

The early Vallesian vertebrates of Atzelsdorf (Late Miocene, Austria)

5. Aves

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(With 1 figure and 1 table)

Manuscript submitted on June 14th 2008,
the revised manuscript on October 10th 2008

This article is dedicated to my dear colleague Ortwin SCHULTZ on the occasion of his 65th birthday.

Abstract

Presented here are the only two bird remains, a fragmentary coracoid and a distal tarsometatarsus, discovered at the Atzelsdorf site (early Pannonian, Austria). Both fossils are representatives of the order Anseriformes, but they are from two different taxa. The record of *Anas* cf. *sansaniensis* from Atzelsdorf is the first record of that species outside of France, and it is stratigraphically the youngest evidence for *A. sansaniensis* to date.

Keywords: Anseriformes, *Anas sansaniensis*, waterfowl, Lake Pannon, Hollabrunn-Mistelbach Formation

Zusammenfassung

Dieser Artikel stellt die einzigen beiden Vogelreste, ein fragmentäres coracoid und einen distalen tarsometatarsus, aus der Fundstelle Atzelsdorf (unteres Pannon, Österreich) vor. Beide Fossilien repräsentieren Vertreter der Anseriformes, die aber zwei unterschiedlichen Taxa angehören. Der Fund von *Anas* cf. *sansaniensis* aus Atzelsdorf ist der erste Beleg dieser Art außerhalb von Frankreich und ist der bisher stratigraphisch jüngste Nachweis für diese Art.

Schlüsselwörter: Anseriformes, *Anas sansaniensis*, Wasservogel, Pannon See, Hollabrunn-Mistelbach Formation

Introduction

The Atzelsdorf site is an abandoned gravel pit located about 35 km NE of Vienna in Lower Austria. It is geologically situated at the western margin of the Vienna Basin. The deposits of the Atzelsdorf site belong to the Hollabrunn-Mistelbach Formation, which

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comprises deltaic deposits that were discharged by the palaeo-Danube River into Lake Pannon during the Late Miocene.

Biostratigraphic investigations (HARZHAUSER 2009, this volume) and well-log correlations point to a correspondence of the Atzelsdorf fauna with the Vienna Basin Pannonian Zone C, basal MN9, and an absolute age of about 11.2-11.1 Ma (for more details, see HARZHAUSER 2009, this volume).

Methods

The present material was discovered by G. PENZ (VIENNA) and belongs to his private collection. Casts of the specimens are housed at the Natural History Museum of Vienna (NHMW). The osteological terminology used here follows BAUMEL et al. (1993). Most of the comparative material mentioned below has been studied personally by the author.

Systematic Palaeontology

Order Anseriformes WAGLER, 1831

Family Anatidae VIGORS, 1825

Anas cf. sansaniensis MILNE-EDWARDS, 1868

(fig. 1A)

M a t e r i a l : fragmentary proximal coracoid dext. (NHMW 2008z00070/0001, colln Penz P1)

D e s c r i p t i o n : Proximal end of processus acrocoracoideus and distal coracoidal blade broken off; processus procoracoideus short, projecting medially; cotyla scapularis deeply concave and of rounded-triangular shape; lateral margin of cotyla scapularis concave; facies articularis humeralis large and shallowly concave, with laterally projecting margin.

M e a s u r e m e n t s : least width of corpus coracoidei (KC): 5.1 mm

C o m p a r i s o n s : The coracoid fragment can be identified as an anatid based on the combination of the following characters: a cotyla scapularis deeply concave and of rounded-triangular form, the processus procoracoideus short, the shape and projecting lateral margin of the facies articularis humeralis, and the shape of sulcus m. supracoracoidei, which has a barely concave lateral surface. In comparison with members of the Dendrocygninae [*Mionetta consobrina* (MILNE-EDWARDS, 1867), *M. blanchardi* (MILNE-EDWARDS, 1863), *M. natator* (MILNE-EDWARDS, 1867)] the concave sulcus m. supracoracoidei of the coracoid from Atzelsdorf is less curved, but it is more elongated. Furthermore, the coracoid is distinctly larger than that of *M. natator* and *M. blanchardi* and somewhat larger than *M. consobrina*. Based on the characters given above, the At-

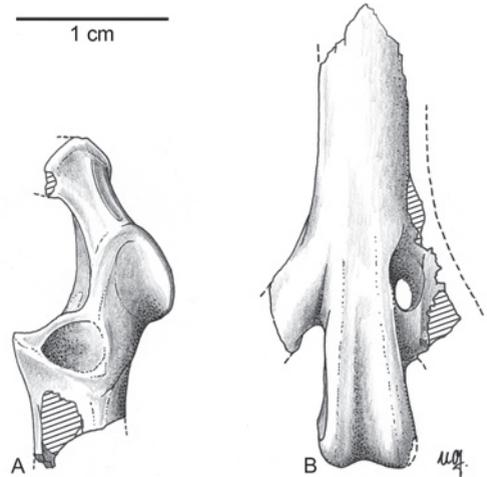


Fig. 1. Bird bones from the early Pannonian of Atzelsdorf (Austria). A: Fragmentary proximal coracoid dext. of *Anas* cf. *sansaniensis*, dorsal view. B: Fragmentary distal tarsometatarsus sin. of Anserinae indet., dorsal view.

zelsdorf coracoid corresponds well with the morphology of the members of Anatinae. It differs by its larger size from *Anas velox* MILNE-EDWARDS, 1868, *Anas eppelsheimensis* LAMBRECHT, 1933, and *Aythya chauvirae* CHENEVAL, 1987. The holotypic and only known specimen of *Anas isarensis* LAMBRECHT, 1933, from Aumeister near Munich, Germany (MN9), a scapula, was lost (searched for by author) in the bombing of the Munich collections during World War II. However, the measurement of the scapula suggests a taxon somewhat larger than that at hand. “*Anas*” *oeningensis* MEYER, 1865 from Öhningen, Germany (MN7), whose generic affiliation is unclear (MLÍKOVSKÝ 2002), lacks a coracoid, but other skeletal elements are distinctly larger than *A. sansaniensis*. The validity and diagnosis of *Anas risgoviensis* AMMON, 1918, from Lierheim near Hahnenberg, Germany (MN6), is still unclear (MLÍKOVSKÝ 2002). Anserin taxa of the Miocene from Europe are all distinctly larger than the taxon represented by the preserved coracoid.

The fragmentary coracoid from Atzelsdorf is most similar, both morphologically and metrically, to *Anas sansaniensis* (tab. 1).

Anserinae indet.

(fig. 1B)

M a t e r i a l : fragmentary distal tarsometatarsus sin. (NHMW 2008/0070/0000, colln Penz P2)

D e s c r i p t i o n : The very fragmentary distal end of the tarsometatarsus lacks the medial and lateral trochlea. The third (middle) trochlea is long and in distal view inclined medioplantarily. The medial incisura intertrochlearis ends somewhat more proximal than the lateral one. The foramen vasculare distale pierces the shaft just above the level of the medial incisura intertrochlearis. A dorsal sulcus distal to the foramen runs to the lateral incisura.

M e a s u r e m e n t s : width of third trochlea: 6.0 mm. The width of the completed distal end can be roughly estimated to be about 15 mm.

C o m p a r i s o n s : The tarsometatarsus is poorly preserved, but based on the following characters it can be identified as an anseriform: a long, slender and slightly twisted third trochlea, the position of the foramen vasculare distale, the length of the incisurae, the arrangement of the origin of the second and fourth trochlea, and the posterior position and back-offset of the second trochlea. However, the tarsometatarsus belongs to a distinctly larger taxon than the coracoid described above. Based on its size, the tarsometatarsus most probably belongs to a Miocene member of the Anserinae. However, the incomplete preservation and lack of any complete measurement prevents a more precise systematic determination.

Conclusion

The very scanty fossil bird material from Atzelsdorf represents two taxa of anseriforms. The mode of life of these waterfowl fits well with that of a wetland habitat in a braided delta system, which is what has been reconstructed for the Atzelsdorf deposits. Hitherto *Anas sansaniensis* has been known only from Sansan (MN6) and La Grive (MN7). Thus, the record at Atzelsdorf (basal MN9) is the first record outside of France, and it is the stratigraphically youngest evidence for *A. sansaniensis*, if indeed the fragmentary coracoid represents that species.

Acknowledgments

I thank G. PENZ (Vienna) and P. SCHEBECZEK (Pellendorf) for placing their Atzelsdorf fossils at our disposal, C. MOURER-CHAUVIRÉ (Université Claude Bernard, Lyon 1) for discussions and a review of the manuscript, K. CAMPBELL (Natural History Museum of Los Angeles County) for improving the English and reviewing the manuscript, and my colleagues G. DAXNER-HÖCK and M. HARZHAUSER (both NHMW) for their collaboration in this project.

Table 1. Measurements (KC: smallest width of corpus coracoidei) of some Miocene anatid taxa from Europe. All measurements by author, except for *A. eppelsheimensis* (see LAMBRECHT 1933). Type localities are indicated by an asterisk.

taxa	localities	KC (mm)
<i>Anas cf. sansaniensis</i>	Atzelsdorf	5.1
<i>Mionetta blanchardi</i>	St.-Gérand-le-Puy* (F) (MN2)	3.8-4.1
<i>Mionetta consobrina</i>	St.-Gérand-le-Puy* (F) (MN2)	4.5 (n=1)
<i>Mionetta natator</i>	St.-Gérand-le-Puy* (F) (MN2) Sandelzhausen (G) (MN5)	~3.0 (n=1) 3.1-3.4 (n=2)
<i>Anas velox</i>	Sansan* (F) (MN6)	2.9-4.0 (n=8)
<i>Anas sansaniensis</i>	Sansan* (F) (MN6) La Grive (F) (MN7)	5.4 (n=1) 4.8 (n=1)
<i>Anas eppelsheimensis</i>	Eppelsheim (G) (MN9)	3.5 (n=1)
<i>Aythya chauvirae</i>	Sansan* (F) (MN6)	3.9 (n=1)

References

- AMMON, L. VON (1918): Tertiäre Vogelreste von Regensburg und die jungmiocäne Vogelwelt. – *Abhandlungen des naturwissenschaftlichen Vereins zu Regensburg*, **12**: 1-69.
- BAUMEL, J.J., KING, A.S., BREAZILE, J.E., EVANS, H.E. & VANDEN BERGE, J.C. (1993): Handbook of avian anatomy: Nomina Anatomica Avium. – Publications of the Nuttall Ornithological Club, **23**: 779 p.
- CHENEVAL, J. (1987): Les Anatidae (Aves, Ansériformes) du Miocène de France. Révision systématique et évolution. – In: MOURER-CHAUVIRÉ, C. (ed.): *L'Évolution des Oiseaux d'après le Témoignage des Fossiles*. – Documents des Laboratoires de Géologie, Lyon, **99**: 137-157.
- HARZHAUSER, M. (2009): The early Vallesian vertebrates of Atzelsdorf (Late Miocene, Austria). 2. Geology. – *Annalen des Naturhistorischen Museums in Wien, Serie A*, **111**: 479-488.
- LAMBRECHT, K. (1933): *Handbuch der Palaeornithologie*. – 1024 p., Berlin (Borntraeger).
- MEYER, H. VON (1865): Fossile Vögel von Radoboy und Oeningen. – *Palaeontographica*, **14**: 126-131.
- MILNE-EDWARDS, A. (1867-1869): *Recherches anatomiques et paléontologiques pour servir à l'histoire des oiseaux fossiles de la France*, I: 472 p., Atlas I: pls 1-96, Paris (Victor Masson et Fils).
- (1869-1871): *Recherches anatomiques et paléontologiques pour servir à l'histoire des oiseaux fossiles de la France*, II: 627 p., Atlas II: pls 97-200, Paris (Librairie de G. Masson).
- MLÍKOVSKÝ, J. (2002): *Cenozoic birds of the world, part 1: Europe*. – 406 p., Praha (Ninox Press).
- VIGORS, N.A. (1825): Observations on the natural affinities that connect the orders and families of birds. – *Transactions of the Linnean Society of London*, **14**: 395-517.

