



EARLY MIOCENE BIRDS OF BŘEŠŤANY, CZECH REPUBLIC

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Abstract. The early Miocene (MN 3) locality Břešťany yielded remains of 4 species from 4 different families of birds. *Totanus praecursor* Laube, 1901 and *Cygnus bilinicus* Laube, 1909b, both described on the basis of bones from Břešťany, are meaningless names. *Phalacrocorax anatolicus* Mourer-Chauviré, 1978 was transferred in the genus *Nectornis* Cheneval, 1984.

■ Aves, Miocene, Czech Republic

INTRODUCTION

Early Miocene lacustrine deposits at Břešťany near Bilina in NW Bohemia were discovered in the middle 18th century during coal mining activities (Fejfar et Kvaček 1993). They yielded extensive leaf floras (Ettinghausen 1866, 1868, 1869, Bůžek et al. 1992), and a limited number of vertebrate remains, including those of fishes (Laube 1897, 1901, Obrhelová 1979, Obrhelová et Obrhel 1983), amphibians (Laube 1909a, Liebus 1929a,b), reptiles (Laube 1897, Liebus 1930, 1936b), birds (see below), and mammals (Liebus 1936a). The fossil remains belong to the early Miocene, MN-zone 3 (Fejfar et Kvaček 1993).

The birds from Břešťany were mentioned for the first time by Laube (1901, 1909b), who named two new species: *Totanus praecursor* Laube, 1901 and *Cygnus bilinicus* Laube, 1909b. The restudy of the remains started only recently (Mlíkovský et Švec 1989, Mlíkovský 1992), and the final results are presented below.

The remains of the birds from Břešťany are deposited in the Regional Museum in Teplice (RMT), and in the National Museum in Prague (NMP). The stratigraphy of the Neogene follows Mein (1990).

SYSTEMATIC LIST

Order Pelecaniformes Sharpe, 1891

Family Phalacrocoracidae Reichenbach, 1852

Genus *Phalacrocorax* Brisson, 1760

Phalacrocorax intermedius (Milne-Edwards, 1867)

(Fig. 1)

Graculus intermedius Milne-Edwards, 1867: 266, pl. 43: figs. 8 – 11.

Phalacrocorax intermedius (Milne-Edwards): Lydekker, 1891a: 53 (new combination)

Phalacrocorax praecarbo Ammon, 1918: 28, fig. 3.

Ardea brunhuberi Ammon, 1918: 30, fig. 4.

Botaurites avitus Ammon, 1918: 31, figs. 5 – 6.

Miocorax intermedius (Milne-Edwards): Lambrecht 1933: 292 (new combination)

Phalacrocorax brunhuberi (Ammon): Brodkorb 1980: 91 (new combination)

Material: pelvis in a slab; NMP 25447.

Measurements: width across antiochanter = 34.3 mm, narrowest width across anterior part = 17.6 mm, maximum width of anterior part = ca. 40.0 mm.

Remarks: The pelvis is clearly referable to the genus *Phalacrocorax* (see Cheneval 1984a: 61 for characters). It is slightly smaller than the pelvis of the modern *Phalacrocorax carbo* (Linnaeus), and is thus referable to *Phalacrocorax intermedius* (Milne-Edwards, 1867), originally described from the early Miocene (MN 4) of Orleanais in France. The next oldest cormorants are known from the middle Miocene of Dechbetten (MN 7 – 8) in Germany. They were originally described as *Phalacrocorax praecarbo* Ammon, 1918, *Botaurites avitus* Ammon, 1918, and *Ardea brunhuberi* Ammon, 1918, and later re-identified as cormorants of a single species *Phalacrocorax brunhuberi* Ammon, 1918 (Brodkorb 1980, Olson 1985: 67), which was subsequently synonymized with *Phalacrocorax intermedius* Milne-Edwards, 1867 (Mlíkovský 1992). This species is thus currently recorded from the Orleanian and the Astaracian of France, Germany and Bohemia.

Another early Miocene European species, *Phalacrocorax littoralis* (Milne-Edwards, 1863) from the early Miocene (MN 2) of Saint-Gérand-le-Puy in France, was much smaller than *Phalacrocorax intermedius* (Cheneval 1984a), and has not yet been recorded outside of this locality.

A further cormorant from Saint-Gérand-le-Puy, *Nectornis miocaenus* (Milne-Edwards, 1867), is distinct at the generic level (Cheneval 1984a). The differences are reflected also in the pelvis structure (see Cheneval 1984a: 61). A coracoid from the early Miocene (MN 2) of Ravalzhausen in Germany, originally attributed to *Phalacrocorax littoralis* by Martini (1974), actually belongs to *Nectornis miocaenus* (Cheneval 1984a: 62). This species was found also in the early Miocene (MN 4) of Dolnice in the Czech Republic (Mlíkovský, unpub. results).

Mourer-Chauviré (1978) described a new cormorant species, *Phalacrocorax anatolicus* from the middle Miocene (Astaracian?) of Bes-Konak in Turkey. Its holotype coracoid (Mourer-Chauviré 1978, pl. 4: fig. 6 – 7) markedly differs from the same element of *Phalacrocorax*, and agrees with that of *Nectornis* in having well developed processus procoracoideus. It must be thus transferred to *Nectornis* as *Nectornis anatolicus* (Mourer-Chauviré, 1978), new combination. Cormorants of the genus *Nectornis* were thus recorded from the Agenian of France and Germany, the Orleanian of Bohemia, and the Astaracian of Turkey so far.

The last cormorant species, described from the early to middle Miocene so far, *Phalacrocorax subvolans* Brodkorb, 1956 from the early Miocene of Florida, was transferred to the Anhingidae (Becker 1986).

The early to middle Miocene records of the Phalacrocoracidae in Europe and the adjacent regions can thus be currently summarized as follows:

Nectornis miocaenus (Milne-Edwards, 1867): Agenian of France, and Orleanian of Bohemia.

Nectornis anatolicus (Mourer-Chauviré, 1978): Astaracian of Turkey.

Phalacrocorax littoralis (Milne-Edwards, 1863): Orleanian of France.

Phalacrocorax intermedius (Milne-Edwards, 1867): Orleanian of France and Bohemia, and Astaracian of Germany.

Order Ardeiformes Wagler, 1830
Family Ciconiidae Sundevall, 1836
„*Cygnus*“ *bilinicus* Laube, 1909

Cygnus bilinicus Laube, 1909b: 161, pl. I

Aquilavus bilinicus (Laube): Brodkorb 1964: 264 (new combination)

Material: proximal end of ulna, proximal end of radius and carpometacarpus, lacking processus extensorius, in a slab, all apparently from a single individual. The bones are too flattened to reveal from which side of the body they originated. Figured by Laube (1909b, pl. I), and Mlíkovský et Švec (1989, pl. II, fig. b). RMT, uncatalogued.

Measurements: maximum length of carpometacarpus = ca. 107 mm (not 117, as stated by Laube 1909b: 160), proximal width of carpometacarpus = ca. 16 mm (Mlíkovský et Švec 1989).

Remarks: These scanty remains were originally described as those of a swan (Laube 1909b), and later were believed to represent a raptor (Lambrecht 1933, Howard 1964, Brodkorb 1964, 1978). A restudy of the holotype showed, however, that they represent a stork, indeterminate within the family (Mlíkovský et Švec 1989). The find nevertheless provides another evidence for the family's existence in the early Miocene. Other early Miocene records of storks include „*Grallavis*“ *edwardsi* (Lydekker, 1891b) from France (see also Cheneval 1984a,b) and Libya (Mlíkovský, in press), *Ciconia minor* Harrison, 1980 from Kenya, and „*Propelargus*“ *olseni* Brodkorb, 1963a from Florida. The earliest known stork, *Palaeohippiorhynchus dietrichi* Lambrecht, 1930, was described from the early Oligocene of Egypt (Lambrecht 1930, Rasmussen et al. 1987). For a further discussion of fossil storks see Mlíkovský (in press).

In addition to the material described above I examined a slab from Břešťany with remains of a flattened tibiotarsus and fragments of the cranial part of a coracoid that is deposited in the collections of the National Museum in Prague (NMP 1521b). The slab was accompanied with a label „?*Cygnus bilineatus* Laube“. I consider both these remains indeterminate within the class Aves.

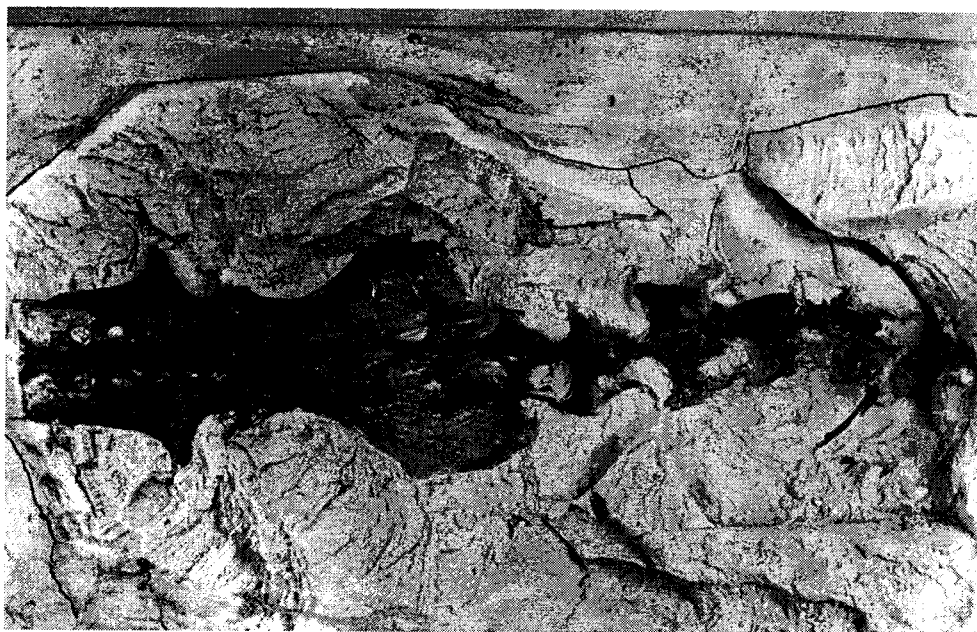


Fig. 1. Partial pelvis of *Phalacrocorax intermedius* (NMP 25447) from the early Miocene of Břešťany.

Family Ardeidae
Genus and species indeterminate
(Fig. 2)

Material: left humerus and left coracoid in a slab, both apparently from a single individual; NMP 1521a. Measurements: humerus: maximum length = 121 mm, distal width = 16.5 mm; coracoid: medial length = 52.6 mm, length of facies articularis sternalis = 15.9 mm.

Remarks: Lack of the pneumatic fossa in humerus and a narrow posterior sternal facet allows us to assign these remains to the subfamily Ardeinae (sensu Payne et Risley 1976), but the state of their

preservation makes closer identification impossible. The species was much larger than *Proardeola walkeri* Harrison, 1979 from the early Miocene (MN 2) of Saint-Gérard-le-Puy in France, in which the medial length of the coracoid = 31.9 mm (Cheneval 1984a).

Several alleged herons were described from comparably old deposits. *Ardeacites molassicus* Haushalter, 1855 from the early Miocene (MN 3) of Harbatshofen in Germany is an indeterminate bird, but not a heron (Brodkorb 1980). *Botaurites avitus* Ammon, 1918 and *Ardea brunhuberi* Ammon, 1918 from the middle Miocene (MN 7 – 8) of Dechbetten in Germany are cormorants (see above), *Ardea similis* Fraas, 1870 from the middle Miocene (MN 7) of Steinheim in Germany is a peacock (Olson 1985), and *Ardea perplexa* Milne-Edwards, 1867 from the middle Miocene (MN 6) of Sansan in France was based on indeterminate remains (Cheneval in press).

Proardeola walkeri and the indeterminate heron from Břešťany are the oldest records of true herons (Ardeinae). Other early heron records from the early Oligocene of Egypt (*Nycticorax* sp. – Rasmussen et al. 1987) and the early Miocene of Libya (*Zeltornis ginsburgi* Balouet, 1981) belong to the subfamily Nycticoracinae (sensu Payne et Risley 1976).

Order Charadriiformes Huxley, 1867
Family Scolopacidae Vigors, 1825
„*Totanus praecursor*“ Laube, 1901

Totanus praecursor Laube, 1901: 66, fig. 14.

Material: pelvic impression (in plate and counter-plate). Its whereabouts is unknown (see Mlíkovský 1992: 442 for details).

Measurements: Not available.

Remarks: Laube's (1901) fig. 14 indeed shows a pelvis generally similar to that of the Scolopacidae, but *Totanus praecursor* is best relegated to Aves incertae sedis until its holotype is found and restudied (Mlíkovský 1992).

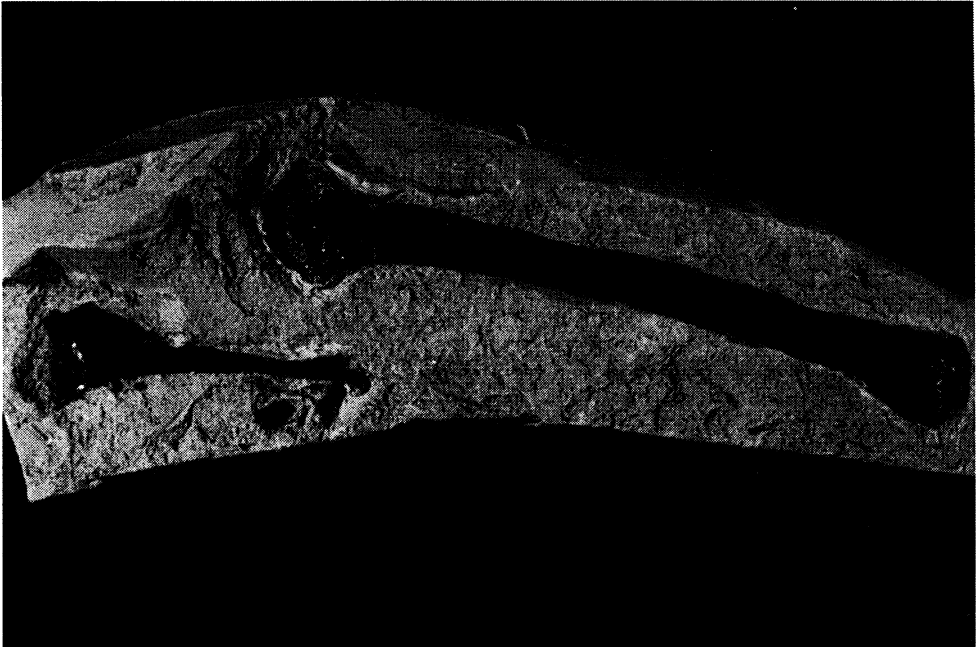


Fig. 2. Humerus and coracoid of Ardeidae indet. (NMP 1521a) from the early Miocene of Břešťany.

Břešťany yielded a small lacustrine avifauna, typical for the Orleanian (see Mlíkovský 1996b). However, the number of remains is too small to allow a more profound discussion from taphonomical, zoogeographical or ecological points of view. Nevertheless, the Břešťany site belongs to the important Orleanian paleornithological localities of Europe (see Mlíkovský 1996b).

A comparison with a slightly younger (MN 4), and paleornithologically very rich locality Dolnice, which yielded remains from the same Miocene lake, points to some interesting differences. In particular, herons and storks were recorded in Břešťany, while they are absent in Dolnice (Mlíkovský 1996a, unpub. results). The reasons for this difference are not obvious due to the small amount of remains and taxa found in Břešťany.

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RANNĚ MIOCÉNNÍ PTÁCI Z BŘEŠŤAN, ČESKÁ REPUBLIKA

Kosterní zbytky ptáků z ranně miocénní (MN 3) lokality Břešťany v SZ Čechách patří čtyřem druhům ze čtyř čeledí: Phalacrocoracidae, Ciconiidae, Ardeidae a ?Scolopacidae. *Totanus praecursor* Laube, 1901 a *Cygnus bilanicus* Laube, 1909b, kteří byli popsáni na základě kosterních zbytků z Břešťan, jsou smysluprostá jména. *Phalacrocorax anatolicus* Mourer-Chauviré, 1978 ze středního miocénu Turecka byl přefazzen do rodu *Nectornis* Cheneval, 1984.