

## A new parrot (Aves: Psittacidae) from the early Miocene of the Czech Republic

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Received April 14, 1998; accepted September 24, 1998  
Published December 28, 1998

**Abstract.** A new parrot, *Xenopsitta fejfari* gen. n. et sp. n., is described from the early Miocene (MN 3) of Merkur in the Czech Republic. It is the oldest member of the Psittacini known so far. Other taxonomic conclusions are as follows: *Archaeopsittacus verreauxii* (Milne-Edwards, 1871) from the early Miocene of France is not related to the Psittacini, and belongs in the Psittaculini. *Psittacus verreauxi* Milne-Edwards, 1870 is nomen nudum. Syntypes of *Pararallus dispar* (Milne-Edwards, 1869) from the middle Miocene of France were identified, and it was shown, that the name cannot be applied to a parrot. A summary of the Tertiary records of the Psittacidae is presented. In Europe, the scanty fossil record of the family is limited to the early and middle Miocene.

**Taxonomy, Aves, Psittacidae, *Xenopsitta fejfari* gen. n. et sp. n., Miocene, Europe**

### INTRODUCTION

Parrots (family Psittacidae) are a well defined group of small to medium sized, primarily arboreal birds, which inhabit the tropics and subtropics of the whole world (Forshaw 1977). The fossil record of parrots is extremely scarce, with very few Tertiary forms known so far (see below).

In the present paper I will describe a new parrot from the early Miocene deposits of Merkur in western Bohemia, and comment on the nomenclatural and taxonomic identity of some other Tertiary parrots. The stratigraphy follows Mein (1990). Mein's Mammal Neogene zones are abbreviated as MN. The classification of parrots follows Smith (1975).

### SYSTEMATIC PALEONTOLOGY

Order Psittaciformes Wagler, 1830

Family Psittacidae Illiger, 1811

**Genus *Xenopsitta* gen. n.**

TYPE SPECIES. *Xenopsitta fejfari* sp. n.

**DIAGNOSIS.** Small parrot with short and robust tarsometatarsus, generally resembling the tarsometatarsi of large African parrots (*Psittacus* Linnaeus, 1758, *Poicephalus* Swainson, 1837, and *Coracopsis* Wagler, 1832). Anterior-medial metatarsal groove on tarsometatarsus more broad and long, proximal end of tarsometatarsus narrower than in the latter three genera.

**COMPARISON.** The tarsometatarsus resembles the same element of large African parrots of the modern genera *Psittacus*, *Poicephalus*, and *Coracopsis* (which form the tribe Psittacini sensu Smith 1975) in its general shape, and in lacking the outer proximal foramen. It differs from the tarsometatarsus

tarsus of all these genera in having (1) proximal end more narrow antero-posteriorly, (2) antero-medial metatarsal groove more broad and long, and (3) trochlea for digit 4 differently shaped (in lateral view). The tarsometatarsus of *Xenopsitta* gen. n. differs from the same element of *Archaeopsittacus* Lambrecht, 1933 in having (1) antero-medial metatarsal groove more broad and long, and (2) in lacking perforated shaft at the insertion point of the hind toe.

The humerus of *Xenopsitta* gen. n. differs from the same element of *Poicephalus*, and agrees with that of *Psittacus* in having the attachment of anterior articular ligament short.

ETYMOLOGY. Formed from the Greek *ξένος*, strange, foreign, and *psitta*, diminutive of the Latin *psittacus*, parrot. Selected in allusion of the apparent scarcity of parrots in the Miocene of Europe. The name is feminine in gender.

REMARKS. *Xenopsitta* gen. n. is closely related to the modern genera *Psittacus*, *Poicephalus*, and *Coracopsis*, and belongs in the tribe Psittacini (sensu Smith 1975). This tribe is currently limited to the Afrotropical region. *Xenopsitta* gen. n. represents the earliest record for the tribe, and also the only record of the tribe outside of Africa.

### *Xenopsitta fejfari* sp. n.

(Fig. 1)

HOLOTYPE. Right tarsometatarsus, damaged on both ends; coll. Fejfar (Praha), uncatalogued.

MATERIAL. Right tarsometatarsus (holotype), distal part of left humerus, and proximal part of right humerus; coll. Fejfar (Praha), uncatalogued. All these bones were collected by O. Fejfar in the 1990s (his field-number 7408).

AGE AND LOCALITY. Early Miocene (MN 3) of Merkur, Cheb County, West Bohemia, Czech Republic (Fejfar & Kvaček 1993, Mlíkovský 1996a).

DIAGNOSIS. As for the genus.

MEASUREMENTS. Tarsometatarsus (holotype): length = 16–17 mm (estimated), distal width = 7.0 mm, minimum width of shaft = 2.5 mm, depth of shaft at the same place = 1.6 mm; humerus: distal width = 6.6 mm, distal depth = 4.5 mm, minimum width of shaft = 4.4 mm, depth of shaft at the same place = 2.7 mm.

ETYMOLOGY. After Oldřich Fejfar (Praha), who collected the fossil, in recognition of his paleontological work on Cenozoic mammals.

REMARKS. Previously, this parrot was provisionally listed as “*Archaeopsittacus*” by Mlíkovský (1996a, b).

### COMMENTS ON SOME OTHER FOSSIL PARROTS

The previously known Tertiary record of the family Psittacidae was limited to the early Miocene of Queensland in Australia (Boles 1993), early Miocene of France (Milne-Edwards 1869, Lambrecht 1933), early Miocene of Nebraska (Wetmore 1926), middle Miocene of France (Cheneval in press), and Germany (Heizmann & Hesse 1995), and late Pliocene of Kansas (Becker 1987). An alleged record was reported also from the early Eocene of England (Harrison 1982). Below, I will comment on some of these taxa.

### *Archaeopsittacus verreauxii* (Milne-Edwards, 1871)

The first Tertiary parrot ever described was *Psittacus verreauxii* from the early Miocene (MN 2a) of Saint-Gérand-le-Puy in France. Milne-Edwards (1871: 525), Lydekker (1891: 12), Paris (1912: 286), Lambrecht (1921: 88, 1933: 609), Brodkorb (1971: 210), and Bocheński (1997: 319) stated, that the species was described by Milne-Edwards (1870: 558; page 557 erroneously given by Brodkorb).

The name indeed appears in that work and on that page, but there is no description or indication of the species in that paper. Hence *Psittacus verreauxii* Milne-Edwards, 1870 is nomen nudum, and the name must be credited to Milne-Edwards (1871: 525). The holotype of the species is a tarsometatarsus, figured by Milne-Edwards (1871, pl. 200, fig. 1–6), and probably deposited in the Muséum National d'Histoire Naturelle in Paris, France.

Milne-Edwards (1871) observed, that the holotypical tarsometatarsus of *Psittacus verreauxii* is more similar to the same element of larger African parrots (Psittacini sensu Smith 1975), than to the same element of American parrots (Arini sensu Smith 1975). While the bird indeed seems to belong to the group of the Old World parrots (New World parrots seem to be distinct within the family – Smith 1975), its tarsometatarsus significantly differs from the same bone of the Psittacini (*Psittacus*, *Poicephalus*, *Coracopsis*), Cacatuini (*Cacatua* Viellot, 1817), and Platycercini (*Platycercus* Vigors, 1825, *Psephotus* Gould, 1845) in possessing the outer proximal foramen. In the latter character, *Psittacus verreauxii* agrees with the Loriini (*Eos* Wagler, 1832, *Trichoglossus* Vigors et Horsfield, 1826), and Psittaculini (*Agapornis* Selby, 1836, *Alisterus* Mathews, 1911).

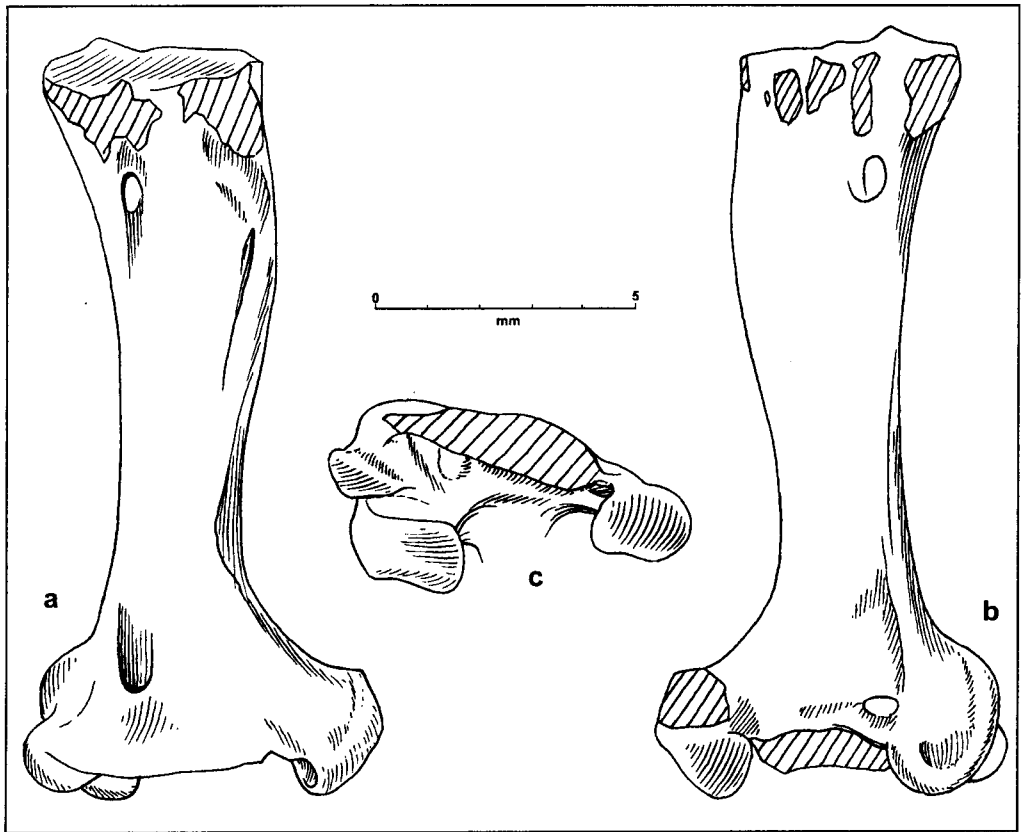


Fig. 1. Holotypical tarsometatarsus of *Xenopsitta fejfari* gen. n. et sp. n. (Aves: Psittacidae) from the early Miocene of Merkur in the Czech Republic. a – anconal view, b – plantar view, c – distal view.

The tarsometatarsus of *Psittacus verreauxi* differs from the Loriini in having hypotarsus with free calcaneal ridges. In all studied members of the Loriini (see Appendix), hypotarsus is highly modified, and forms a single bony ring (in proximal view). I found similar condition also in some Old World genera of parrots, placed by Smith (1975) in other tribes, particularly in *Melopsittacus* Gould, 1840, *Eunymphicus* Peters, 1937, and *Cyanoramphus* Bonaparte, 1854 (Platyercini), *Nymphicus* Wagler, 1832 (Cacatuini), *Psittrichas* Lesson, 1831 (Psittrichasini), *Loriculus* Blyth, 1850, *Agapornis*, and *Bolbopsittacus* Salvadori, 1891 (Psittaculini), and also in all New World parrots (Arini – see Appendix). Ring-shaped hypotarsus was also almost formed in *Psittaculirostris* Gray et Gray, 1859 (Psittaculirostrini), *Micropsitta* Lesson, 1831 (Micropsittini), and in *Psittinus* Blyth, 1842 (Psittaculini). This condition was rather similar in these three less known genera, which may indicate, that they are closer related to each other, than previously assumed. All other genera of Old World parrots, listed in Appendix, had ridged hypotarsus, although the ridges tented to be cooified to some degree.

Summarizing this evidence, it is probable, that *Psittacus verreauxi* belongs in the Psittaculini. Until the taxonomic position of this parrot within the tribe is solved, the bird should be placed in the monotypic genus *Archaeopsittacus*, created by Lambrecht (1933: 609).

### ***Pararallus dispar* (Milne-Edwards, 1869)**

Milne-Edwards (1869: 155) described from the middle Miocene (MN 6) of Sansan in France under the name *Rallus dispar* a rail species, to which he assigned four bones: proximal part of a tarsometatarsus (his pl. 105, fig. 17–21), distal part of a tarsometatarsus (pl. 105, fig. 17–20, 22), distal part of a tibiotarsus (pl. 105, fig. 27–30), and distal part of a humerus (pl. 105, fig. 23–26; also figured in Cracraft 1973, fig. 15A, B). Lambrecht (1933: 466), Brodkorb (1967: 120), and Cracraft (1973: 33) believed, that these bones form a syntypical series. This led Cracraft (1973: 120) to select the partial humerus (Muséum National d'Histoire Naturelle, Paris, Sa 1201) as the lectotype of the species.

Nevertheless, Milne-Edwards (1869) based his *Rallus dispar* solely on the two tarsometatarsal fragments (as correctly observed already by Lydekker 1891: 144), while he just assigned the other two fragments to the species. Hence, the partial humerus cannot be selected as a lectotype of *Rallus dispar*, and Cracraft's (1973) action is thus not valid from the point of view of the zoological nomenclature (ICZN 1985). Milne-Edwards (1869–1871) apparently believed, that the two tarsometatarsal fragments originated from a single bone. However, Lambrecht (1933: 466) observed, that the distal portion is from the right side of the body, while the proximal end is from the left side of the body. This certainly applies to the figures in Milne-Edwards (1869), but there is no evidence, that one of the figures was not side-reversed by the draughtsman. At least, this seems to apply to the "lectotypical" humerus fragment. The stereo-photograph in Cracraft (1973, fig. 15A,B) shows a left humerus (as correctly stated by Cracraft), while the figure in Milne-Edwards (1869–1871, pl. 105, fig. 22–26) shows a right humerus. Morphological details allow to conclude, that all these figures were based on a single specimen. Without respect to this, it is obvious that no evidence is available that the two tarsometatarsal fragments, upon which Milne-Edwards (1869) based *Rallus dispar*, originated from a single bone. Hence, these two fragments should be deemed to be the syntypes of *Rallus dispar* Milne-Edwards, 1869.

Cheneval (in press) observed, that the supposedly lectotypical fragment of humerus does not belong to a rail (family Rallidae), but to a parrot (family Psittacidae). In belief, that this bone is the name-bearer of *Rallus dispar*, he moved the species from the Rallidae to the Psittacidae. The same applies to the genus *Pararallus*, created by Lambrecht (1933: 466) for *Rallus dispar* Milne-Edwards, 1869 (see also Cheneval 1996). This information was accepted by Mlíkovský (1996b). While

a parrot indeed did exist in Sansan, neither the species name *Rallus dispar* Milne-Edwards, 1869, nor the genus name *Pararallus* Lambrecht, 1933 can be applied to it. The form thus remains unnamed. During the last minutes of proof-reading, Mlíkovský (in Mlíkovský & Hesse 1996) erroneously extended the supposed parrot affinities of *Pararallus* to *Pararallus hassenkampii* Martini, 1967 from the early Oligocene of Sieblos in Germany. While the affinities of the latter species are not clear, the remains certainly did not belong to a parrot. There is no evidence, that a parrot was found in Sieblos.

### *Palaeopsittacus georgei* Harrison, 1982

Harrison (1982: 205) described from the early Eocene of Walton-on-the-Naze in England a new species of a bird, considered by himself to be the earliest parrot. Olson (1985) questioned the referral of this species to the Psittacidae, and Mourer-Chauviré (1992) transferred it to the Quercypsittidae, created by herself for *Quercypsitta* Mourer-Chauviré, 1992 from the late Eocene of La Bouffie in France. According to my restudy of available illustrations, *Quercypsitta* shows many similarities to the Sandcoleidae Houde et Olson, 1992 from the middle Eocene of Wyoming. Generally, the fossils show a mixture of characters of the Psittacidae and the Coliidae. Whether they were primitive parrots (Mourer-Chauviré 1992), or their similarities to parrots are a result of convergent evolution (Houde & Olson 1992), these birds certainly did not belong in the family Psittacidae.

### DISCUSSION

The earliest true parrots were found in the early Miocene of Australia (Boles 1995), Europe (Milne-Edwards 1871, Mlíkovský this paper), and North America (Wetmore 1926). Considering Smith's (1975) classification of the Psittacidae, this record applies to four tribes, incl. the Cacatuini (Australia), Psittacini (Europe), Psittaculini (Europe), and Arini (North America). This means, that parrots were already widespread and diversified in the early Miocene, but the data have little bearing on the phylogenetic history of the family.

In Europe, the Psittacidae were recorded from the early Miocene (MN 2a) of Saint-Gérand-le-Puy in France (*Archaeopsittacus verreauxii*; Milne-Edwards 1871, Mlíkovský this paper), in the early Miocene (MN 3) of Merkur in the Czech Republic (*Xenopsitta fejfari* gen. n. et sp. n.), in the middle Miocene (MN 6) of Sansan in France (unnamed form; Cheneval in press, Mlíkovský this paper), in the middle Miocene (MN 6) of Nördlinger Ries in Germany (unnamed form; Heizmann & Hesse 1995), and in the middle Miocene (MN 7) of Steinheim in Germany (unnamed form; Heizmann & Hesse 1995). There is no evidence for the existence of parrots in Europe in the late Miocene and Pliocene (Mlíkovský 1996b).

### Acknowledgements

Oldřich Fejfar (Praha) and Zdeněk Dvořák (Bílina, Czech Republic) placed the fossils from Merkur at my disposal. Storrs L. Olson (Washington, D. C.) allowed me to use the comparative collection of avian skeletons under his care. The drawings were kindly prepared by Oldřich Fejfar. I am obliged to all of the named persons. This work was largely done, when I was short-term fellow of the Smithsonian Institution in Washington, D. C., in January/February 1997.

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## APPENDIX

### List of examined species

Skeletons of modern parrots were studied in the collections of the United States National Museum in Washington, D. C., and in the author's collection in Praha. In the following list, the supraspecific classification follows Smith (1975). Representatives of all tribes were available for study. Usually, only one specimen per species was examined. Higher numbers are given in parentheses.

Platyercini: *Melopsittacus undulatus* (Shaw, 1805), *Neophema elegans* (Gould, 1837), *N. pulchella* (Shaw, 1792) (2), *N. splendida* (Gould, 1841), *Eunymphicus cornutus* (Gmelin, 1788) (2), *Cyanoramphus novaezealandiae* (Sparman, 1787), *Purpureicephalus spurius* (Kuhl, 1820), *Psephotus varius* Clark, 1910, *Northiella haematogaster* (Gould, 1838), *Barnardius barnardi* (Vigors & Horsfield, 1827), *Platyercus adscitus* (Latham, 1790), *P. eximius* (Shaw, 1792).

Cacatuini: *Nymphicus hollandicus* (Kerr, 1792) (2), *Callocephalon fimbriatum* (Grant, 1803), *Cacatua alba* (Mueller, 1776), *C. galerita* (Latham, 1790), *C. sulphurea* (Gmelin, 1788), *C. sanguinea* (Gould, 1843), *C. leadbeateri* (Vigors, 1831), *C. roseicapilla* (Vicillot, 1817), *Calyptorhynchus magnificus* (Shaw, 1790), *Probosciger aterrimus* (Gmelin, 1788) (3).

Nestorini: *Nestor meridionalis* (Gmelin, 1788), *N. notabilis* (Gould, 1856).

Strigopini: *Strigops habroptilus* Gray, 1845.

Psittrichasini: *Psittrichas fulgidus* (Lesson, 1830).

Loriini: *Oreopsittacus arfaki* (Meyer, 1874), *Chamosyna papou* (Scopoli, 1786), *Vini australis* (Gmelin, 1789), *V. stephensi* (North, 1908), *Lorius albinuchus* (Rothschild & Hartert, 1924), *L. lory* (Linnaeus, 1758), *L. garrulus* (Linnaeus, 1758), *Eos squamata* (Boddacrt, 1783), *Chalcopsitta atra* (Scopoli, 1786), *Trichoglossus haematodus* (Linnaeus, 1771), *T. rubiginosus* (Bonaparte, 1850).

Psittaculirostrini: *Psittaculirostris edwardsi* (Oustalct, 1885).

Micropsittini: *Micropsitta fischeri* (Ramsay, 1881).

Psittaculini: *Loriculus galgulus* (Linnaeus, 1758), *L. philippensis* (Müller, 1776), *Agapornis taranta* (Stanley, 1814), *A. roseicollis* (Vicillot, 1818), *A. fischeri* Reichcnow, 1887, *A. swinderiana* (Kuhl, 1820), *A. cana* (Gmelin, 1788), *Aprosmictus erythropterus* (Gould, 1865), *Alisterus scapularis* (Licchtenstein, 1818), *Polytelis swainsonii* (Desmarest, 1826) (2), *P. anthopeplus* (Lear, 1831), *Prosopiea tabuensis* (Gmelin, 1788), *Geoffroyus geoffroyi* (Bechstein, 1811), *Eclectus roratus* (Mueller, 1776) (2), *Bolbopsittacus lunulatus* (Scopoli, 1786), *Psittinus cyanurus* (Forster, 1795), *Prioniturus montanus* Ogilvic-Grant, 1895, *Tanygnathus megalorhynchus* (Boddacrt, 1783), *T. lucionensis* (Linnaeus, 1766), *Psittacula eupatria* (Linnaeus, 1766), *P. krameri* (Scopoli, 1769).

Psittacini: *Psittacus erithacus* Linnaeus, 1758 (3), *Coracopsis vasa* (Shaw, 1812), *C. nigra* (Linnaeus, 1758), *Poicephalus senegalus* (Linnaeus, 1766) (2), *P. meyeri* (Cretzschmar, 1827) (2), *P. robustus* (Gmelin, 1788), *P. gulielmi* (Jardinc, 1849).

Arini: *Bolborhynchus lineola* (Cassin, 1853) (2), *Forpus coelestis* (Lesson, 1847), *F. cyanopygius* (Souancé, 1856), *Brotogeris jugularis* (Mueller, 1776), *B. versicolorus* (Mueller, 1776), *Nannopsittaca panychlora* (Salvin & Godman, 1870), *Touit dilectissima* (Sclater & Salvin, 1870), *Pionopsitta haematotis* (Sclater & Salvin, 1860), *Graydidascalus brachyurus* (Kuhl, 1820), *Pionus maximiliani* (Kuhl, 1820), *P. menstruus* (Linnaeus, 1766), *Amazona leucocephala* (Linnaeus, 1758), *A. farinosa* (Boddacrt, 1783) (2), *A. guildingi* (Vigors, 1837), *Triclarina malachitacea* (Spix, 1824), *Pionites leucogaster* (Kuhl, 1820), *Deropytus accipitrinus* (Linnaeus, 1758), *Myiopsitta monachus* (Boddacrt, 1783), *Cyanoliseus patagonus* (Vicillot, 1817), *Microsittace ferruginea* (Mueller, 1776), *Pyrrhura hoffmanni* (Cabanis, 1861), *P. rhodogaster* (Sclater, 1864), *Ognorhynchus icterotis* (Masséna & Souancé, 1834), *Rhynchopsitta pachyrhyncha* (Swainson, 1827), *Conuropsis carolinensis* (Linnaeus, 1758), *Nandayus nanday* (Vicillot, 1823), *Aratinga holochroa* (Sclater, 1859), *A. guarouba* (Gmelin, 1788), *A. euops* (Wagler, 1832), *Ara nobilis* (Linnaeus, 1758), *A. maracana* (Vicillot, 1816), *A. macao* (Linnaeus, 1758), *A. militaris* (Linnaeus, 1766), *A. ararauna* (Linnaeus, 1758), *A. spixi* (Wagler, 1832), *Anodorhynchus hyacinthinus* (Latham, 1790).

## Erratum

In an article by J. Mlíkovský (Early Pleistocene birds of Deutsch-Altenburg, Austria. *Acta Soc. Zool. Bohem.* 62: 135–141, 1998) a right carpometacarpus from Deutsch-Altenburg 4B was erroneously listed as belonging to *Palaeocryptonyx donnezani*. In fact, the bone belongs to *Perdix perdix*. By this, the overall number of bird species from Deutsch-Altenburg is increased to 15, and the minimum number of individuals from Deutsch-Altenburg 4B to 22. Proportion of MNI's in the Table 1 in Mlíkovský (1998) must be changed accordingly. The carpometacarpus of *Perdix perdix* was originally identified as belonging to *Francolinus caepki* by Jánossy (1981), and remains unfigured.