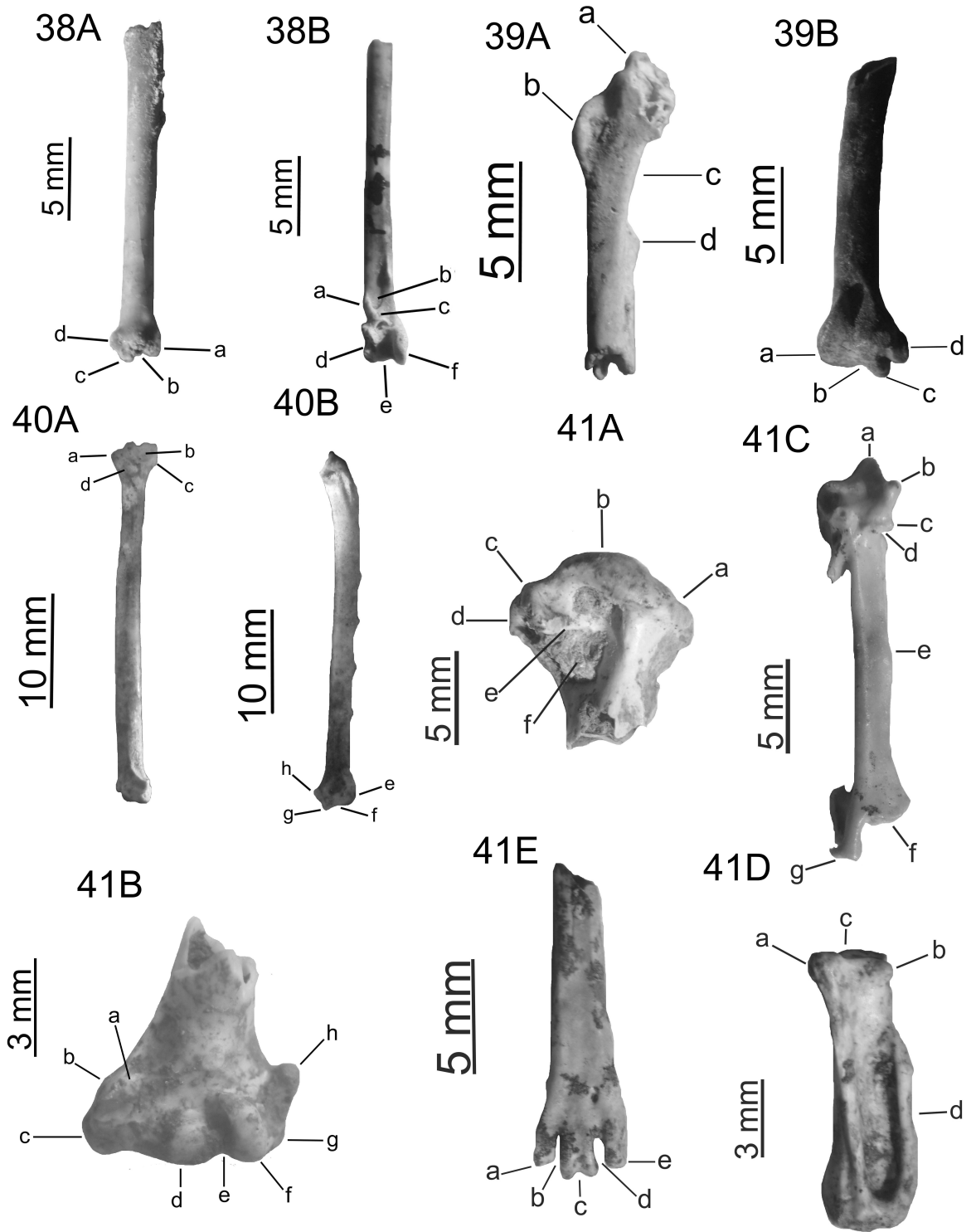


Plate X

Figure 42 A. *Turdus † medius nova sp.* – humerus sin. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 42 B. *Turdus † medius nova sp.* – humerus dext. (Csarnóta, MÁFI V.11.26.1; V.29101), cranial view, a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 42 C. *Turdus † medius nova sp.* – ulna dext. (Csarnóta, MÁFI V.11.44.2; V.29119), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 42 D. *Turdus † medius nova sp.* – carpometacarpus dext. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *processus extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*; f. basis of *facies articularis digiti major*; g. end of *os metacarpi minus*.

Figure 42 E. *Turdus † medius nova sp.* – tibiotarsus dext. (Csarnóta, MÁFI V.11.44.3; V.29119), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 42 F. *Turdus † medius nova sp.* – tarsometatarsus dext. (Beremend, BKA), dorsal view: a. *trochlea metatarsi II.*; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi III.*; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi IV.*

Figure 43 A. *Turdus † minor nova sp.* – humerus sin. (Beremend, BKA), caudal view: a. *caput humeri*; b. *tuberculum ventrale*; c. *crista bicipitalis*; d. *crus fossae*; e. *fossae pneumotricipitalis*.

Figure 43 B. *Turdus † minor nova sp.* – humerus sin. (Csarnóta, MÁFI V.11.27.1; V.29102), cranial view, a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 43 C. *Turdus † minor nova sp.* – carpometacarpus dext. (Csarnóta, MÁFI V.11.45.2; V.29120), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 43 D. *Turdus † minor nova sp.* – tarsometatarsus dext. (Csarnóta, MÁFI V.11.45.3; V.29120), dorsal view, a. *trochlea metatarsi II.*; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi III.*; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi IV.*

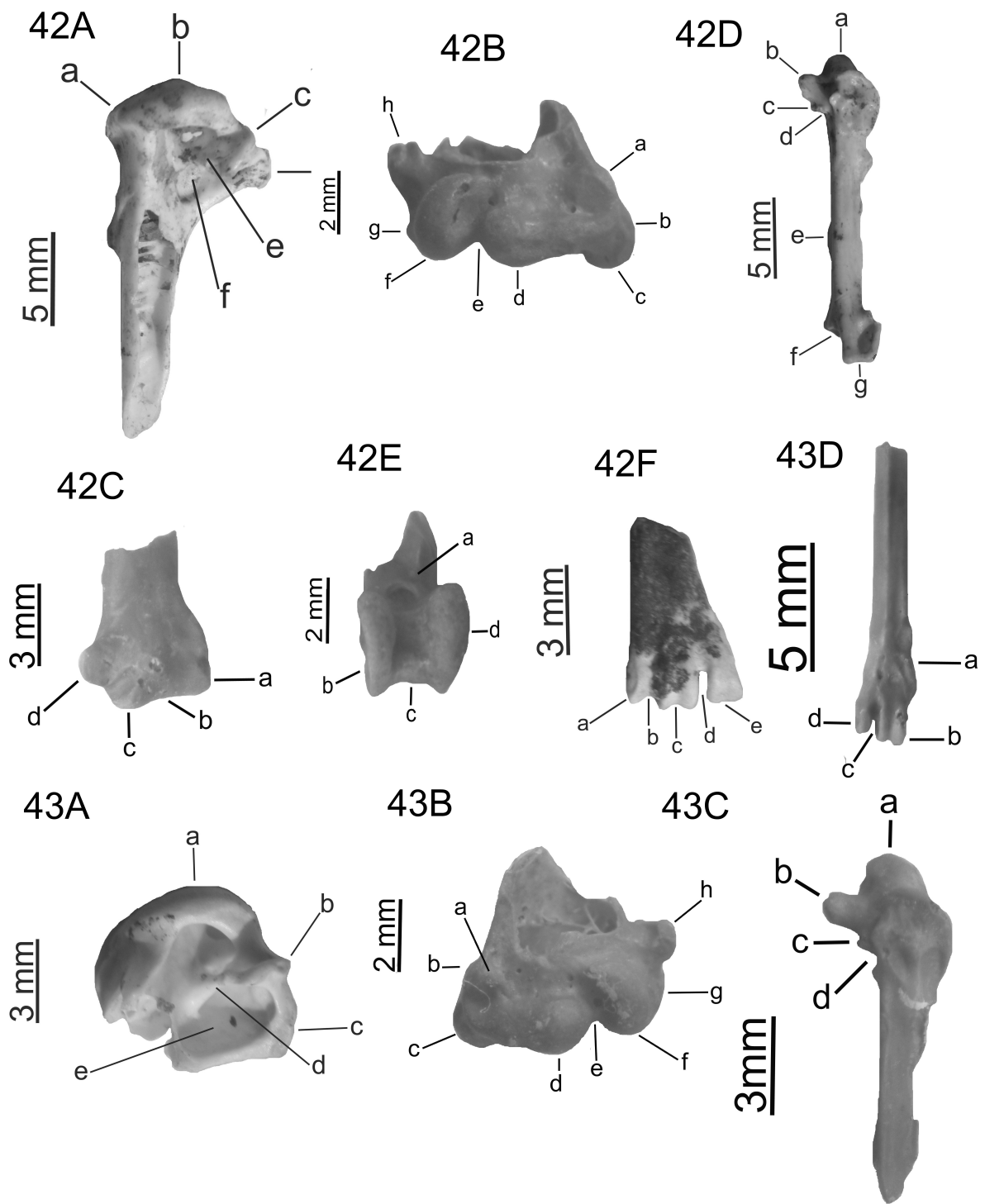


Plate XI

Figure 44 A. *Oriolus † beremendensis* nova sp. – humerus sin. (Beremend, BKA), cranial view: a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 44 B. *Oriolus † beremendensis* nova sp. – ulna sin. (Beremend, BKA), cranial view, a. *oleocranon*; b. *cotyla dorsalis*; c. *cotyla ventralis*; d. *tuberculum lig. colat. ventralis*; e. *depressio m. brachialis*.

Figure 44 C. *Oriolus † beremendensis* nova sp. – ulna sin. (Beremend, BKA), medial view, f. *condylus dorsalis*; g. *sulcus intercondylaris*; h. *condylus ventralis*; i. *tuberculum carpale*.

Figure 44 D. *Oriolus † beremendensis* nova sp. – carpometacarpus dext. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *processus extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*; f. basis of the *facies articularis digiti major*; g. end of the *os metacarpi minus*.

Figure 44 E. *Oriolus † beremendensis* nova sp. – tibiotarsus sin. (Beremend, BKA). cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 45 A. *Acrocephalus † major* nova sp. – humerus sin. (Polgárdi, MÁFI V.11.87.26; V.29162/1), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 45 B. *Acrocephalus † major* nova sp. – humerus dext. (Polgárdi, MÁFI V.11.87.26; V.29162/2), cranial view, g. *epicondylus ventralis*; h. *processus flexorius*; i. *condylus ventralis*; j. *incisura intercondylaris*; k. *condylus dorsalis*; l. *epicondylus dorsalis*; m. *processus supracondylaris dorsalis*.

Figure 45 C. *Acrocephalus † major* nova sp. – ulna dext. (Polgárdi, MÁFI V.11.107.1; V.29182), cranial view, a. *oleocranon*; b. *cotyla dorsalis* c. *cotyla ventralis*; d. *tuberculum lig. colat. ventralis*.

Figure 45 D. *Acrocephalus † major* nova sp. – ulna dext. (Polgárdi, MÁFI V.11.107.1; V.29182), medial view, e. *condylus dorsalis*; f. *sulcus intercondylaris*; g. *condylus ventralis*; h. *tuberculum carpale*.

Figure 45 E. *Acrocephalus † major* nova sp. – tibiotarsus dext. (Polgárdi, MÁFI V.11.87.26; V.29162/3), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

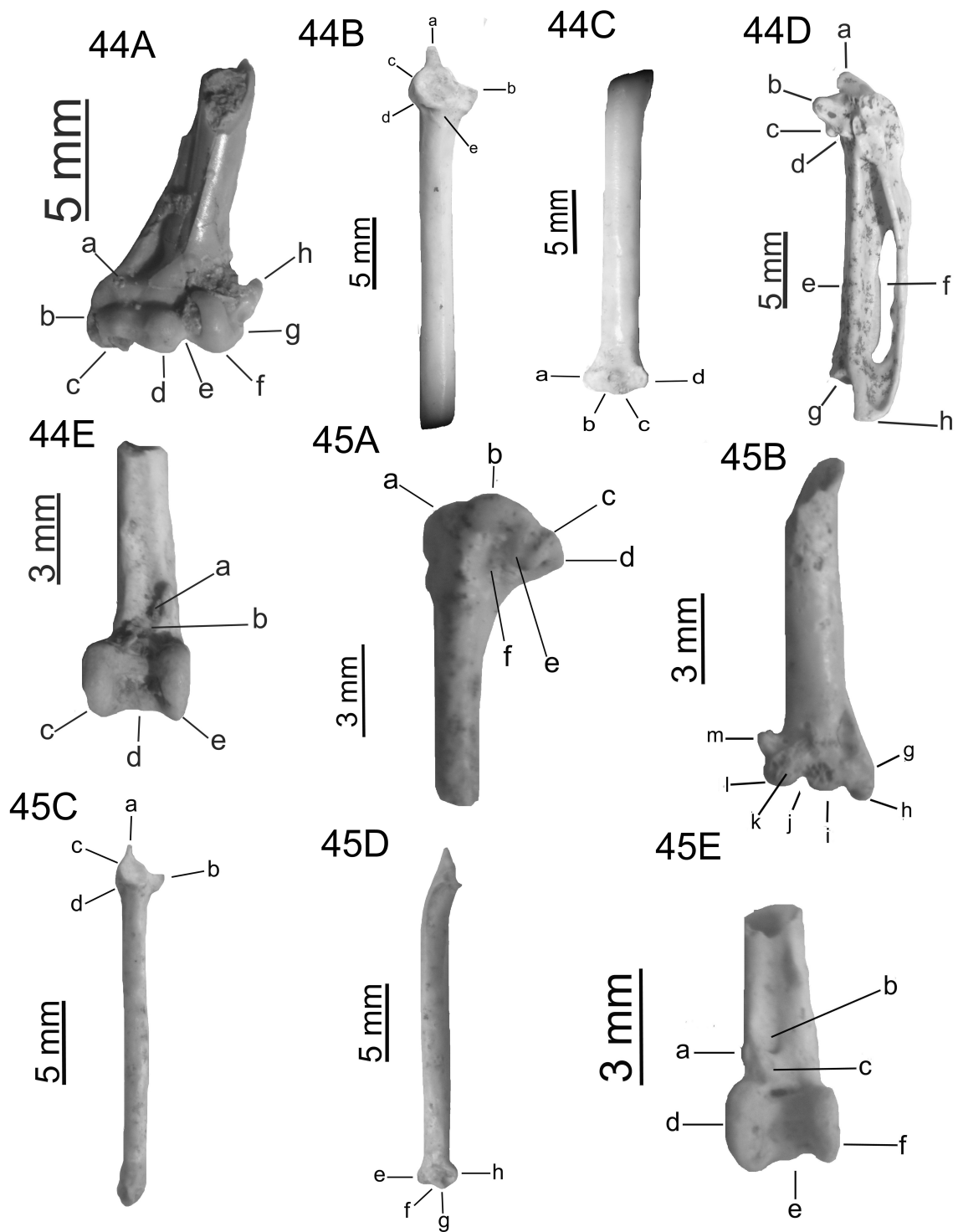


Plate XII

Figure 46 A. *Acrocephalus* † *minor* nova sp. – humerus sin. (Polgárdi, MÁFI V.11.71.1; V.29146), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 46 B. *Acrocephalus* † *minor* nova sp. – humerus dext. (Polgárdi, MÁFI V.11.88.10; V.29163/1), cranial view, g. *epicondylus ventralis*; h. *processus flexorius*; i. *condylus ventralis*; j. *incisura intercondylaris*; k. *condylus dorsalis*; l. *epicondylus dorsalis*; m. *processus supracondylaris dorsalis*.

Figure 46 C. *Acrocephalus* † *minor* nova sp. – ulna sin. (Polgárdi, MÁFI V.11.88.10; V.29163/2), cranial view, a. *oleocranon*; b. *cotyla dorsalis*; c. *cotyla ventralis*; d. *tuberculum lig. colat. ventralis*.

Figure 46 D. *Acrocephalus* † *minor* nova sp. – ulna sin. (Polgárdi, MÁFI V.11.88.10; V.29163/3), medial view, e. *condylus dorsalis*; f. *sulcus intercondylaris*; g. *condylus ventralis*; h. *tuberculum carpale*.

Figure 46 E. *Acrocephalus* † *minor* nova sp. – tibiotarsus dext. (Polgárdi, MÁFI V.11.88.10; V.29163/4), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 47 A. *Acrocephalus* † *kretzoi* nova sp. – carpometacarpus sin. (Csarnóta, MÁFI V.11.1.1; V.29076), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 47 B. *Acrocephalus* † *kretzoi* nova sp. – tarsometatarsus dext. (Csarnóta, MÁFI V.11.39.3; V.29144), dorsal view, a. *trochlea metatarsi* II.; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi* III.; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi* IV.

Figure 47 C. *Acrocephalus* † *kretzoi* nova sp. – tarsometatarsus dext. (Beremend, BKA), dorsal view: a. *trochlea metatarsi* II.; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi* III.; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi* IV.

Figure 48. *Acrocephalus* † *kordosi* nova sp. – carpometacarpus dext. (Csarnóta, MÁFI V.11.2.1; V.29077), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 49. *Cettia* † *janossyi* nova sp. – humerus dext. (Polgárdi, MÁFI V.11.100.2; V.29176), cranial view, a. *tuberculum dorsale*; b. *caput humeri*; c. *epicondylus ventralis*; d. *processus flexorius*; e. *condylus ventralis*; f. *incisura intercondylaris*; g. *condylus dorsalis*; h. *epicondylus dorsalis*; i. *processus supracondylaris dorsalis*.

Figure 50. *Cettia* † *kalmani* nova sp. – humerus dext. (Csarnóta, MÁFI V.11.28.1; V.29103), cranial view, a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

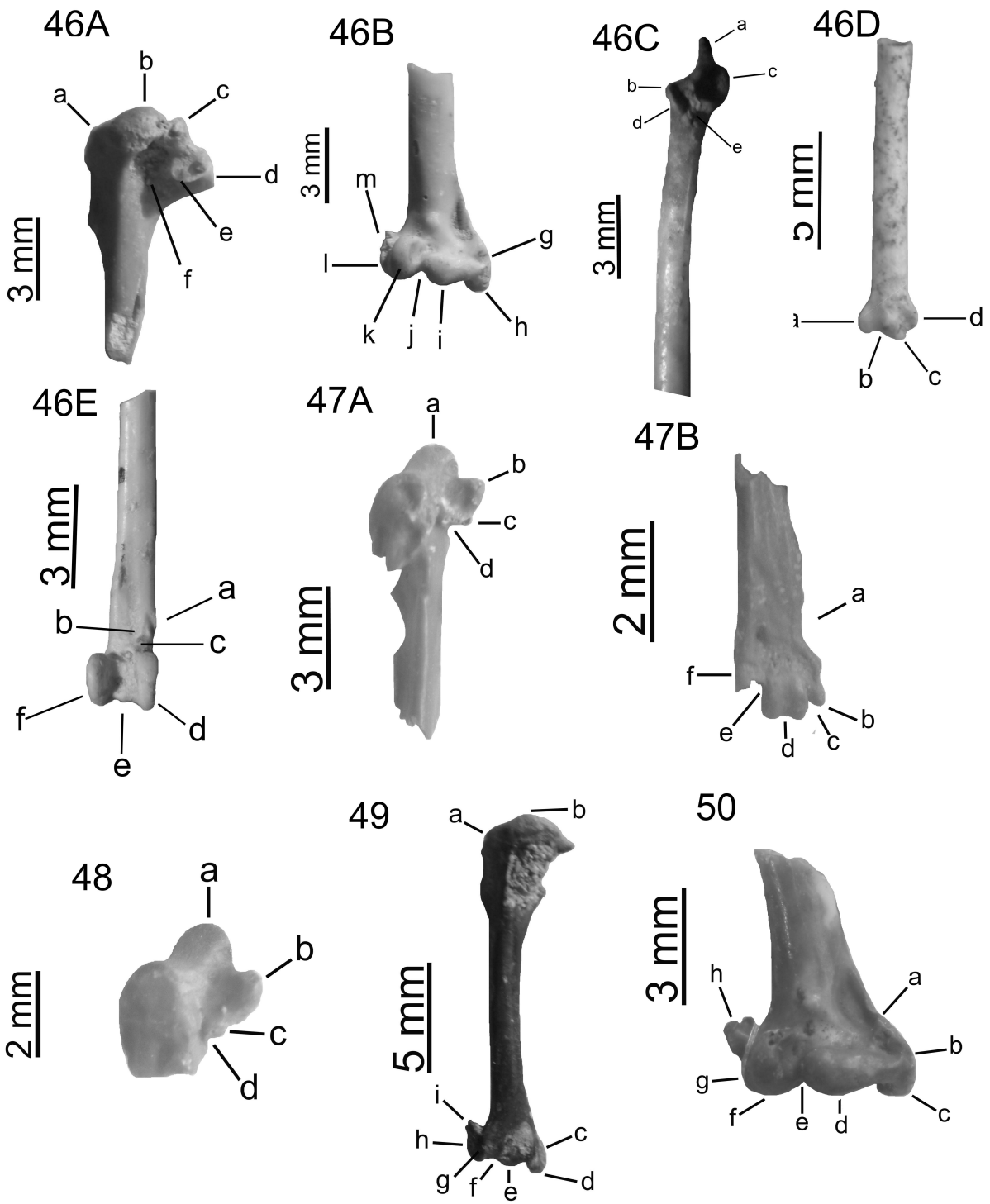


Plate XIII

Figure 51 A. *Hippolais †veterior* nova sp. – humerus dext. (Polgárdi, MÁFI V.11.84.5; V.29159/1), cranial view, a. *tuberculum supracondylare ventrale* b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 51 B. *Hippolais †veterior* nova sp. – carpometacarpus sin. (Polgárdi, MÁFI V.11.70.1; V.29145), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 51 C. *Hippolais †veterior* nova sp. – tibiotarsus dext. (Polgárdi, MÁFI V.11.84.5; V.29159/2), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 52 A. *Sylvia †intermedia* nova sp. – humerus dext. (Polgárdi, MÁFI V.11.86.9; V.29161/1), caudal view, a. *caput humeri*; b. *tuberculum ventrale*; c. *crista bicipitalis*; d. *cruss fossae*; e. *fossae pneumotricipitalis*; f. *tuberculum dorsale*.

Figure 52 B. *Sylvia †intermedia* nova sp. – humerus dext. (Polgárdi, MÁFI V.11.86.9; V.29161/2), cranial view, g. *tuberculum supracondylare ventrale* h. *epicondylus ventralis*; i. *processus flexorius*; j. *condylus ventralis*; k. *incisura intercondylaris*; l. *condylus dorsalis*; m. *epicondylus dorsalis*; n. *processus supracondylaris dorsalis*.

Figure 52 C. *Sylvia †intermedia* nova sp. – carpometacarpus dext. (Polgárdi, MÁFI V.11.69.1; V.29144), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 52 D. *Sylvia †intermedia* nova sp. – tibiotarsus dext. (Polgárdi, MÁFI V.11.86.9; V.29161/3), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 52 E. *Sylvia †intermedia* nova sp. – tarsometatarsus sin. (Polgárdi, MÁFI V.11.86.9; V.29161/4), dorsal view, a. *fossa metatarsi I*; b. edge between *fossa metatarsi I* and *trochlea metatarsi II*; c. *trochlea metatarsi II*; d. *incisura intertrochlearis medialis*; e. *trochlea metatarsi III*; f. *incisura intertrochlearis lateralis*; g. *trochlea metatarsi IV*.

Figure 53 A. *Sylvia †pusilla* nova sp. – humerus dext. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 53 B. *Sylvia †pusilla* nova sp. – carpometacarpus sin. (Csarnóta, MÁFI V.11.7.1; V.29082), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 53 C. *Sylvia †pusilla* nova sp. – tarsometatarsus sin. (Csarnóta, MÁFI V.11.108.3; V.29183), dorsal view, a. *trochlea metatarsi II*; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi III*; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi IV*.

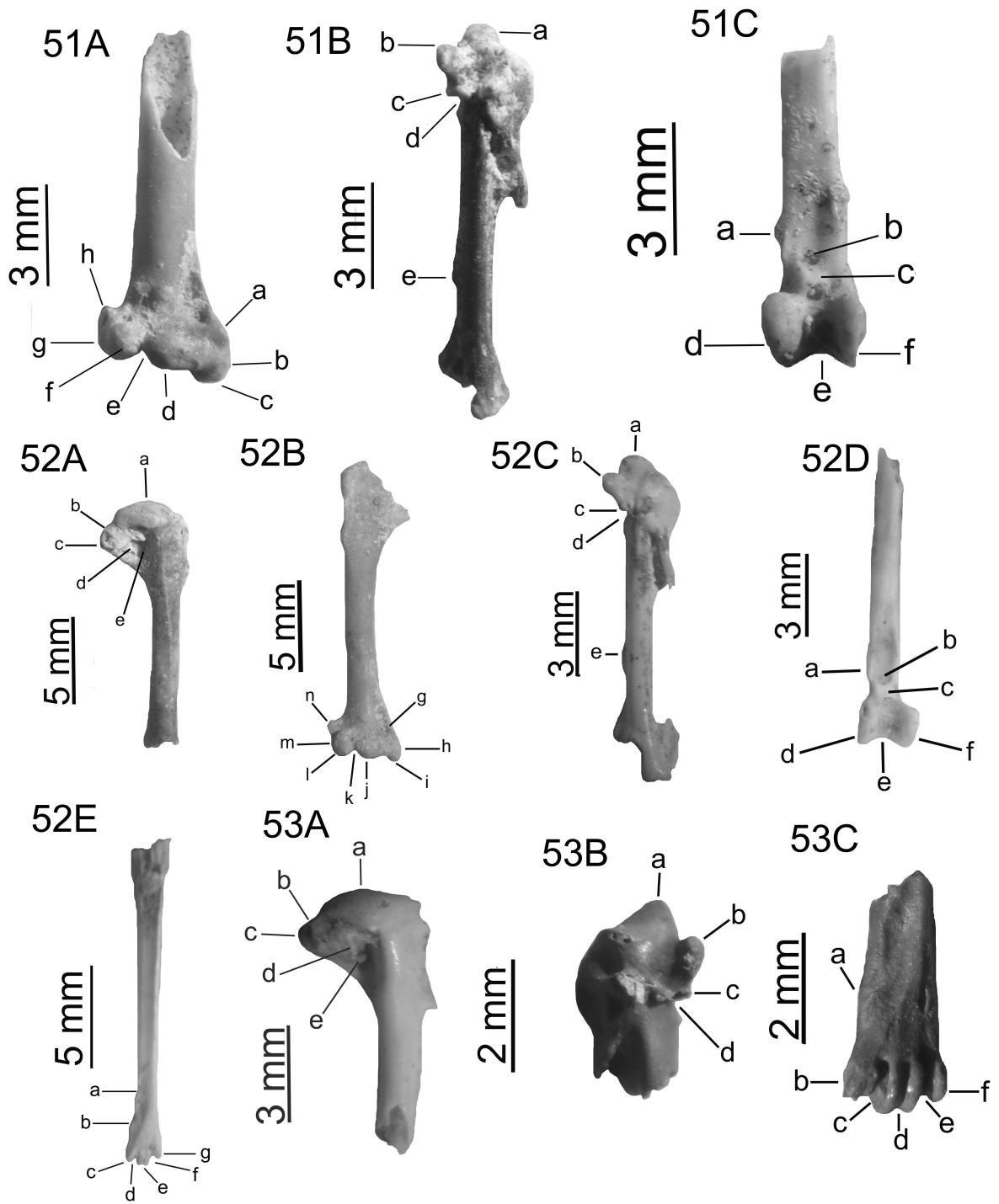


Plate XIV

Figure 54 A. *Locustella † kordosi* nova sp. – humerus dext. (Polgárdi, MÁFI V.11.104.1; V.29179), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 54 B. *Locustella † kordosi* nova sp. – humerus dext. (Polgárdi, MÁFI V.11.104.1; V.29179), cranial view, d. *crista bicipitalis*.

Figure 54 C. *Locustella † kordosi* nova sp. – ulna sin. (Polgárdi, MÁFI V.11.111.1, V.29186), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 54 D. *Locustella † kordosi* nova sp. – tibiotarsus dext. (Polgárdi, MÁFI V.11.126.9; V.29201), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 55 A. *Locustella † janossyi* nova sp. – humerus sin. (Beremend, BKA), cranial view: a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 55 B. *Locustella † janossyi* nova sp. – tibiotarsus dext. (Csarnóta, MÁFI V.11.35.1; V.29110), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 56 A. *Locustella † magna* nova sp. – humerus sin. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 56 B. *Locustella † magna* nova sp. – humerus sin. (Beremend, BKA), cranial view: g. *tuberculum supracondylare ventrale*; h. *epicondylus ventralis*; i. *processus flexorius*; j. *condylus ventralis*; k. *incisura intercondylaris*; l. *condylus dorsalis*; m. *epicondylus dorsalis*; n. *processus supracondylaris dorsalis*.

Figure 57. *Regulus pliocaenicus* nova sp. – humerus sin. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*; g. *processus supracondylaris dorsalis*.

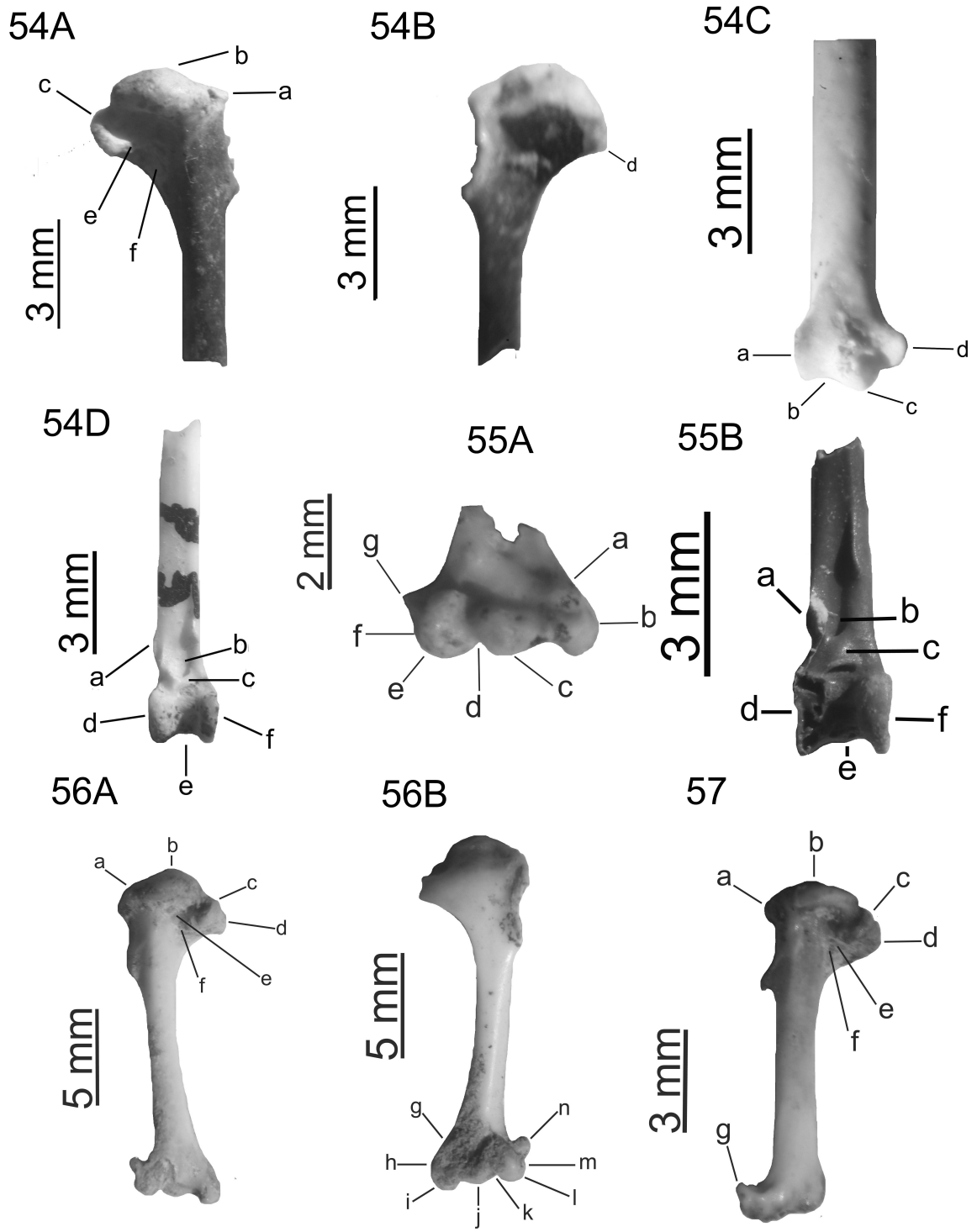


Plate XV

Figure 58 A. *Phylloscopus †venczeli* nova sp. – ulna sin. (Polgárdi, MÁFI V.11.89.4; V.29164/1), cranial view, a. *oleocranon*; b. *cotyla dorsalis*; c. *cotyla ventralis*; d. *tuberculum lig. colat. ventralis*, e. *depressio m. brachialis*.

Figure 58 B. *Phylloscopus †venczeli* nova sp. – ulna sin. (Polgárdi, MÁFI V.11.89.4; V.29164/1), medial view, f. *condylus dorsalis*; g. *sulcus intercondylaris*; h. *condylus ventralis*; i. *tuberculum carpale*.

Figure 58 C. *Phylloscopus †venczeli* nova sp. – carpometacarpus dext. (Polgárdi, MÁFI V.11.74.1; V.29149), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*.

Figure 59. *Phylloscopus †pliocaenicus* nova sp. – humerus dext. (Csarnóta, MÁFI V.11.3.1; V.29078), cranial view, a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 60 A. *Anthus †hiri* nova sp. – carpometacarpus dext. (Polgárdi, MÁFI V.11.98.1; V.29173), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; e. *protuberantia metacarpalis*.

Figure 60 B. *Anthus †hiri* nova sp. – carpometacarpus dext. (Polgárdi, MÁFI V.11.98.1; V.29173), dorsal view, d. *fovea subalularis*.

Figure 60 C. *Anthus †hiri* nova sp. – tarsometatarsus sin. (Polgárdi, MÁFI V.11.122.3; V.29197), dorsal view, a. *trochlea metatarsi* II.; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi* III.; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi* IV.

Figure 61 A. *Anthus †baranensis* nova sp. – coracoideum dext. (Csarnóta, MÁFI V.11.8.1; V.29083). dorsal view, a. *acroracoideum*; b. *processus accessorius*; c. *sulcus m. supracoracoidei*; d. *processus procoracoidei*.

Figure 61 B. *Anthus †baranensis* nova sp. – ulna sin. (Csarnóta, MÁFI V.11.36.1; V.29111). caudal view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

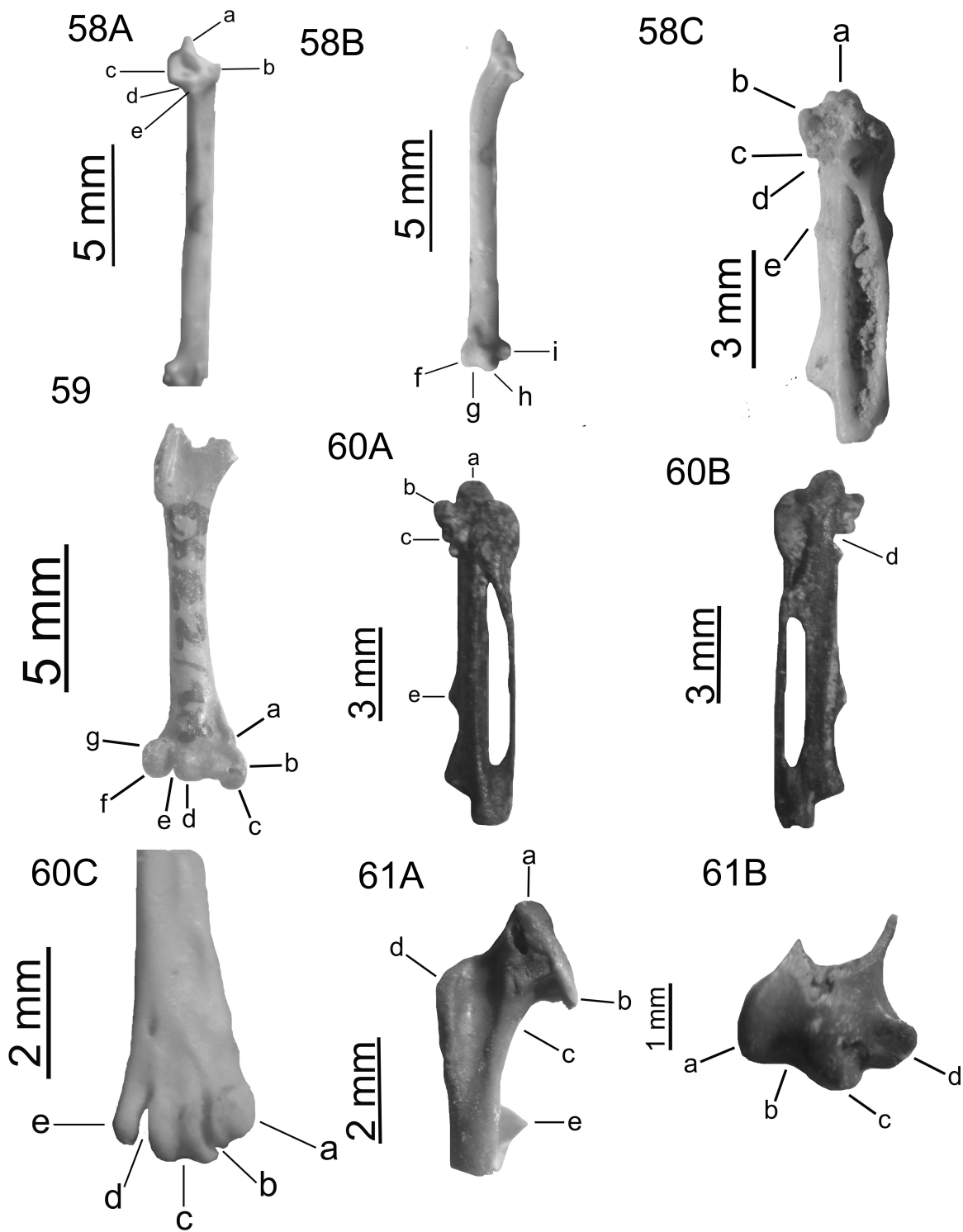


Plate XVI

Figure 62 A. *Motacilla †intermedia* nova sp. – humerus dext. (Polgárdi, MÁFI V.11.114.7, V.29189/1), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *fossae pneumotricipitalis*.

Figure 62 B. *Motacilla †intermedia* nova sp. – humerus dext. (Polgárdi, MÁFI V.11.114.7, V.29189/2), cranial view, f. *epicondylus ventralis*; g. *processus flexorius*; h. *condylus ventralis*; i. *incisura intercondylaris*; j *condylus dorsalis*; k. *epicondylus dorsalis*; l. *processus supracondylaris dorsalis*.

Figure 62 C. *Motacilla †intermedia* nova sp. – ulna sin. (Polgárdi, MÁFI V.11.114.7, V.29189/3), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpalae*.

Figure 62 D. *Motacilla †intermedia* nova sp. – carpometacarpus sin. (Polgárdi, MÁFI V.11.119.9; V.29154/1), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 62 E. *Motacilla †intermedia* nova sp. – femur sin. (Polgárdi, MÁFI V.11.119.9; V.29154/2), caudal view, a. *trochlea fibularis*; b. *condylus lateralis*; c. *incisura intercondylaris*; d. *condylus medialis*; e. *epicondylus medialis*.

Figure 62 F. *Motacilla †intermedia* nova sp. – tibiotarsus dext. (Polgárdi, MÁFI V.11.119.9; V.29154/3), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 62 G. *Motacilla †intermedia* nova sp. – tarsometatarsus sin. (Polgárdi, MÁFI V.11.119.9; V.29154/4), dorsal view, a. *trochlea metatarsi* II.; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi* III.; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi* IV.

Figure 63. *Motacilla minor* nova sp. – carpometacarpus dext. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *processus extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 64. *Motacilla robusta* nova sp. – humerus sin. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

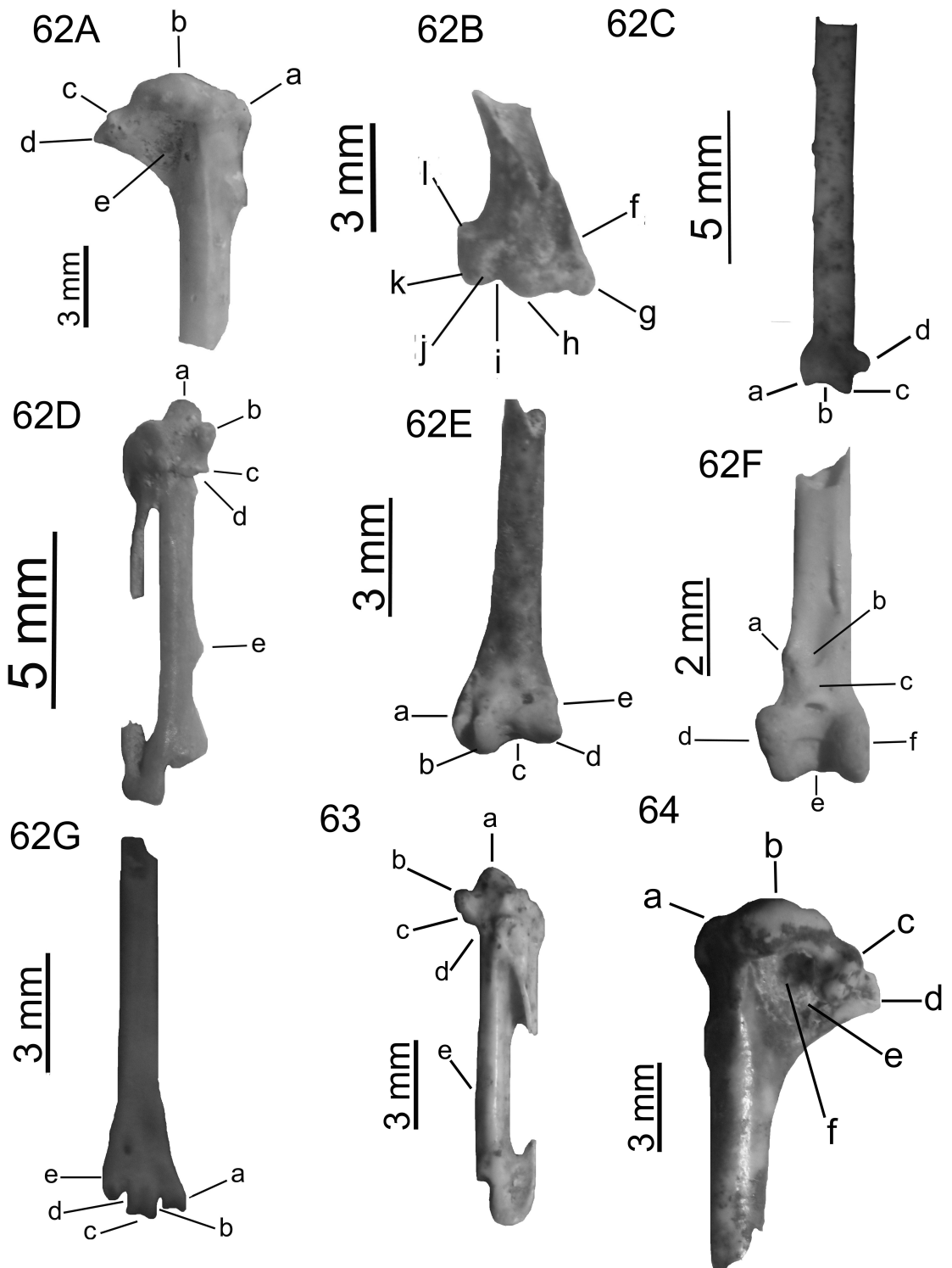


Plate XVII

Figure 65 A. *Bombycilla* † *brevia* nova sp. – coracoid dext. (Polgárdi, MÁFI V.11.96.1; V.29171), dorsal view, a. *acrocoracoid*; b. *processus accessori*; c. *sulcus m. supracoracoidei*; d. *processus procoracoidei*; e. *facies articularis humeralis*.

Figure 65 B. *Bombycilla* † *brevia* nova sp. – humerus dext. (Polgárdi, MÁFI V.11.120.2; V.29195/1), cranial view, a. *epicondylus ventralis*; b. *processus flexorius*; c. *condylus ventralis*; d. *incisura intercondylaris*; e. *condylus dorsalis*; f. *epicondylus dorsalis*; g. *processus supracondylaris dorsalis*.

Figure 65 C. *Bombycilla* † *brevia* nova sp. – tibiotarsus sin. (Polgárdi, MÁFI V.11.120.2; V.29195/2), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 66 A. *Bombycilla* † *kubinyii* nova sp. – humerus sin. (Beremend, BKA), cranial view: a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 66 B. *Bombycilla* † *kubinyii* nova sp. – tibiotarsus sin. (Beremend, BKA). cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 67 A. *Troglodytes* † *robustus* nova sp. – humerus sin. (Polgárdi, MÁFI V.11.64.1; V.29139), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*; g. *margo caudalis*.

Figure 67 B. *Troglodytes* † *robustus* nova sp. – humerus sin. (Polgárdi, MÁFI V.11.64.1; V.29139), cranial view, h. *epicondylus ventralis*; i. *processus flexorius*; j. *condylus ventralis*; k. *incisura intercondylaris*; l. *condylus dorsalis*; m. *epicondylus dorsalis*; n. *processus supracondylaris dorsalis*.

Figure 67 C. *Troglodytes* † *robustus* nova sp.– ulna dext. (Polgárdi, MÁFI V.11.121.3; V.29196/1), cranial view, a. *oleocranon* b. *cotyla dorsalis*; c. *cotyla ventralis*; d. *tuberculum lig. colat. ventralis*; e. *depressio m. brachialis*.

Figure 67 D. *Troglodytes* † *robustus* nova sp. – carpometacarpus dext. (Polgárdi, MÁFI V.11.121.3; V.29196/2), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 67 E. *Troglodytes* † *robustus* nova sp. – tibiotarsus sin. (Polgárdi, MÁFI V.11.121.3; V.29196/3), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*; g. *arrow transverses*.

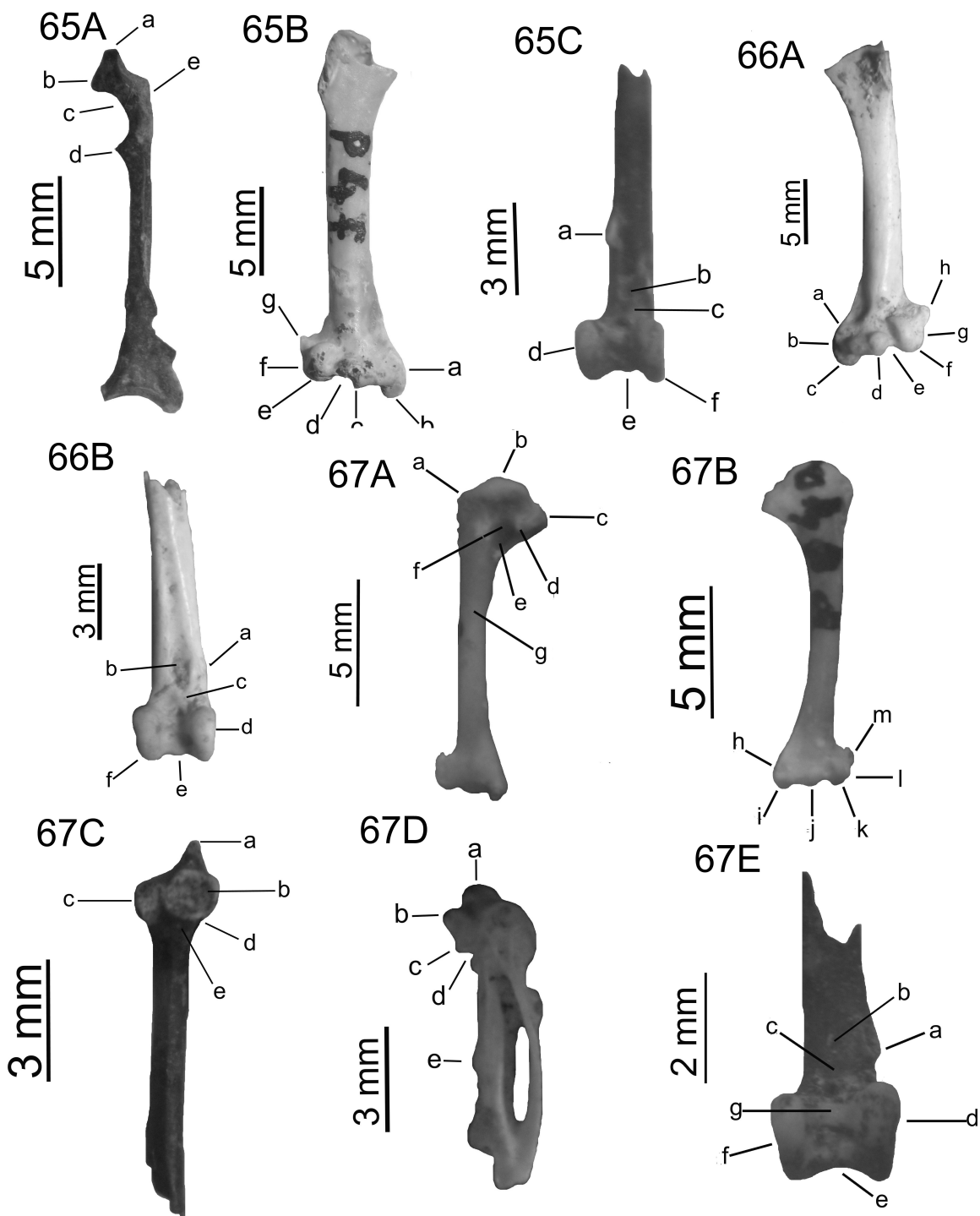


Plate XVIII

Figure 68. *Cinclus* † *gaspariki* nova sp. – carpometacarpus sin. (Polgárdi, MÁFI V.11.99.1; V.29174), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*.

Figure 69. *Cinclus* † *minor* nova sp. – ulna dext. (Csarnóta, MÁFI V.11.9.1, V.29084), caudal view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 70 A. *Prunella* † *freudenthali* nova sp. – humerus sin. (Polgárdi, MÁFI V.11.101.1, V.29176), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 70 B. *Prunella* † *freudenthali* nova sp. – ulna sin. (Polgárdi, MÁFI V.11.123.5; V.29198/1), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 70 C. *Prunella* † *freudenthali* nova sp. – femur dext. (Polgárdi, MÁFI V.11.123.5; V.29198/2), caudal view, a. *trochlea fibularis*; b. *condylus lateralis*; c. *incisura intercondylaris*; d. *condylus medialis*; e. *epicondylus medialis*.

Figure 71 A. *Prunella* † *kormosi* nova sp. – coracoideum sin. (Csarnóta, MÁFI V.11.4.1; V.29079), dorsal view, a. *acrocoracoideum*; b. *processus accesorius*; c. *sulcus m. supracoracoidei*; d. *processus procoracoidei*.

Figure 71 B. *Prunella* † *kormosi* nova sp. – humerus dext. (Csarnóta, MÁFI V.11.40.5; V.29155), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 71 C. *Prunella* † *kormosi* nova sp. – ulna sin. (Csarnóta, MÁFI V.11.40.6; V.29155), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 71 D. *Prunella* † *kormosi* nova sp. – tarsometatarsus dext. (Beremend, BKA), dorsal view: a. edge between *metatarsus* I. and *trochlea metatarsi* II.; b. *trochlea metatarsi* II.; c. *incisura intertrochlearis medialis*; d. *trochlea metatarsi* III.; e. *incisura intertrochlearis lateralis*; f. *trochlea metatarsi* IV.

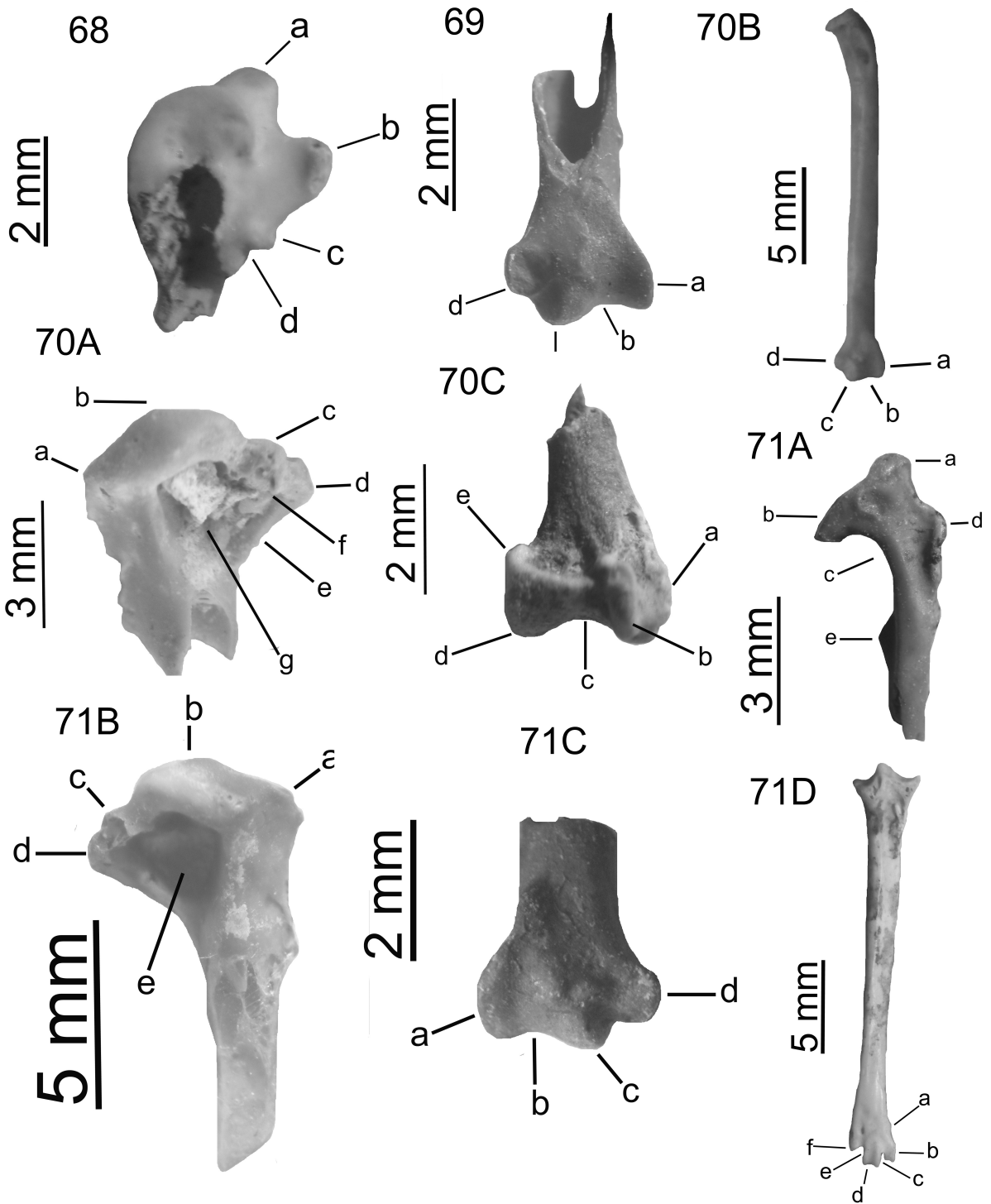


Plate XIX

Figure 72. *Lanius* † *capeki* nova sp. – coracoid dext. (Polgárdi, MÁFI V.11.54.1; V.29129), dorsal view, a. *acrocoracoid*; b. *processus accessori*; c. *sulcus m. supracoracoidei*; d. *facies aricularis humeralis*; e. *processus procoracoidei*.

Figure 73 A. *Lanius* † *hungaricus* nova sp. – coracoideum sin. (Csarnóta, MÁFI V.11.5.1; V.29080), dorsal view, a. *acrocoracoideum*; b. *processus accessori*; c. *sulcus m. supracoracoidei*;

Figure 73 B. *Lanius* † *hungaricus* nova sp. – coracoideum sin. (Csarnóta, MÁFI V.11.5.1; V.29080), ventral view. d. *processus procoracoidei*.

Figure 73 C. *Lanius* † *hungaricus* nova sp. – scapula sin. (Csarnóta, MÁFI V.1.41.2; V.29116), lateral view. a. *acromion – costal branch*; b. edge between branches; c. *acromion – lateral branch*; d. *facies atricularis humeralis*.

Figure 73 D. *Lanius* † *hungaricus* nova sp. – carpometacarpus sin. (Csarnóta, MÁFI V.1.41.3; V.29116), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*.

Figure 73 E. *Lanius* † *hungaricus* nova sp. – carpometacarpus sin. (Csarnóta, MÁFI V.1.41.3; V.29116). dorsal view, d. *fovea subalularis*.

Figure 74 A. *Lanius* † *major* nova sp. – humerus dext. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *fossae pneumotricipitalis*.

Figure 74 B. *Lanius* † *major* nova sp. – humerus dext. (Beremend, BKA), cranial view: f. *tuberculum supracondylare ventrale*; g. *epicondylus ventralis*; h. *processus flexorius*; i. *condylus ventralis*; j. *incisura intercondylaris*; k. *condylus dorsalis*; l. *epicondylus dorsalis*; m. *processus supracondylaris dorsalis*.

Figure 74 C. *Lanius* † *major* nova sp. – carpometacarpus sin. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *processus extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 74 D. *Lanius* † *major* nova sp. – tarsometatarsus dext. (Beremend, BKA), dorsal view: a. edge between *metatarsus* I. and *trochlea metatarsi* II.; b. *trochlea metatarsi* II.; c. *incisura intertrochlearis medialis*; d. *trochlea metatarsi* III.; e. *incisura intertrochlearis lateralis*; f. *trochlea metatarsi* IV.

Plate XIX

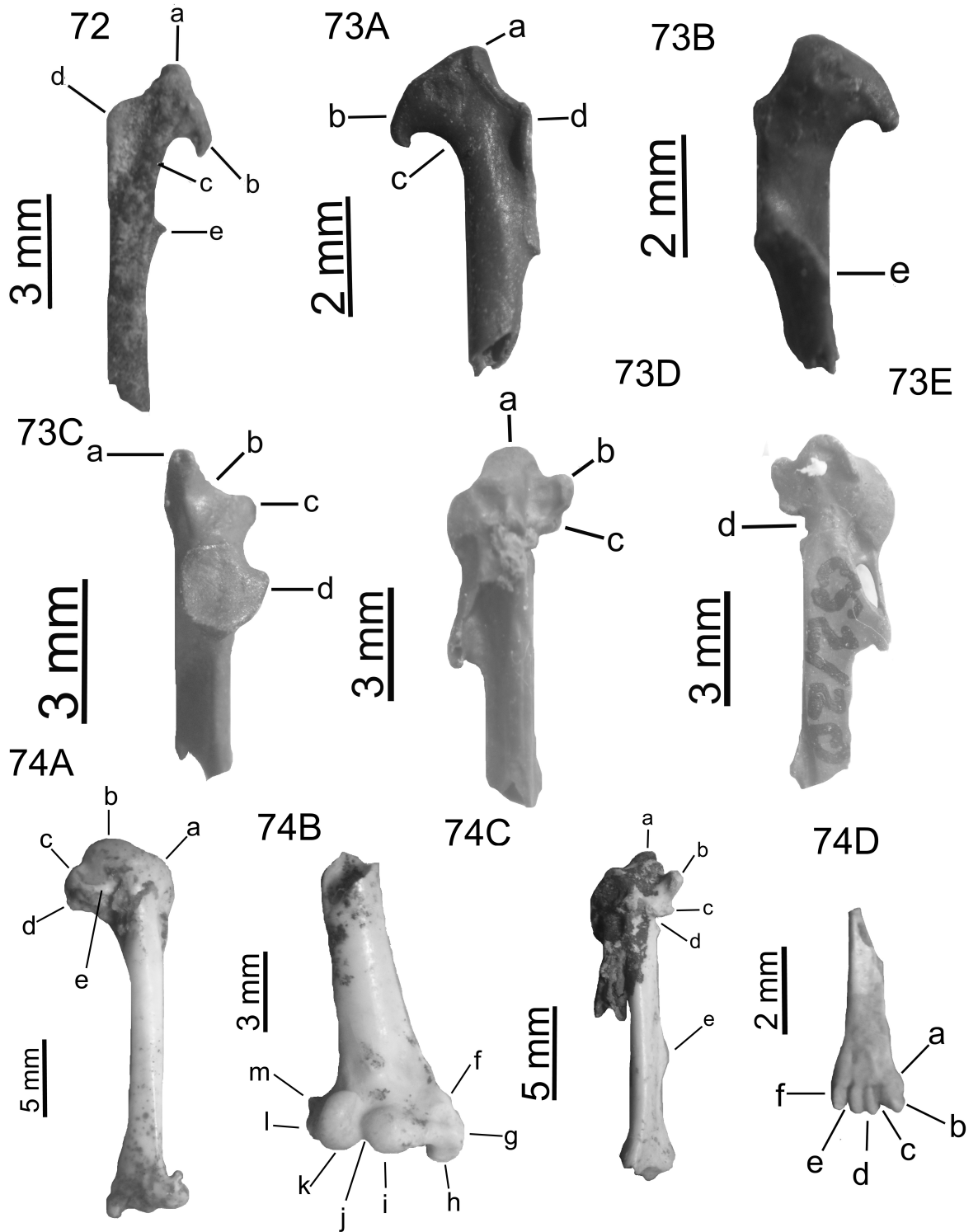


Plate XX

Figure 75 A. *Lanius* † *intermedius* nova sp. – humerus dext. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 75 B. *Lanius* † *intermedius* nova sp. – carpometacarpus dext. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *processus extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 76 A. *Sturnus* † *brevis* nova sp. – coracoid dext. (Polgárdi, MÁFI V.11.55.1, V.29130), dorsal view, a. *acroracoid*; b. *processus accessori*; c. *sulcus m. supracoracoidei*; d. *facies aricularis humeralis*; e. *processus procoracoidei*.

Figure 76 B. *Sturnus* † *brevis* nova sp. – humerus dext. (Polgárdi, MÁFI V.11.115.2; V.29190/1), cranial view, a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 76 C. *Sturnus* † *brevis* nova sp. – tibiotarsus dext. (Polgárdi, MÁFI V.11.115.2; V.29190/2), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 77 A. *Sturnus* † *plioaenicus* nova sp. – humerus dext. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 77 B. *Sturnus* † *plioaenicus* nova sp. – humerus dext. (Beremend, BKA), cranial view: g. *tuberculum supracondylare ventrale*; h. *epicondylus ventralis*; i. *processus flexorius*; j. *condylus ventralis*; k. *incisura intercondylaris*; l. *condylus dorsalis*; m. *epicondylus dorsalis*; n. *processus supracondylaris dorsalis*.

Figure 77 C. *Sturnus* † *plioaenicus* nova sp. – tarsometatarsus dext. (Beremend, BKA), dorsal view: a. edge between *metatarsus* I. and *trochlea metatarsi* II.; b. *trochlea metatarsi* II.; c. *incisura intertrochlearis medialis*; d. *trochlea metatarsi* III.; e. *incisura intertrochlearis lateralis*; f. *trochlea metatarsi* IV.

Figure 78 A. *Sturnus* † *baranensis* nova sp. – humerus dext. (Beremend, BKA), caudal view: a. *tuberculum ventrale*; b. *crista bicipitalis*; c. *crus fossae*; d. *fossae pneumotricipitalis*.

Figure 78 B. *Sturnus* † *baranensis* nova sp. – humerus dext. (Beremend, BKA), cranial view: e. *tuberculum supracondylare ventrale*; f. *condylus ventralis*; g. *incisura intercondylaris*; h. *condylus dorsalis*; i. *epicondylus dorsalis*; j. *processus supracondylaris dorsalis*.

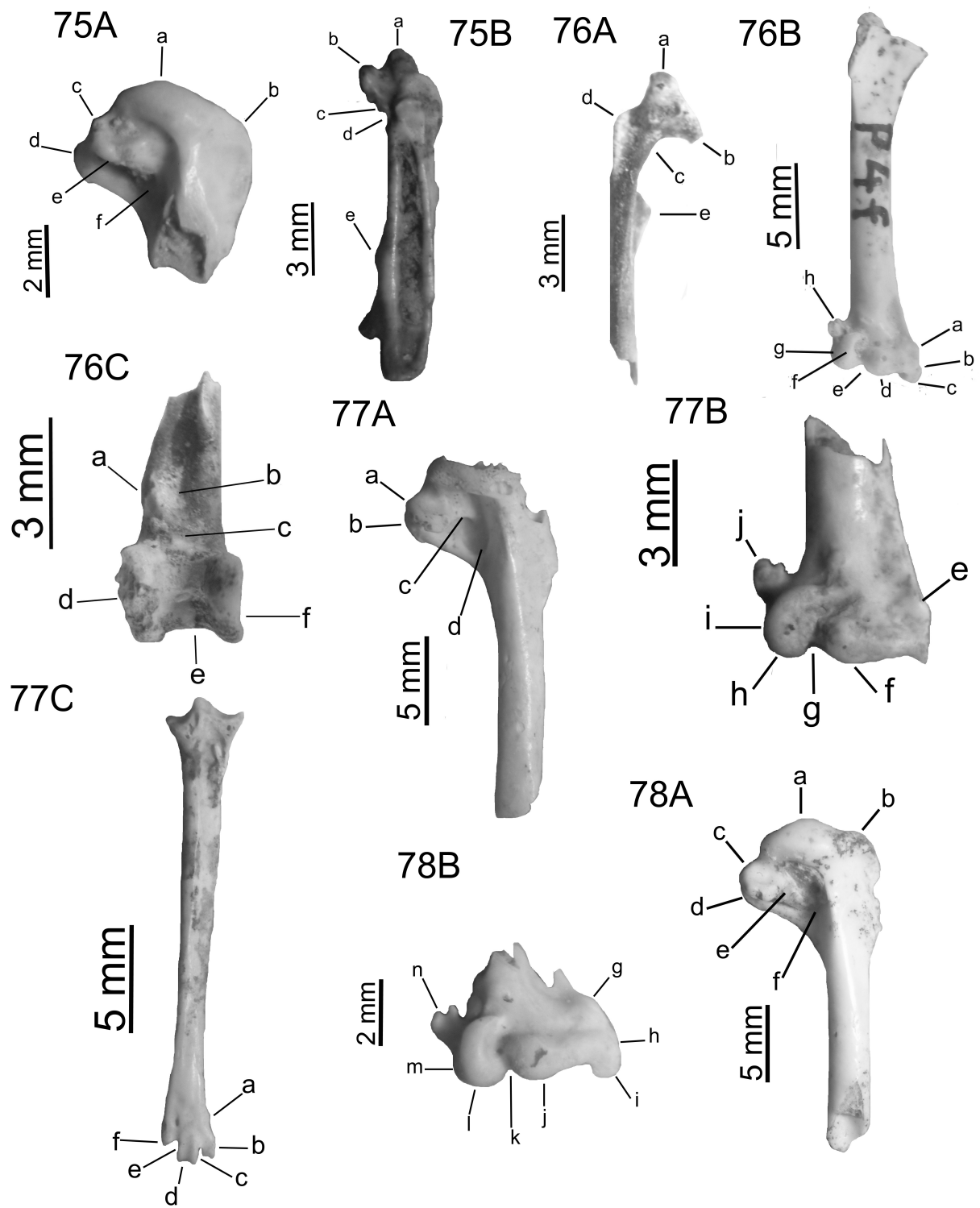


Plate XXI

Figure 79 A. *Passer † hiri nova sp.* – ulna sin. (Polgárdi, MÁFI V.11.61.1, V.29136); cranial view, a. *oleocranon* b. *cotyla dorsalis*; c. *cotyla ventralis*; d. *tuberculum lig. colat. ventralis*; e. *depressio m. brachialis*.

Figure 79 B. *Passer † hiri nova sp.* – carpometacarpus sin. (Polgárdi, MÁFI V.11.78.4; V.29153/1), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 79 C. *Passer † hiri nova sp.* – tibiotarsus sin. (Polgárdi, MÁFI V.11.78.4; V.29153/2), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 80. *Passer † minusculus nova sp.* – coracoideum dext. (Csarnóta, MÁFI V.11.6.1; V.29081), dorsal view, a. *acroracoideum*; b. *processus accessorius*; c. *sulcus m. supracoracoidei*; d. *processus procoracoidei*.

Figure 81. *Passer † pannonicus nova sp.* – carpometacarpus sin. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *processus alularis*; c. *fovea subalularis*; d. *protuberantia metacarpalis*; e. basis of the *facies articularis digiti major*; f. end of the *os metacarpi minus*.

Figure 82 A. *Fringilla † kormosi nova sp.* – coracoid sin. (Polgárdi, MÁFI V.11.75.1; V.29150), dorsal view, a. *acroracoid*; b. *processus accessorius*; c. *sulcus m. supracoracoidei*; d. *facies articularis humeralis*; e. *processus procoracoidei*.

Figure 82 B. *Fringilla † kormosi nova sp.* – humerus dext. (Polgárdi, MÁFI V.11.56.1; V.29131), cranial view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; f. *tuberculum supracondylare ventrale*; g. *epicondylus ventralis*; h. *processus flexorius*; i. *condylus ventralis*; j. *incisura intercondylaris*; k. *condylus dorsalis*; l. *epicondylus dorsalis*; m. *processus supracondylaris dorsalis*.

Figure 82 C. *Fringilla † kormosi nova sp.* – humerus dext. (Polgárdi, MÁFI V.11.56.1; V.29131), caudal view, e. *fossae pneumotricipitalis*.

Figure 83 A. *Fringilla † petenyii nova sp.* – tibiotarsus dext. (Csarnóta, MÁFI 11.49.1; V.29124), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 83 B. *Fringilla † petenyii nova sp.* – tarsometatarsus dext. (Csarnóta, MÁFI V.11.29.1; V.29104), dorsal view, a. *trochlea metatarsi II.*; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi III.*; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi IV.*

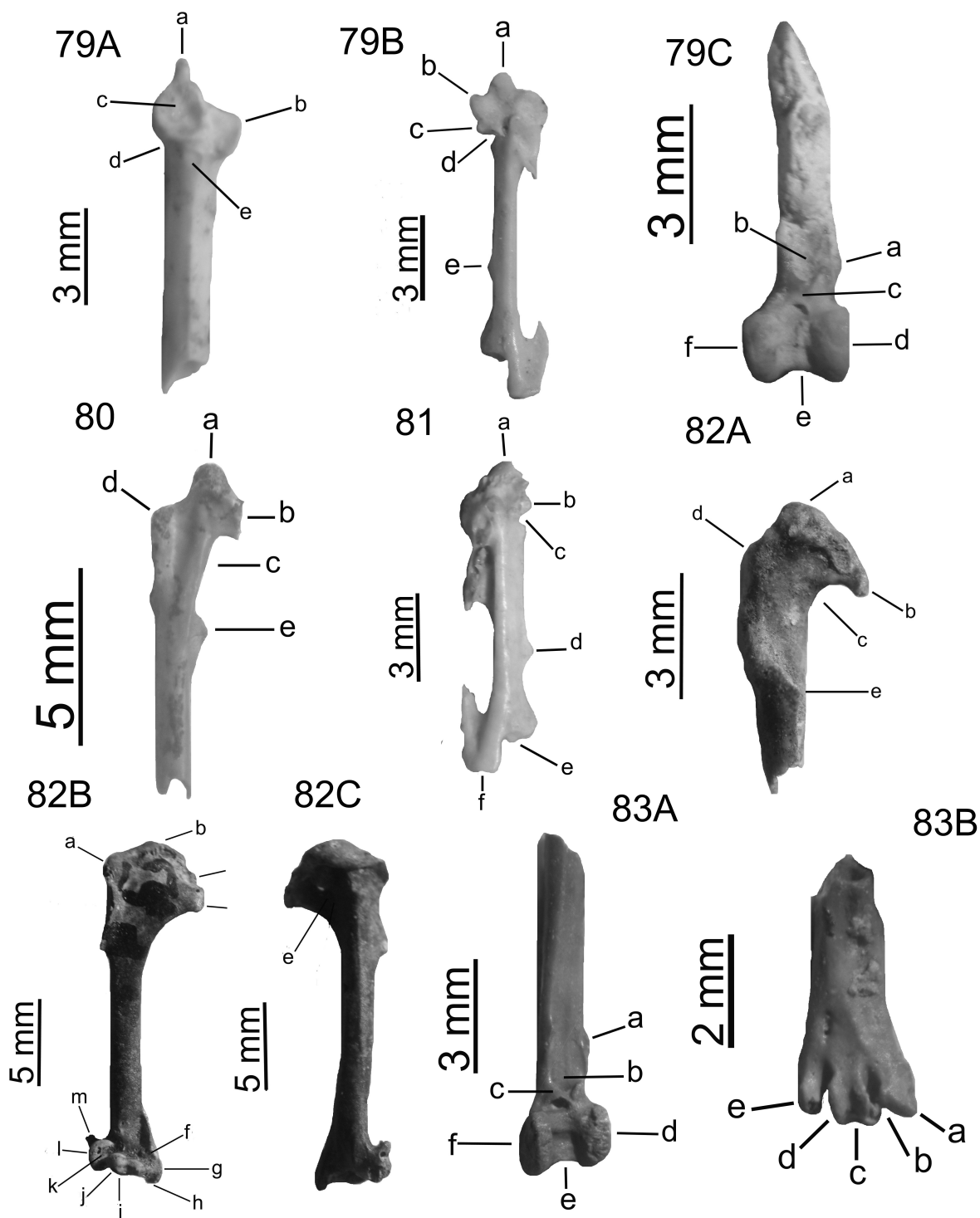


Plate XXII

Figure 84 A. *Carduelis †kretzoi* nova sp. – coracoid sin. (Polgárdi, MÁFI V.11.112.9; V.29187/1), dorsal view, a. *acrocoracoid*; b. *processus aessorius*; c. *sulcus m. supracoracoidei*; d. *facies aricularis humeralis*; e. *processus procoracoidei*.

Figure 84 B. *Carduelis †kretzoi* nova sp. – humerus dext. (Polgárdi, MÁFI V.V.11.91.1; V.29166), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *fossae pneumotricipitalis*.

Figure 84 C. *Carduelis †kretzoi* nova sp. – humerus dext. (Polgárdi, MÁFI V.V.11.91.1; V.29166), cranial view, f. *tuberculum supracondylare ventrale*; g. *epicondylus ventralis*; h. *processus flexorius*; i. *condylus ventralis*; j. *incisura intercondylaris*; k. *condylus dorsalis*; l. *epicondylus dorsalis*; m. *processus supracondylaris dorsalis*.

Figure 84 D. *Carduelis †kretzoi* nova sp. – carpometacarpus dext. (Polgárdi, MÁFI V.11.112.9; V.29187/2), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 84 E. *Carduelis †kretzoi* nova sp. – femur dext. (Polgárdi, MÁFI V.11.116.7; V.29191/1), caudal view, a. *trochlea fibularis*; b. *condylus lateralis*; c. *incisura intercondylaris*; d. *condylus medialis*; e. *epicondylus medialis*.

Figure 84 F. *Carduelis †kretzoi* nova sp. – tibiotarsus sin. (Polgárdi, MÁFI V.11.116.7; V.29191/2), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 85 A. *Carduelis †lambrechti* nova sp. – coracoid dext. (Polgárdi, MÁFI V.11.77.4; V.29152), dorsal view, a. *acrocoracoid*; b. *processus aessorius*; c. *sulcus m. supracoracoidei*; d. *facies aricularis humeralis*; e. *processus procoracoidei*.

Figure 85 B. *Carduelis †lambrechti* nova sp. – humerus sin. (Polgárdi, MÁFI V.11.58.1; V.29133), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *fossae pneumotricipitalis*.

Figure 85 C. *Carduelis †lambrechti* nova sp. – humerus sin. (Polgárdi, MÁFI V.11.58.1; V.29133),), cranial view, f. *tuberculum supracondylare ventrale*; g. *epicondylus ventralis*; h. *processus flexorius*; i. *condylus ventralis*; j. *incisura intercondylaris*; k. *condylus dorsalis*; l. *epicondylus dorsalis*; m. *processus supracondylaris dorsalis*.

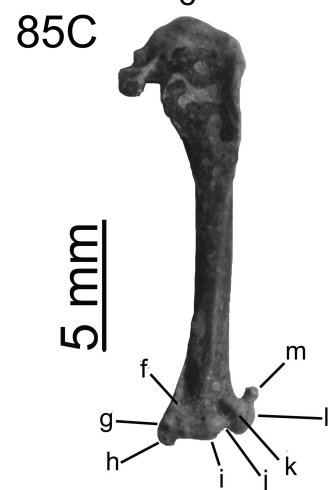
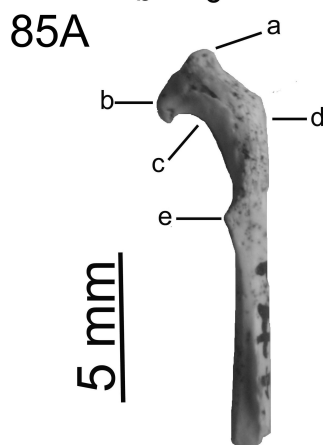
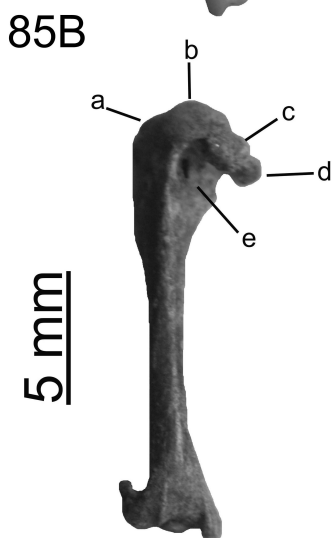
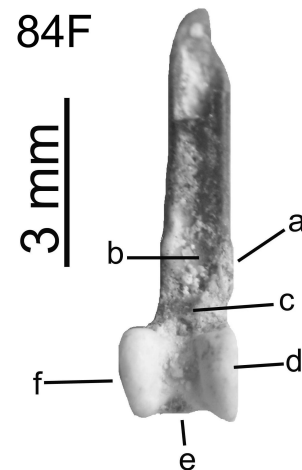
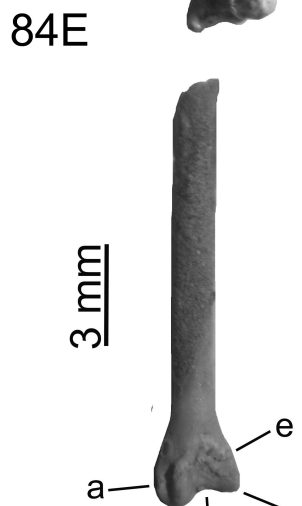
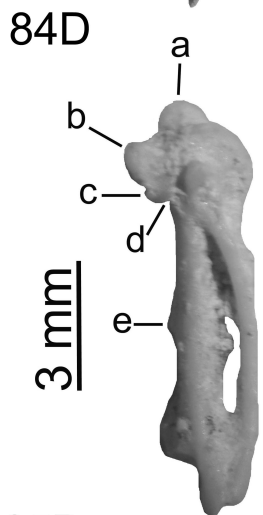
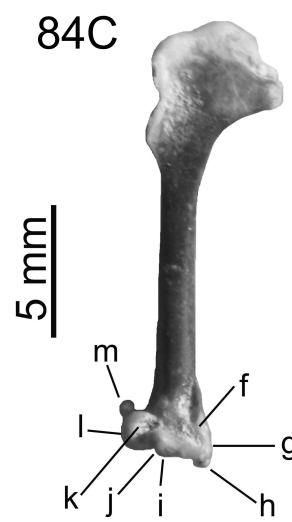
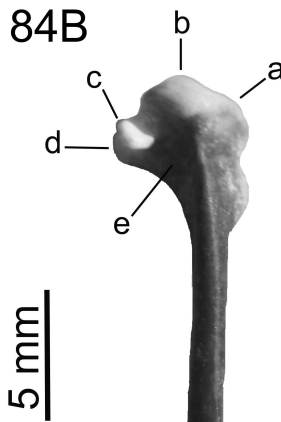
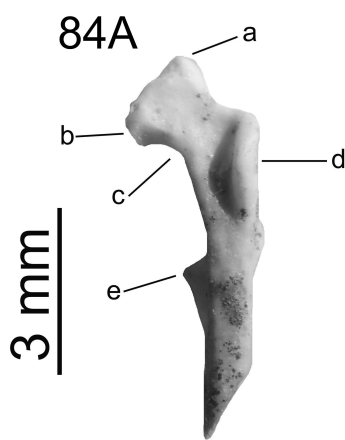


Plate XXIII

Figure 86 A. *Carduelis †parvulus nova sp.* – coracoideum dext. (Csarnóta, MÁFI V.11.10.1; V.29085), dorsal view, a. *acroracoideum*; b. *processus accessorius*; c. *sulcus m. supracoracoidei*; d. *processus procoracoidei*.

Figure 86 B. *Carduelis †parvulus nova sp.* – ulna sin. (Csarnóta, MÁFI V.11.37.1; V.29112), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 87. *Carduelis †medius nova sp.* – coracoideum sin. (Csarnóta, MÁFI V.11.11.1, V.29086). dorsal view, a. *acroracoideum*; b. *processus accessorius*; c. *sulcus m. supracoracoidei*; d. *processus procoracoidei*.

Figure 88 A. *Pyrrhula †gali nova sp.* – humerus sin. (Polgárdi, MÁFI V.11.129.1; V.29204), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *fossae pneumotricipitalis*.

Figure 88 B. *Pyrrhula †gali nova sp.* – humerus sin. (Polgárdi, MÁFI V.11.129.1; V.29204), cranial view, f. *tuberculum supracondylare ventrale*; g. *epicondylus ventralis*; h. *processus flexorius*; i. *condylus ventralis*; j. *incisura intercondylaris*; k. *condylus dorsalis*; l. *epicondylus dorsalis*; m. *processus supracondylaris dorsalis*.

Figure 88 C. *Pyrrhula †gali nova sp.* – ulna sin. (Polgárdi, MÁFI V.11.129.1; V.29204/3), cranial view, a. *oleocranon* b. *cotylo dorsalis*; c. *cotylo ventralis*; d. *tuberculum lig. colat. ventralis*; e. *depressio m. brachialis*.

Figure 89 A. *Pyrrhula †minor nova sp.* – coracoideum sin. (Csarnóta, MÁFI V.11.48.2; V.29123), dorsal view, a. *acroracoideum*; b. *processus accessorius*; c. *sulcus m. supracoracoidei*; d. *processus procoracoidei*.

Figure 89 B. *Pyrrhula †minor nova sp.* – humerus sin. (Csarnóta, MÁFI V.11.12.1, V.29087), cranial view, a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 89 C. *Pyrrhula †minor nova sp.* – ulna dext. (Csarnóta, MÁFI V.11.48.3; V.29123), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

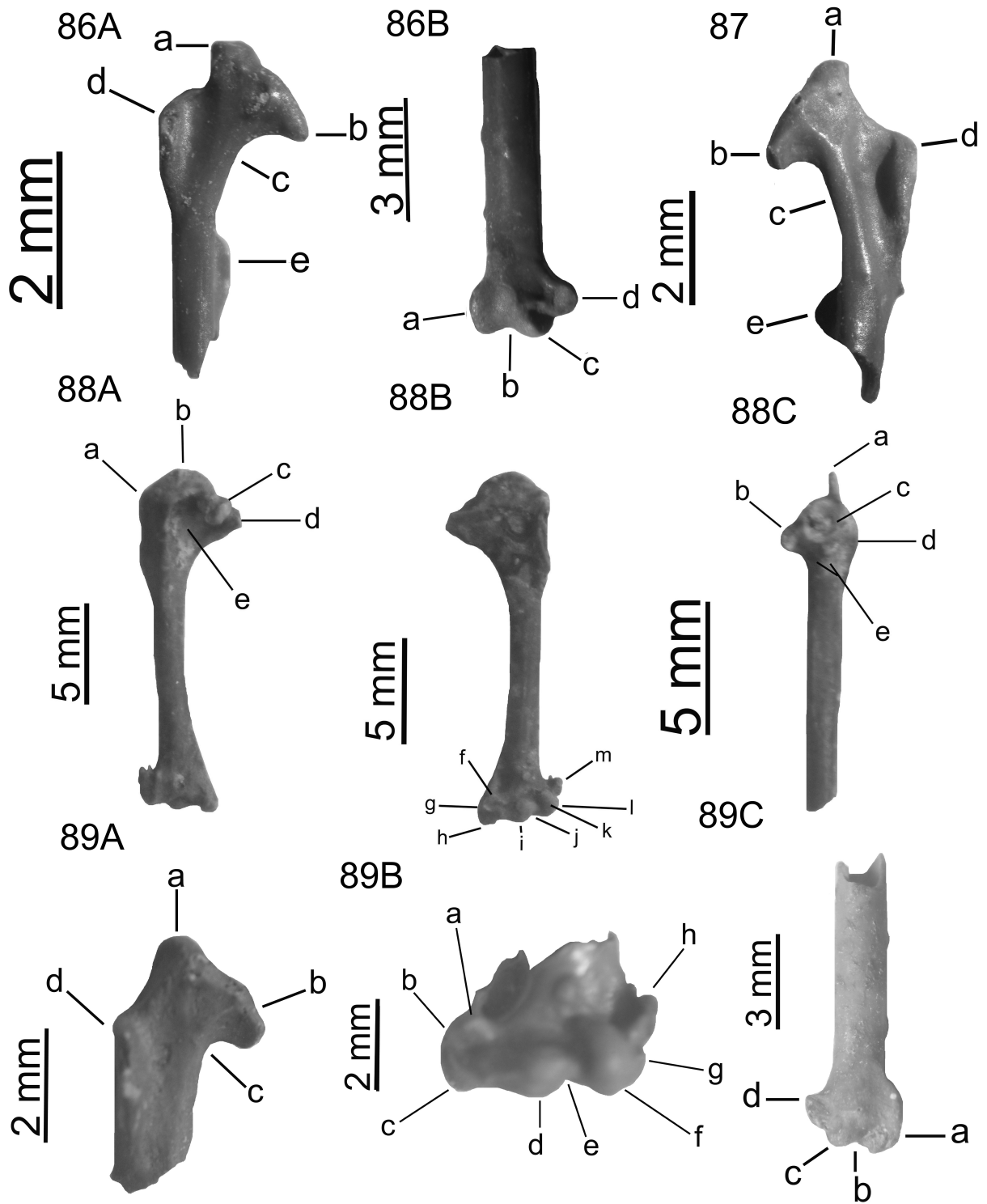


Plate XXIV

Figure 90 A. *Loxia* † *csarnotanus* nova sp. – humerus dext. (Csarnóta, MÁFI V.11.30.1; V.29105), cranial view, a. *tuberculum supracondylare ventrale*; b. *epicondylus ventralis*; c. *processus flexorius*; d. *condylus ventralis*; e. *incisura intercondylaris*; f. *condylus dorsalis*; g. *epicondylus dorsalis*; h. *processus supracondylaris dorsalis*.

Figure 90 B. *Loxia* † *csarnotanus* nova sp. – ulna sin. (Csarnóta, MÁFI V.11.50.1, V.29125). medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 90 C. *Loxia* † *csarnotanus* nova sp. – tibiotarsus dext. (Beremend, BKA), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 91. *Pinicola* † *kubinyii* nova sp. – scapula sin. (Csarnóta, MÁFI V.11.31.1; V.29106), lateral view. a. *acromion – costal branch*; b. edge between branches; c. *acromion – lateral branch*; d. *facies atricularis humeralis*.

Figure 92 A. *Coccothraustes* † *major* nova sp. – maxilla (Beremend, BKA), dorsal view.

Figure 92 B. *Coccothraustes* † *major* nova sp. – mandibula (Beremend, BKA), ventral view.

Figure 92 C. *Coccothraustes* † *major* nova sp. – mandibula (Beremend, BKA), dorsal view.

Figure 92 D. *Coccothraustes* † *major* nova sp. – humerus sin. (Beremend, BKA), caudal view: a. *caput humeri*; b. *tuberculum dorsale*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *fossae pneumotricipitalis*.

Figure 92 E. *Coccothraustes* † *major* nova sp. – humerus dext. (Beremend, BKA), cranial view: f. *tuberculum supracondylare ventrale*; g. *epicondylus ventralis*; h. *processus flexorius*; i. *condylus ventralis*; j. *incisura intercondylaris*; k. *condylus dorsalis*; l. *epicondylus dorsalis*; m. *processus supracondylaris dorsalis*.

Figure 92 F. *Coccothraustes* † *major* nova sp. – tarsometatarsus sin. (Beremend, BKA), dorsal view: a. *trochlea metatarsi II.*; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi III.*; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi IV.*

Plate XXIV

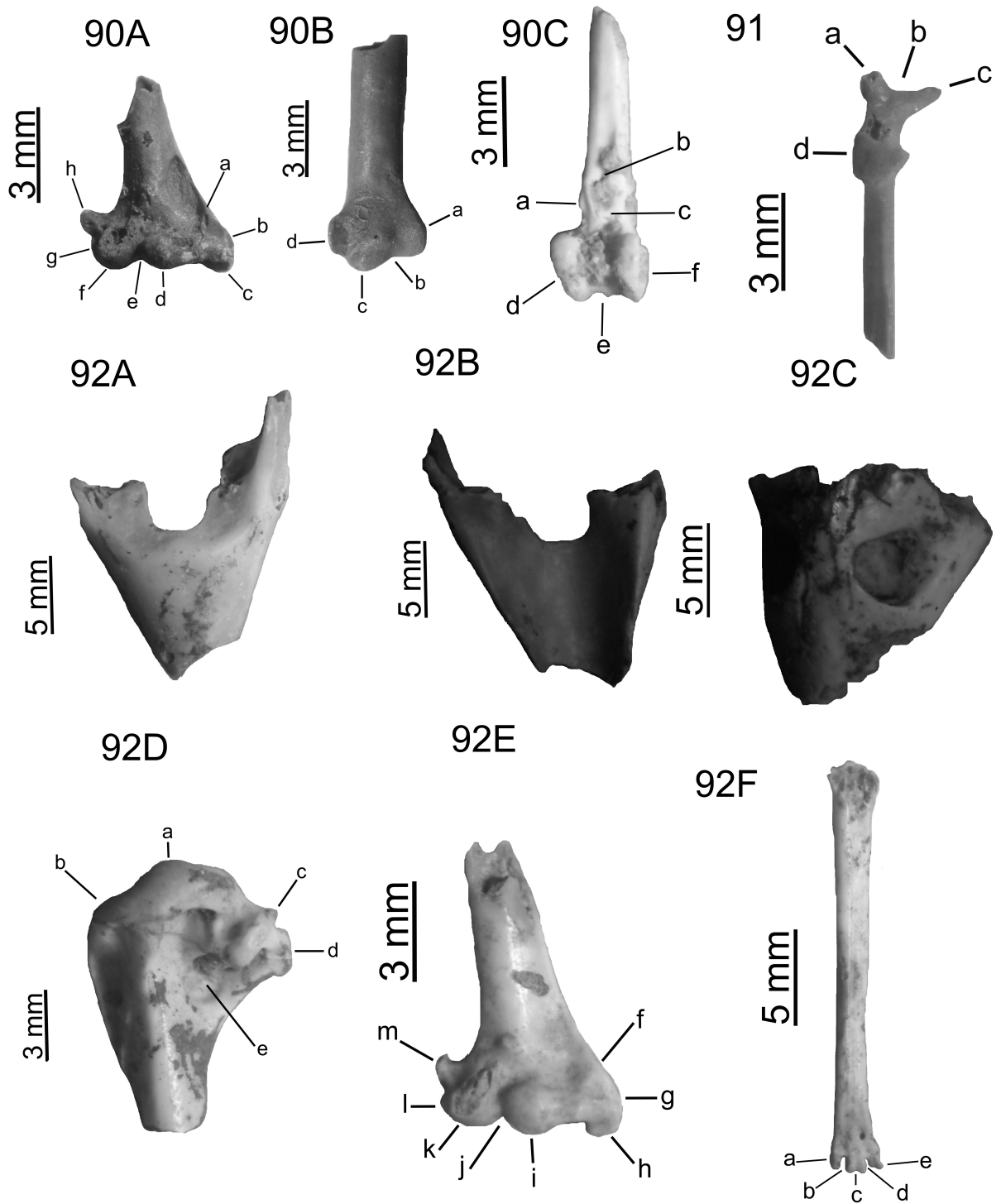


Plate XXV

Figure 93 A. *Emberiza †pannonica nova* sp. – humerus dext. (Polgárdi, MÁFI V.11.92.1; V.29167), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 93 B. *Emberiza †pannonica nova* sp. – ulna sin. (Polgárdi, MÁFI V.11.113.3, V.29188 /1), cranial view, a. *oleocranon* b. *cotyla dorsalis*; c. *cotyla ventralis*; d. *tuberculum lig. colat. ventralis*; e. *depressio m. brachialis*.

Figure 93 C. *Emberiza †pannonica nova* sp. – carpometacarpus dext. (Polgárdi, MÁFI V.11.113.3, V.29188 /2), ventral view, a. *trochlea carpalis*; b. *proc. extensorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 93 D. *Emberiza †pannonica nova* sp. – tibiotarsus sin. (Polgárdi, MÁFI V.11.117.1; V.29192), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 94 A. *Emberiza †polgardiensis nova* sp. – humerus dext. (Polgárdi, MÁFI V.11.79.19; V.29154/1), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 94 B. *Emberiza †polgardiensis nova* sp. – humerus dext. (Polgárdi, MÁFI V.11.79.19; V.29154/1), cranial view, g. *tuberculum supracondylare ventrale*; h. *epicondylus ventralis*; i. *processus flexorius*; j. *condylus ventralis*; k. *incisura intercondylaris*; l. *condylus dorsalis*; m. *epicondylus dorsalis*; n. *processus supracondylaris dorsalis*.

Figure 94 C. *Emberiza †polgardiensis nova* sp. – ulna sin. (Polgárdi, MÁFI V.11.79.19; V.29154/2), cranial view, a. *oleocranon* b. *cotyla dorsalis*; c. *cotyla ventralis*; d. *tuberculum lig. colat. ventralis*; e. *depressio m. brachialis*.

Figure 94 D. *Emberiza †polgardiensis nova* sp. – ulna dext. (Polgárdi, MÁFI V.11.79.19; V.29154/3), medial view, f. *condylus dorsalis*; g. *sulcus intercondylaris*; h. *condylus ventralis*; i. *tuberculum carpale*.

Figure 94 E. *Emberiza †polgardiensis nova* sp. – tibiotarsus dext. (Polgárdi, MÁFI V.11.61.1; 29137), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *condylus lateralis*; e. *incisura intercondylaris*; f. *condylus medialis*.

Figure 94 F. *Emberiza †polgardiensis nova* sp. – tarsometatarsus sin. (Polgárdi, MÁFI V.11.79.19; V.29154/3), dorsal view, a. *trochlea metatarsi II.*; b. *incisura intertrochlearis medialis*; c. *trochlea metatarsi III.*; d. *incisura intertrochlearis lateralis*; e. *trochlea metatarsi IV.*

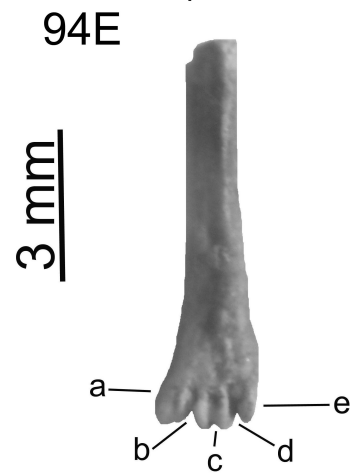
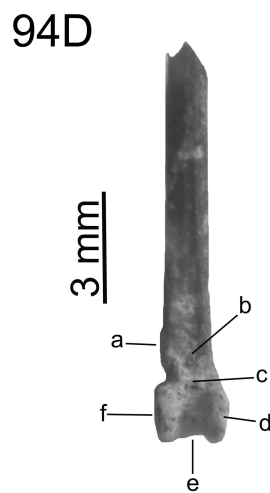
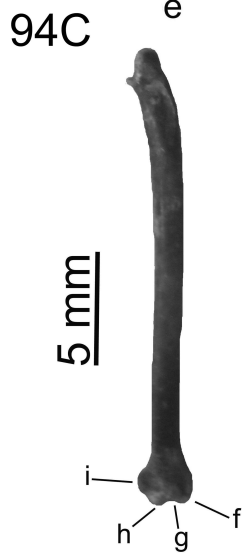
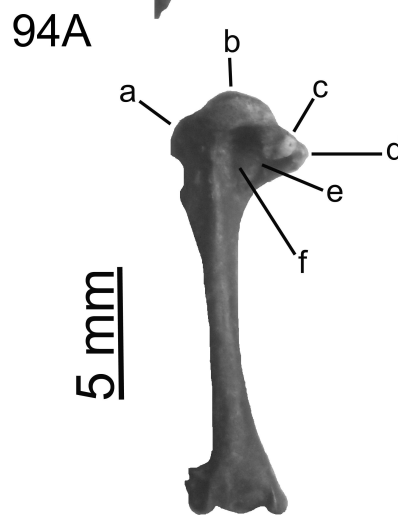
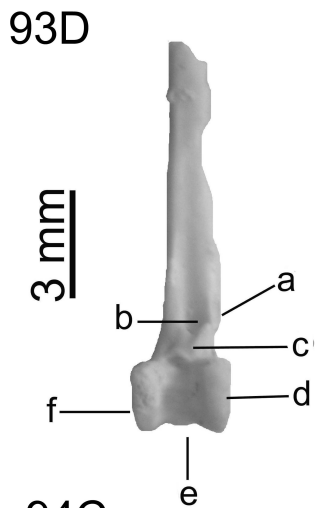
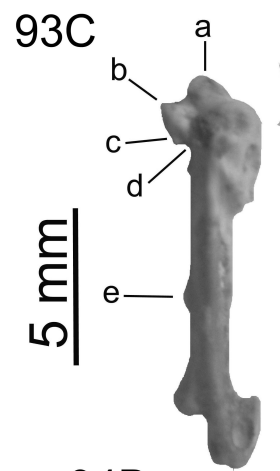
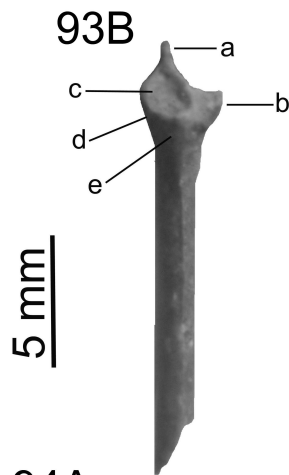
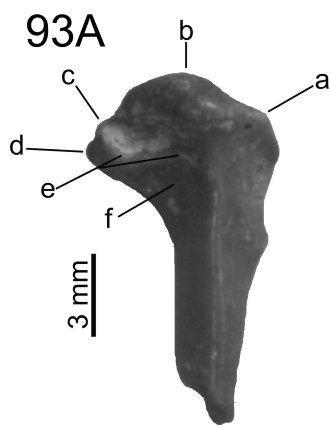


Plate XXVI

Figure 95 A. *Emberiza † media nova* sp. – humerus sin. (Csarnóta, MÁFI V.11.33.1; V.29108), caudal view, a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *crus fossae*; f. *fossae pneumotricipitalis*.

Figure 95 B. *Emberiza † media nova* sp. – humerus sin. (Csarnóta, MÁFI V.11.33.1; V.29108), cranial view, g. *tuberculum supracondylare ventrale*; h. *epicondylus ventralis*; i. *processus flexorius*; j. *condylus ventralis*; k. *incisura intercondylaris*; l. *condylus dorsalis*; m. *epicondylus dorsalis*; n. *processus supracondylaris dorsalis*.

Figure 95 C. *Emberiza † media nova* sp. – ulna dext. (Csarnóta, MÁFI V.11.51.1; V.29126), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 96 A. *Emberiza † parva nova* sp. – coracoideum dext. (Csarnóta, MÁFI V.11.32.1; V.29107), dorsal view, a. *acrocoracoideum*; b. *processus accessorius*; c. *sulcus m. supracoracoidei*; d. *processus procoracoidei*.

Figure 96 B. *Emberiza † parva nova* sp. – humerus sin. (Csarnóta, MÁFI V.11.52.6, V.29127), cranial view, g. *tuberculum supracondylare ventrale*; h. *epicondylus ventralis*; i. *processus flexorius*; j. *condylus ventralis*; k. *incisura intercondylaris*; l. *condylus dorsalis*; m. *epicondylus dorsalis*; n. *processus supracondylaris dorsalis*.

Figure 96 C. *Emberiza † parva nova* sp. – ulna sin. (Csarnóta, MÁFI V.11.52.7; V.29127), medial view, a. *condylus dorsalis*; b. *sulcus intercondylaris*; c. *condylus ventralis*; d. *tuberculum carpale*.

Figure 97 A. *Emberiza † gaspariki nova* sp. – humerus sin. (Beremend, BKA), caudal view: a. *tuberculum dorsale*; b. *caput humeri*; c. *tuberculum ventrale*; d. *crista bicipitalis*; e. *fossae pneumotricipitalis*.

Figure 97 B. *Emberiza † gaspariki nova* sp. – humerus sin. (Beremend, BKA), cranial view: f. *tuberculum supracondylare ventrale*; g. *epicondylus ventralis*; h. *processus flexorius*; i. *condylus ventralis*; j. *incisura intercondylaris*; k. *condylus dorsalis*; l. *epicondylus dorsalis*; m. *processus supracondylaris dorsalis*.

Figure 97 C. *Emberiza † gaspariki nova* sp. – carpometacarpus dext. (Beremend, BKA), ventral view: a. *trochlea carpalis*; b. *processus flexorius*; c. *processus alularis*; d. *fovea subalularis*; e. *protuberantia metacarpalis*.

Figure 98. *Plectrophenax †veterior nova* sp. – tibiotarsus sin. (Polgárdi MÁFI V.11.59.1; V.29134), cranial view, a. *tuberositas retinaculi m. fibularis*; b. *sulcus extensorius*; c. *pons supratendineus*; d. *canalis extensorius*; e. *condylus lateralis*; f. *incisura intercondylaris*; g. *condylus medialis*.

