

SI_1 Stratigraphic Ages and Sources

Taxon	Age (Ma)	Source (full refs below)
<i>Ambiorus</i>	130	Kurochkin 2000
<i>Anas</i>	0	
<i>Apsaravis</i>	73	Dashzeveg et al 2005
<i>Archaeopteryx</i>	150	Schweigert 2007
<i>Baptornis advenus</i>	79	Martin and Tate 1976
<i>Baptornis varneri</i>	77	Martin and Cordes-Person 2007
<i>Cathayornis</i>	120	He et al. 2004
<i>Changchengornis</i>	125	Zhou 2006
<i>Chaoyangia</i>	120	He et al. 2004
<i>Chauna</i>	0	
<i>Columba</i>	0	
<i>Concornis</i>	124	Sanz et al. 1995
<i>Confuciusornis dui</i>	126	Hou et al. 1999
<i>Confuciusornis sanctus</i>	125	Zhou 2006
<i>Crax</i>	0	
<i>Crypturellus</i>	0	
<i>Didactyornis</i>	120	Gao et al. 2012
Dromaeosauridae (based on <i>Deinonychus</i> and <i>Velociraptor</i>)	115	Weishampel et al. 2004
<i>Elsornis</i>	77	Chiappe et al. 2007
<i>Enaliornis</i>	102	Elzanowski and Galton 1991
<i>Eoalulavis</i>	128	Sanz et al. 1995
<i>Eocathayornis</i>	120	He et al. 2004
<i>Eoconfuciusornis</i>	131	Zhang et al. 2008
<i>Eoenantiornis</i>	125	Zhou 2006
<i>Gallinuloides</i>	55	Dyke 2003
<i>Gallus</i>	0	
<i>Gansus</i>	120	He et al. 2004
<i>Gobipteryx</i>	72	Weishampel et al. 2004
<i>Hesperornis</i>	79	Clarke 2004
<i>Hollanda</i>	77	Bell et al. 2010
<i>Hongshanornis</i>	125	O'Connors et al. 2010
<i>Iaceornis</i>	79	Clarke 2004
<i>Ichthyornis</i>	84.5	Clarke 2004
<i>Jeholornis</i>	120	He et al. 2004
<i>Jianchangornis</i>	120	He et al. 2004
<i>Jinzhouornis</i>	125	Zhou 2006
<i>Jixiangornis</i>	125	Zhou 2006
<i>Liaoningornis</i>	125	Zhou 2006
<i>Limenavis</i>	71	Clarke and Chiappe 2001
<i>Lithornis</i>	53	Tauxe et al. 1994
<i>Longicrusavis</i>	122	O'Connor et al. 2010

<i>Longipteryx</i>	120	O'Connor et al. 2009
<i>Longirostravis</i>	122	O'Connor et al. 2009
<i>Neuquenornis</i>	85	Chiappe and Calvo 1994
<i>Otogornis</i>	123	Hou 1994
<i>Parahesperornis</i>	86	Martin 1984
<i>Patagopteryx</i>	77.05	Alvarenga and Bonaparte 1992
<i>Pengornis</i>	120.3	Zhou et al. 2008
<i>Rahonavis</i>	69	Forster et al. 1998
<i>Rapaxavis</i>	120	He et al. 2004
<i>Sapeornis</i>	120	He et al. 2004
<i>Shanweiniao</i>	122	O'Connor et al. 2009
<i>Shenqiornis</i>	122	Jin et al. 2008
<i>Shenzhouraptor</i>	120	Ji et al. 2003
<i>Songlingornis</i>	120	He et al. 2004
<i>Vegavis</i>	67	Clarke et al. 2005
<i>Vescornis</i>	122	Jin et al. 2008
<i>Vorona</i>	69	Forster et al. 2002
<i>Waimanu</i>	59	Slack et al. 2006
<i>Yanornis</i>	120	Zhou and Zhang 2001
<i>Yixianornis</i>	120.3	Zhou and Zhang 2001
<i>Zhongjianornis</i>	120	Zhou et al. 2010
<i>Zhongornis</i>	122	Gao et al. 2008

Sources:

- Alvarenga, H.M.F. and Bonaparte, J.F. 1992. A new flightless landbird from the Cretaceous of Patagonia. Los Angeles County Museum of Natural History, Science Series 36: 51-64.
- Bell, A.K., Chiappe, L.M., Erickson, G.M., Suzuki, S., Watabe, M., Barsbold, R. and Tsogtbaatar, K. 2010. Description and ecologic analysis of *Hollanda luceria*, a Late Cretaceous bird from the Gobi Desert (Mongolia). Cretaceous Research, 31(1): 16-26.
- Chiappe, L.M. and Calvo, J.O. 1994. *Neuquenornis volans*, a New Late Cretaceous Bird (Enantiornithes: Avisauridae) from Patagonia, Argentina. Journal of Vertebrate Paleontology 14 (2): 230-246.
- Chiappe, L.M., Suzuki, S., Dyke, G.J., Watabe, M., Tsogtbaatar, K. and Barsbold, R. 2007. A New Enantiornithine Bird from the Late Cretaceous of the Gobi Desert. Journal of Systematic Palaeontology 5: 193-208.
- Clarke, J.A. 2004. Morphology, phylogenetic taxonomy, and systematics of *Ichthyornis* and *Apatornis* (Avialae: Ornithurae). Bulletin of the American Museum of Natural History 286: 1-179.
- Clarke, J.A. and Chiappe, L.M. 2001. A new carinate bird from the Late Cretaceous of Patagonia (Argentina). American Museum Novitates 3323: 1-23.
- Clarke, J.A., Tambussi, C.A., Noriega, J.I., Erickson, G.M., Ketcham, R.A. 2005. Definitive fossil evidence for the extant avian radiation in the Cretaceous. Nature 433: 305-308.
- Dashzeveg, D., Dingus, L., Loope, D.B., Swisher, III, C.C., Dulam, T. and Sweeney, M.R. 2005. New stratigraphic subdivision, depositional environment, and age estimate for the Upper Cretaceous Djadokhta Formation, southern Ulan Nur Basin, Mongolia. American Museum Novitates 3498: 1-31.
- Dyke, G.J. 2003. The phylogenetic position of *Gallinuloides* Eastman (Aves: Galliformes) from the Tertiary of North America. Zootaxa 199:1-10.
- Elzanowski, A. and Galton, P. M. 1991. Braincase of *Enaliornis*, an Early Cretaceous Bird from England. Journal of Vertebrate Paleontology 11(1): 90-107.

- Forster, C.A., Chiappe, L.M., Krause, D.W. and Sampson, S.D. 2002. *Vorona berivotrensis*, a primitive bird from the Late Cretaceous of Madagascar. In: L. M. Chiappe and L. M. Witmer (eds.), Mesozoic Birds: Above the Heads of Dinosaurs. University of California Press, Berkeley 268-280.
- Forster, C.A., Sampson, S.D., Chiappe, L.M. and Krause, D.W. 1998. The theropod ancestry of birds: new evidence from the Late Cretaceous of Madagascar. *Science* 279: 1915-1919.
- Gao, C., Chiappe, L.M., Meng, Q., O'Connor, J.K., Wang, X., Cheng, X. and Liu, J. 2008. A new basal lineage of Early Cretaceous birds from China and its implications on the evolution of the avian tail. *Palaeontology* 51(4): 775-791.
- Gao, C., Chiappe, L.M., Zhang, F., Pomeroy, D.L., Shen, C., Chinsamy, A. and Walsh, M.O. 2012. A subadult specimen of the Early Cretaceous bird *Sapeornis chaoyangensis* and a taxonomic reassessment of sapeornithids. *Journal of Vertebrate Paleontology* 32(5): 1103-1112.
- He, H.Y., Wang, X.L., Zhou, Z.H., Wang, F., Boven, A., Shi, G.H. and Zhu R.X. 2004. Timing of the Jiufotang Formation (Jehol Group) in Liaoning, northeastern China, and its implications. *Geophysical Research Letters* 31(13): 1709.
- Hou, L. 1994. A late Mesozoic bird from Inner Mongolia. *Vertebrata PalAsiatica* 32(4): 258-266.
- Hou, L., Martin, L.D., Zhou, Z., Feduccia, A. and Zhang, F. 1999. A diapsid skull in a new species of the primitive bird *Confuciusornis*. *Nature* 399: 679-682.
- Ji, Q., Ji, S., Lu, J., You, H., Chen, W., Liu, Y. and Liu, Y. 2005. First avialan bird from China (*Jinfengopteryx elegans* gen. et sp. nov.). *Geological Bulletin of China* 24(3): 197-205.
- Ji, Q., Norell, M.A., Makovicky, P.J., Gao, K.-Q., Ji, S. and Yuan, C. 2003. An early ostrich dinosaur and implications for ornithomimosaur phylogeny. *American Museum Novitates* 3420: 1-19.
- Jin, F., Zhang, F. C., Li, Z. H., Zhang, J. Y., Li, C. and Zhou, Z. H. 2008. On the horizon of *Proptopteryx* and the early vertebrate fossil assemblages of the Jehol Biota. *Chinese Science Bulletin*, 53(18): 2820-2827.
- Kurochkin, E.N. 2000. Mesozoic birds of Mongolia and the former USSR. In M. J. Benton, M. A. Shishkin, D. M. Unwin & E. N. Kurochkin (eds.), *The Age of Dinosaurs in Russia and Mongolia*. Cambridge University Press, Cambridge 533-559.
- Martin, J.E. and Cordes-Person A. 2007. A new species of the diving bird *Baptornis* (Ornithurae, Hesperornithiformes) from the lower Pierre Shale Group (Upper Cretaceous) of southwestern South Dakota. *Geological Society of America Special Paper* 427: 227-237.
- Martin, L. D. and Tate, J. 1976. The skeleton of *Baptornis advenus* (Aves: Hesperornithiformes). In Olson (ed). Collected papers in avian phylogeny honoring the 90th birthday of Alexander Wetmore. *Smithsonian Contributions to Paleobiology*. 27: 35-66.
- Martin, L.D. 1984. A new hesperornithid and the relationships of the Mesozoic birds. *Transactions of the Kansas Academy of Science* 87(3/4): 141-150.
- O'Connor, J.K., Gao, K.-Q. and Chiappe, L.M. 2010. A new ornithuromorph (Aves: Ornithothoraces) bird from the Jehol Group indicative of higher-level diversity. *Journal of Vertebrate Paleontology* 30(2): 311-321.
- O'Connor, J.K., Wang, X., Chiappe, L.M., Gao, C., Meng, Q., Cheng, X. and Liu, J. 2009. Phylogenetic Support for a Specialized Clade of Cretaceous Enantiornithine Birds with Information from a New Species. *Journal of Vertebrate Paleontology* 29(1): 188-204.
- Sanz, J.L., Chiappe, L.M. and Buscalioni, A.D. 1995. The osteology of *Concornis lacustris* (Aves: Enantiornithes) from the Lower Cretaceous of Spain and a reexamination of its phylogenetic relationships. *American Museum Novitates* 3133: 1-23.
- Schweigert, G. 2007. Ammonite biostratigraphy as a tool for dating Upper Jurassic lithographic limestones from South Germany - first results and open questions. *Neues Jahrbuch für Geologie und Paläontologie - Abhandlungen* 245(1): 117-125.
- Slack, K.E., Jones, C.M., Ando, T., Harrison G.L., Fordyce R.E., Arnason, U. and Penny, D. 2006. Early Penguin Fossils, plus Mitochondrial Genomes, Calibrate Avian Evolution. *Molecular Biology and Evolution*, 23(6): 1144-1155.
- Tauxe, L., Gee, J., Gallet, Y., Pick, T. and Bown, T. 1994. Magnetostratigraphy of the Willwood Formation, Bighorn Basin, Wyoming: new constraints on the location of Paleocene/Eocene boundary. *Earth and Planetary Science Letters* 125: 159-172.
- Weishampel, D. B., Dodson, P. and Osmolska, H. (eds.), *The Dinosauria* (second edition). University of California Press, Berkeley.

- Zhang, Z., Zhou, Z. and Benton, M.J. 2008. A primitive confuciusornithid bird from China and its implications for early avian flight. *Science in China Series D: Earth Sciences* 51(5): 625-639.
- Zhou, Z-H. 2006. Evolutionary radiation of the Jehol Biota: chronological and ecological perspectives. *Geological Journal* 41: 377-393.
- Zhou, Z.-H. and Zhang, F. 2001. Two new ornithurine birds from the Early Cretaceous of western Liaoning, China. *Chinese Science Bulletin* 46(15): 1258-1264.
- Zhou, Z.J., Clarke, J.A. and Zhang, F. 2008. Insight into diversity, body size and morphological evolution from the largest Early Cretaceous enantiornithine bird. *Journal of Anatomy* 212(5): 565-577.
- Zhou, Z.J., Zhang, F. and Li., Z. 2010. A new Lower Cretaceous bird from China and tooth reduction in early avian evolution. *Proceedings of the Royal Society B* 277: 219-227.