



EARLY MIOCENE QUAILS (AVES: PHASIANIDAE) FROM SAINT-GÉRAND-LE-PUY, FRANCE

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A b s t r a c t: Skeletal remains of the family Phasianidae from the early Miocene (MN 2a) of Saint-Gérard-le-Puy in France were restudied with the following results: *Palaeortyx brevipes* MILNE-EDWARDS, 1869 was synonymized with *Palaeortyx gallica* MILNE-EDWARDS, 1869 and *Palaeortyx phasianoides* MILNE-EDWARDS, 1869 was transferred from the Phasianidae to the Anatidae, where it was synonymized with *Mionetta blanchardi* (MILNE-EDWARDS, 1863). In addition, *Palaeortyx intermedia* BALLMANN, 1969b was synonymized with *Palaeortyx longipes* MILNE-EDWARDS, 1869. Two quail species, *Palaeortyx gallica* MILNE-EDWARDS, and *Palaeortyx longipes* MILNE-EDWARDS are known from Saint-Gérard-le-Puy.

■ Aves, Phasianidae, Miocene, France

INTRODUCTION

The early Miocene (MN 2a) locality Saint-Gérard-le-Puy in France yielded a few tens of thousands avian bones (see Cheneval 1984, 1989). Most of the bones belong to aquatic or wetland birds, terrestrial and arboreal birds being in minority. Milne-Edwards (1869-1871) identified 35 of these bones as belonging to quails (family Phasianidae). He believed to discern three size classes of these bones, which he interpreted as species, giving them the following names: *Palaeortyx brevipes* MILNE-EDWARDS, 1869 (smallest), *Palaeortyx gallica* MILNE-EDWARDS, 1869 (middle-sized), and *Palaeortyx phasianoides* MILNE-EDWARDS, 1869 (largest).

My restudy of the bones showed that five of the bones, incl. both syntypes of *Palaeortyx phasianoides*, do not belong to the Phasianidae and that *Palaeortyx gallica* and *Palaeortyx brevipes* are inseparable from each other.

The material is deposited in the Laboratoire de Paléontologie, Muséum National d'Histoire Naturelle in Paris (MNHN). Stratigraphical divisioning of the European Neogene and Paleogene follows Mein (1990) and Schmidt-Kittler (1987), respectively. Details on the mentioned localities can be found in Mlíkovský (1996).

Order Galliformes LINNAEUS, 1758

Family Phasianidae HORSFIELD, 1821

Genus *Palaeortyx* MILNE-EDWARDS, 1869

Palaeortyx gallica MILNE-EDWARDS, 1869

Palaeortyx gallica MILNE-EDWARDS, 1869: 230

Palaeortyx brevipes MILNE-EDWARDS, 1869: 235

Palaeortyx ocyptera MILNE-EDWARDS, 1892: 71

Rallus dasypus MILNE-EDWARDS, 1892: 73

Querquyrallus dasypus (MILNE-EDWARDS): Lambrecht 1933: 461 (new combination)

Taoperdix gallica (MILNE-EDWARDS): Brodkorb 1964: 301 (new combination)

Taoperdix brevipes (MILNE-EDWARDS): Brodkorb 1964: 301 (new combination)

Material 1 (syntypes of *Palaeortyx gallica*): Lectotype (here selected): right humerus; Av-2875. Figured by Milne-Edwards 1869-1871, pl. 129, fig. 25-29. Paralectotypes: left coracoid (Av-2873), proximal end of left humerus (Av-2876), distal end of left humerus (Av-2874), 2 right ulnae (Av-2878, Av-2879), left femur (Av-2886), right femur (Av-2887), right femur (Av-2888), right tibiotarsus (Av-2890), proximal end of right tibiotarsus (Av-2893), distal ends of 3 left tibiotarsi (Av-2889, Av-2891, Av-2892), and right tarsometatarsus (Av-2894). Figured by Milne-Edwards 1869-1871, pl. 128 and pl. 129, fig. 1-24. Assuming consecutive numbering of the material, the following specimens are missing from the collection: Av-2877 and 2880-2885.

Material 2 (syntypes of *Palaeortyx brevipes*): Lectotype (here selected): right humerus; Av-2898. Figured by Milne-Edwards 1869-1871, pl. 130, fig. 12-13. Paralectotypes: left coracoid (Av-2897), right humerus (Av-2901), proximal end of right humerus (Av-2899), shaft of right humerus (Av-2900), right ulna (Av-2902), another ulna (Av-2903 – absent from the collections in June 1999), left femur (Av-2908), 2 right femora (Av-2906, Av-2907), proximal end of right femur (Av-2905), right tibiotarsus (Av-2909), another tibiotarsus (Av-2910 – absent from the collections in June 1999), and right tarsometatarsus (Av-2911). Figured by Milne-Edwards 1869-1871, pl. 130, fig. 1-21. Assuming consecutive numbering of the bones, unidentified specimen Av-2904 was missing from the MNHN collections in June 1999.

Material 3 (later collections, unnumbered): left coracoid, left humerus, left ulna and left femur. This material is deposited in boxes with etiquettes „*Palaeortyx brevipes*“ (coracoid, humerus, ulna), „*Palaeortyx gallicus*“ (femur).

Comments: The syntypical coracoid Av-2873 is too large for *gallica*, belonging instead to a larger *Palaeortyx* species (see below). Both syntypical ulnae of *Palaeortyx gallica* differ from the Phasianidae in having shaft not flattened, external cotyla large and protruding, and shaft straighter. They probably belong to the Psittacidae (Ballmann 1969). The proximal end of right tibiotarsus Av-2893, which belongs to the syntypes of *Palaeortyx gallica*, originated from a subadult individual and differs from the tibiotarsi of the Phasianidae in shape, being much similar to the same element of the probable stercorariid (see Olson 1985: 180) „*Larus*“ *desnoyersii* MILNE-EDWARDS, 1863, which is abundantly represented in Saint-Gérard-le-Puy (Mlíkovský, pers. observation).

Measurements: See Table 1.

Taxonomy: *Palaeortyx ocyptera* MILNE-EDWARDS and *Rallus dasypus* MILNE-EDWARDS were synonymized with *Palaeortyx gallica* MILNE-EDWARDS by Mourer-Chauviré (1992). The latter author described *Palaeortyx* quails from the Oligocene of Quercy, distinguishing between *Palaeortyx gallica* and *Palaeortyx brevipes*. My restudy of the syntypes of these two alleged species from their typical locality (Saint-Gérard-le-Puy) showed that the size differences are too small to support specific distinctness of these two taxa (see Table 1). Accordingly, I synonymize here *Palaeortyx brevipes* MILNE-EDWARDS, 1869 with *Palaeortyx gallica* MILNE-EDWARDS, 1869. I select the latter name as the first reviewer.

***Palaeortyx longipes* MILNE-EDWARDS**

Palaeoperdix longipes MILNE-EDWARDS, 1869: 245

Palaeortyx? *intermedia* BALLMANN, 1969b: 33.

Material 1 („*Palaeortyx gallica*“): left coracoid (Av-2873).

Material 2 („voisin des Gallinacés“): two right humeri (Av-2913, Av-2916) and two left humeri (Av-2912, Av-2914).

Material 3 („Gallinacé“): left coracoid (unnumbered).

Comments: Milne-Edwards (1869-1871) did not describe this species from Saint-Gérard-le-Puy, but correctly separated four humeri of this species as „Voisin des Gallinacés“. Ballmann (1969) synonymized *Palaeortyx longipes* MILNE-EDWARDS from the middle Miocene (MN 6) of Sansan in France with *Palaeortyx phasianoides* MILNE-EDWARDS, which was based on non-phasianid material (see below). Moreover, the measurement of the holotype (proximal width of tarsometatarsus = 8.0 mm according to Milne-Edwards 1869) shows that the bone corresponds in size to the same element of *Palaeortyx intermedia* BALLMANN. Accordingly, I synonymize here *Palaeortyx intermedia* BALLMANN, 1969a with *Palaeortyx* [= *Palaeortyx*] *longipes* MILNE-EDWARDS, 1869.

Taxonomic identity of *Palaeortyx phasianoides* MILNE-EDWARDS

Palaeortyx phasianoides was described by Milne-Edwards (1869: 237) on the basis of the shaft of right humerus (Av-2896) and the cranial end of right scapula (Av-2895) from Saint-Gérard-le-Puy. I select here the humeral shaft as the lectotype of the species, because it is more diagnostic. It differs from the same element of the Phasianidae in being less flattened medio-laterally and in having sharp longitudinal ridge on its medial side. The paralectotypical fragment of scapula is too small to belong to the same species as the lectotypical humerus and its taxonomic identity remains unresolved at present. The elements are figured by Milne-Edwards (1869-1871, pl. 130, figs. 22-27).

The shape of the lectotypical humerus shaft is strange and the solution of the taxonomic identity of *Palaeortyx phasianoides* would hardly be possible without coincidence. While checking avian bones from Saint-Gérard-le-Puy in the Hofstetter's collection (in MNHN), which was available neither to Milne-Edwards (1863, 1867-1868, 1869-1871) nor to Cheneval (1983, 1984), I discovered a pathological humerus evidently belonging to *Mionetta blanchardi* (MILNE-EDWARDS, 1863), one of the most common avian species in Saint-Gérard-le-Puy (Cheneval 1983, 1984, Mlíkovský pers. observation). The humerus differed from normal humerus of this species in being pneumatic. Accordingly, the shaft of the humerus was more swollen than in normal humeri of *Mionetta blanchardi* and its proximal epiphysis was morphologically rearranged around the air sack. The lectotypical humeral shaft of *Palaeortyx phasianoides* agrees in all the observable details with the shaft of the pathological (pneumatic) humerus of *Mionetta blanchardi*. Accordingly, I synonymize here *Palaeortyx phasianoides* MILNE-EDWARDS, 1869 with *Anas* [= *Mionetta*] *blanchardi* MILNE-EDWARDS, 1863.

DISCUSSION

The Phasianidae are represented in the early Miocene (MN 2a) deposits of Saint-Gérard-le-Puy by two species, *Palaeortyx gallica* MILNE-EDWARDS, and *Palaeortyx longipes* MILNE-EDWARDS. The oldest record of *Palaeortyx gallica* is known from the middle Oligocene (MP 25) of Belgarric 1, France (Mourer-Chauviré 1992). *Palaeortyx longipes* has its oldest record from the late Oligocene (MP 28) of Pech Desse and Pech Fraysse, France, where it coexisted with *Palaeortyx gallica* (Mourer-Chauviré 1992). This indicates the speciation pattern within the genus. The smaller *Palaeortyx gallica* existed first (at least since MP 25). Later, at least in MP 28, a larger species (*Palaeortyx longipes*) branched off the lineage of *Palaeortyx gallica*.

It would be to early to speculate about the further fate of *Palaeortyx* quails in the Miocene. Too many small phasianid species potentially belonging to this genus were described from the middle and late Miocene of France (Milne-Edwards 1869, Depéret 1887, Lydekker 1893, Ennouchi 1930, Gaillard 1939, Ballmann 1969a), Spain (Villalta 1963), Germany (Ballmann 1969b) and Hungary (Jánossy 1991), all of which are in need of revision. The discussion of their taxonomic identity would go beyond the scope of this paper, but none of the names seems to endanger nomenclatural priority of the names applied here to the *Palaeortyx* quails of Saint-Gérard-le-Puy.

Tab. 1. Measurements of bones of *Palaeortyx gallica* from the early Miocene of Saint-Gérard-le-Puy, France. All measurements are in mm.

Bone	Number	Length	Proximal width	Distal width
Coracoid	2897	25.3 ¹	7.2 ²	
Coracoid	—	25.8 ¹	8.7 ²	
Humerus ³	2875	42.1	11.2	8.3
Humerus	2876		11.4	
Humerus	2874			8.5
Humerus ⁴	2898	36.1	9.7	7.4
Humerus	2899		8.3	
Humerus	2901	35.8	9.0	7.1
Humerus	—	37.4	9.6	7.6
Ulna	2902	38.5	6.9	5.0
Ulna	—	33.8	6.3	4.8
Femur	2886	41.7	6.8	7.0
Femur	2888	39.1		6.2
Femur	2906	33.0	6.1	5.6
Femur	2907	31.8	5.6	5.2
Femur	2908	33.7	5.1	5.3
Femur	—	42.1	8.0	6.7
Tibiotarsus	2889			5.4
Tibiotarsus	2890	58.7	6.1	5.3
Tibiotarsus	2891			5.2
Tibiotarsus	2892			6.1
Tibiotarsus	2909	49.8	5.4	4.7
Tarsometatarsus	2911	27.3	5.0	5.5+

¹External length, ²Distance between distal end of glenoid facet and proximal end, ³Lectotype of *Palaeortyx gallica*, ⁴Lectotype of *Palaeortyx brevipes*.

Tab. 2. Measurements of bones of *Palaeortyx longipes* MILNE-EDWARDS from Saint-Gérard-le-Puy, France. All measurements are in mm.

Bone	Number	Length	Proximal width	Distal width
Coracoid	2873	31.9 ¹	10.0 ²	
Coracoid	–	39.6 ¹	12.7 ²	
Humerus	2912	53.3		11.2
Humerus	2913	50.3	13.8	10.4
Humerus	2914	51.9	14.7	11.3
Humerus	2916	55.4	15.6	

¹External length, ²Distance between distal end of glenoid facet and proximal end.

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REFERENCES

- Ballmann P. (1969a): Les oiseaux miocènes de La Grive-Saint-Alban (Isère). *Géobios* 2: 157-204.
- Ballmann, P. (1969b): Die Vögel aus der altburdigalen Spaltenfüllung von Wintershof (West) bei Eichstätt in Bayern. – *Zitteliana* 1: 5-61.
- Ballmann, P. (1972): Les oiseaux miocènes de Vieux-Collonges (Rhône). – Documents du Laboratoire de Géologie de la Faculté des Sciences de Lyon 50: 93-101.
- Brodkorb, P. (1964): Catalogue of fossil birds: Part 2 (Anseriformes through Galliformes). – Bulletin of the Florida State Museum, Biological Sciences 8: 195-335.
- Cheneval, J. (1983): Les Anatidae (Aves, Anseriformes) du gisement aquitain de Saint-Gérard-le-Puy (Allier, France). – In: Buffeteaut E., Mazin J.M. & Salmon E. (Eds.), Actes du symposium paléontologique Georges Cuvier. – Montbéliard: Ville de Montbéliard, pp. 85-98.
- Cheneval, J. (1984): Les oiseaux aquatiques (Gaviiformes à Anseriformes) du gisement aquitain de Saint-Gérard-le-Puy (Allier, France): révision systématique. – *Palaeovertebrata* 14: 33-115.
- Cheneval, J. (1989): Fossil bird study, and paleoecological consequences: example from the Saint-Gérard-le-Puy deposits (Lower Miocene, Allier, France). – *Palaeogeography, Palaeoclimatology, Palaeoecology* 73: 295-309.
- Cheneval, J., Adrover, R., 1993: L'avifaune du Miocène supérieur d'Aljezar B (Los Aljezars, Province de Teruel, Espagne). *Systématique et paléoécologie*. – *Paleontologia i Evolució* 26/27: 133-144.
- Depéret, C., 1887: Recherches sur la succession des faunes des vertébrés miocènes de la vallée du Rhône. *Archives du Museum d'Histoire Naturelle de Lyon* 4: 45-319.
- Ennouchi, E., 1930: Contribution à l'étude de la faune du Tortonien de La Grive-Saint-Alban (Isère). Paris: Presses Modernes, 135 pp.
- Gaillard, C., 1939: Contribution à l'étude des oiseaux fossiles. *Nouvelles Archives du Museum de Lyon* 15(2): 1-100.
- Jánossy, D., 1991: Late Miocene bird remains from Polgárdi (W-Hungary). *Aquila* 98: 13-35.
- Lambrecht, K. (1933): *Handbuch der Palaeornithologie*. – Berlin: Gebrüder Borntraeger, 1024 pp.
- Lydekker, R., 1893: On some bird-bones from the Miocene of Grive-St-Alban, Department of Isere, France. *Proceedings of the Zoological Society of London* 1893: 517-522.
- Mein, P. (1990): Updating of MN zones. – In: Lindsay E.H., Fahlbusch V. & Mein P. (eds.): *European Neogene mammal chronology*. – New York: Plenum Press, pp. 73-90.

- Milne-Edwards, A. (1863): Mémoire sur la distribution géologique des oiseaux fossiles et description de quelques espèces nouvelles. – Annales des Sciences Naturelles (4) 20: 132-176.
- Milne-Edwards, A. (1867-1868): Recherches anatomiques et paléontologiques pour servir à l'histoire des oiseaux fossiles de la France. Vol. 1. – Paris: Victor Masson et Fils, 472 pp. + 96 pls.
- Milne-Edwards, A. (1869-1871): Recherches anatomiques et paléontologiques pour servir à l'histoire des oiseaux fossiles de la France. Vol. 2. – Paris: G. Masson, 627 pp. + pls. 97-200.
- Milne-Edwards, A. (1892): Sur les oiseaux fossiles des dépôts éocènes de phosphate de chaux du Sud de la France. – In: Comptes Rendus du Second Congrès Ornithologique International, Budapest, pp. 60-80.
- Mlíkovský, J. (Ed.; 1996): Tertiary avian localities of Europe. – Acta Universitatis Carolinae, Geologica 39: 517-848.
- Mourer-Chauviré, C. (1992): Les Galliformes (Aves) of Phosphorites du Quercy (France). Systematics and Biostratigraphy. – In: Campbell K.E. (ed.): Papers in avian paleontology honoring Pierce Brodkorb. Natural History Museum of Los Angeles County. Science Series 36: 37-95.
- Olson, S.L. (1985): The fossil record of birds. – In: Farner D.S., King J.R. & Parkes K.C. (Eds.), Avian biology. Vol. 8. – Orlando: Academic Press, pp. 79-256.
- Schmidt-Kittler, N. (Ed.; 1987): European references levels and correlation tables. – In: Schmidt-Kittler N. (Ed.), International symposium on mammalian biostratigraphy and paleoecology of the European Paleogene. – Münchner Geowissenschaftliche Abhandlungen (A) 10: 13-31.
- Shufeldt, R.W. (1896): Fossil bones of birds and mammals from Grotto Pietro Tamponi and Grive-St-Alban. – Proceedings of the Academy of Natural Sciences of Philadelphia 1896: 507-516.
- Švec, P. (1980): Lower Miocene birds from Dolnice (Cheb basin), western Bohemia. – Ěsopis pro Mineralogii a Geologii 25: 377-387.
- Villalta, J.F. de, 1963: Las aves fósiles del Mioceno español [Fossil birds from the Spanish Miocene]. Boletín de la Real Sociedad Española de Historia Natural (Geología) 61: 263-285.

RANĚ MIOCÉNNÍ HRABAVÍ (AVES: PHASIANIDAE) ZE SAINT-GÉRAND-LE-PUY, FRANCIE

Milne-Edwards (1869-1871) popsal z lokality Saint-Gérard-le-Puy ve Francii rod *Palaeortyx* (z čeledi Phasianidae) se třemi druhy. Jejich revize ukázala, že *Palaeortyx brevipes* MILNE-EDWARDS je synonymem druhu *Palaeortyx gallica* MILNE-EDWARDS a že *Palaeortyx phasianoides* MILNE-EDWARDS patří do čeledi Anatidae, kde je synonymem druhu *Mionetta blanchardi* (MILNE-EDWARDS). Ze starého miocénu Saint-Gérard-le-Puy jsou doloženy dva druhy čeledi Phasianidae, *Palaeortyx gallica* MILNE-EDWARDS a *Palaeortyx longipes* MILNE-EDWARDS. *Palaeortyx intermedia* BALMANN byla synonymizována s *Palaeortyx longipes* MILNE-EDWARDS

Druh *Palaeortyx gallica* je doložen již od středního oligocénu (MP 25), druh *Palaeortyx longipes* od svrchního oligocénu (MP 28). Dostupné údaje naznačují, že evoluce vedla od menšího druhu *gallica* k většímu druhu *longipes*, přičemž původní fyletická linie zůstala zachována.