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MIDDLE MIOCENE BIRDS OF FRANTIŠKOVY LÁZNĚ, BOHEMIA

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Abstract. The avian fauna of Františkovy Lázně consists of at least 11 species, belonging to at least eight families. The composition of the avifauna is typical for lacustrine deposits of Europe.

■ **Aves, Miocene, Czech Republic.**

INTRODUCTION

Middle Miocene birds were recorded from over 80 localities of Europe, which are concentrated in France, Germany and Czech Republic (Mlíkovský 1992, 1996a, 2002). Most of them belong to the MN-zones 6–8, while only two interesting avifaunas are known from the earliest part of the European middle Miocene, MN-zone 5, including Vieux Collonges in France (Ballmann 1972, Mlíkovský 1998) and Františkovy Lázně in Czech Republic. Birds from the latter locality were mentioned by Mlíkovský (1992, 2002) and are described in full in the present paper. The material is deposited in the collection of Oldřich Fejfar (Praha, Czech Republic).

The locality lies in the city of Františkovy Lázně, in the basement of a school built in the late 1950s. It was excavated by Oldřich Fejfar and his colleagues in 1957–1958. The fossiliferous layer consists of greenish calcareous sandy marls. For a detailed description see Fejfar et al. (1959) and Fejfar et Kvaček (1993); see also Čtyroký et al. (1962), Cicha et al. (1972), Fejfar (1974, 1990), and Obrhelová et Obrhel (1983). The age of the fauna is earliest middle Miocene, MN-zone 5 (Fejfar 1990, Fejfar et Kvaček 1993).

Stratigraphy of the Paleogene (MP-zones) follows Schmidt-Kittler (1987) and Legendre et Lévêque (1997), that of the Neogene (MN-zones) follows Mein (1990), Steiniger et al. (1996) and Steininger (1999). Minimum numbers of individuals were calculated according to Grayson (1984). The classification of birds follows Mlíkovský (2002). Synonymies of the taxa listed below are given in Mlíkovský (2002).

SYSTEMATIC LIST

Order Anseriformes Wagler, 1831
Family Phoenicopteridae Bonaparte, 1831
Genus *Palaelodus* Milne-Edwards, 1863
Palaelodus ambiguus Milne-Edwards, 1863

Material: anterior part of sternum, distal end of left tarsometatarsus, distal end of right tarsometatarsus; MNI = 1.

Remarks: *Palaelodus ambiguus* was an abundant mid-Tertiary flamingo, recorded between the middle Oligocene (MP 25) to the end of the middle Miocene (MN 8) of France, Germany, Czech Republic and Romania (see Mlíkovský 2002: 104–106).

Genus *Phoenicopterus* Linnaeus, 1758
Phoenicopterus Linnaeus, 1758
Phoenicopterus croizeti Gervais, 1852

Material: distal end of left humerus; MNI = 1.
Remarks: *Phoenicopterus croizeti* was a widespread, though less abundant, mid-Tertiary flamingo. It was recorded between the middle Oligocene (MP 25) and middle Miocene (MN 7) of France, Germany and Czech Republic (see Mlíkovský 2002: 106–107).

Family Anatidae Leach, 1820
Genus *Mionetta* Livezey et Martin, 1988
Mionetta blanchardi (Milne-Edwards, 1863)

Material: proximal end of left scapula, proximal end of right coracoid, anterior part of sternum, proximal end of right humerus, distal end of right radius, proximal end of right carpometacarpus, proximal end of left tarsometatarsus, distal end of left tarsometatarsus; MNI = 1.
Measurements: proximal width of humerus = 15.2 mm, distal width of radius = 5.5 mm, proximal width of carpometacarpus = 9.6 mm, proximal width of tarsometatarsus = 8.2 mm.
Remarks: This whistling goose species was very abundant between the early (MN 1) and middle Miocene (MN 8) of Europe, where it was recorded from sites in France, Germany, Czech Republic and Romania (see Mlíkovský 2002: 109–110).

Mionetta robusta (Milne-Edwards, 1868)

Material: proximal end of left scapula, distal end of right coracoid, proximal end of left humerus, distal end of right humerus, proximal end of right radius, proximal end of right femur; MNI = 1.
Measurements: distal width of humerus = 23.2 mm, distal width x depth of radius = 8.8 x 7.3 mm, distal width of femur = 14.1 mm.
Remarks: *Mionetta robusta* was an uncommon whistling goose of the early and middle Miocene, recorded between MN 2 and MN 7/8 from France, Germany and Czech Republic (see Mlíkovský 2002: 111).

Order Charadriiformes Huxley, 1867
Family Scolopacidae Vigors, 1825
Genus et species [to be described]

Material: proximal end of left humerus, distal end of right ulna; MNI = 1.
Measurements: proximal width of humerus = 6.2 mm (est.), distal width of ulna = 4.7 mm.
Remarks: This species will be described later, based on better material from the late Miocene (MN 10) of Kohfidisch in Austria (Mlíkovský in prep.).

Family Laridae VIGORS, 1825
Genus indet.

Material: phalanx I digiti majoris; MNI = 1.
Measurements: maximal length = 11.5 mm.
Remarks: Members of the family Laridae are known in Europe from the middle Oligocene (MP 23/24) onwards (see Mlíkovský 2002: 136–138).

Order Galliformes TEMMINCK, 1820
Family Phasianidae VIGORS, 1825
Genus *Coturnix* BONNATERRE, 1791
Coturnix gallica (MILNE-EDWARDS, 1869)

Material: distal ends of 2 left humeri, proximal end of right ulna, distal ends of 3 right ulnae, distal end of left femur, distal end of left tarsometatarsus; MNI = 3.
Measurements: distal width of humerus = 9.3 and 9.6 mm, proximal width of ulna = 8.1 mm, distal width of ulna = 5.8, 6.0 and 6.2 mm, distal width of femur = 7.5 mm.
Remarks: This quail species was very abundant and widespread between the late Oligocene (MP 25) and late Miocene (MN 12) of Europe, where it was recorded from Spain, France, Germany, Czech Republic and Hungary (see Mlíkovský 2002: 153–155).

Genus *Miogallus* LAMBRECHT, 1933
Miogallus altus (MILNE-EDWARDS, 1869)

Material: distal end of right coracoid; MNI = 1.
Remarks: This species was recorded between the early Miocene (MN 3) and middle Miocene (MN 8) of Europe, including Spain, France, Germany, Czech Republic, Slovakia and Hungary (see Mlíkovský 2002: 156–157).

Order Accipitriformes VIEILLOT, 1816
Family Rallidae VIGORS, 1825
Genus indet.

Material: distal end of right ulna, distal end of right tibiotarsus; MNI = 1.
Measurements: distal width of ulna = 2.9 mm, distal width of tibiotarsus = 4.0 mm.

Order Columbiformes LATHAM, 1790
Family Strigidae VIGORS, 1825
Genus *Mioglaux* MLÍKOVSKÝ, 1998
Mioglaux debellatrix MLÍKOVSKÝ, 1998

Material: distal end of tarsometatarsus; MNI = 1.
Remarks: This is the second record for this species, the previous one being from the early Miocene (MN 3) of Merkur, Czech Republic (Mlíkovský 1998).

Order Passeriformes LINNAEUS, 1758
Family indet.

Material: distal end of ulna, proximal ends of 3 carpometacarpi, distal ends of 4 tibiotarsi, distal end of tarsometatarsus; MNI = 3.

	Bones	MNI	% MNI
Palaelodus ambiguus	3	1	6.7
Phoenicopterus croizeti	1	1	6.7
Mionetta blanchardi	8	1	6.7
Mionetta robusta	6	1	6.7
Scolopacidae gen. sp.	2	1	6.7
Laridae indet.	1	1	6.7
Coturnix gallicus	8	3	20.0
Miogallus altus	1	1	6.7
Rallidae indet.	2	1	6.7
Mioglaux debellatrix	1	1	6.7
Passeriformes indet.	9	3	20.0
Σ	42	15	100.0

Table 1. Middle Miocene birds of Františkovy Lázně. MNI = minimum numbers of individuals.

DISCUSSION

Františkovy Lázně yielded a lacustrine avifauna typical for the early and middle Miocene of Europe, with *Palaelodus* and *Mionetta* being the dominant elements (Mlíkovský 1996b, 2002). Also *Miogallus altus* is a typical element of middle Miocene lacustrine avifaunas (see Mlíkovský 1996a).

Taphonomic origin of the bone assemblage is not clear for the aquatic birds. The terrestrial quail *Coturnix gallica* is represented by eight elements, six of which belong to the wing bones, while only two are leg elements. This may indicate that these quails were eaten by a raptor, although the number of bones is too small thus this conclusion cannot be taken for granted.

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