

SUPPLEMENTARY MATERIAL

**A new passeriform (Aves: Passeriformes) from the early Oligocene of Poland sheds light
on the beginnings of Suboscines**

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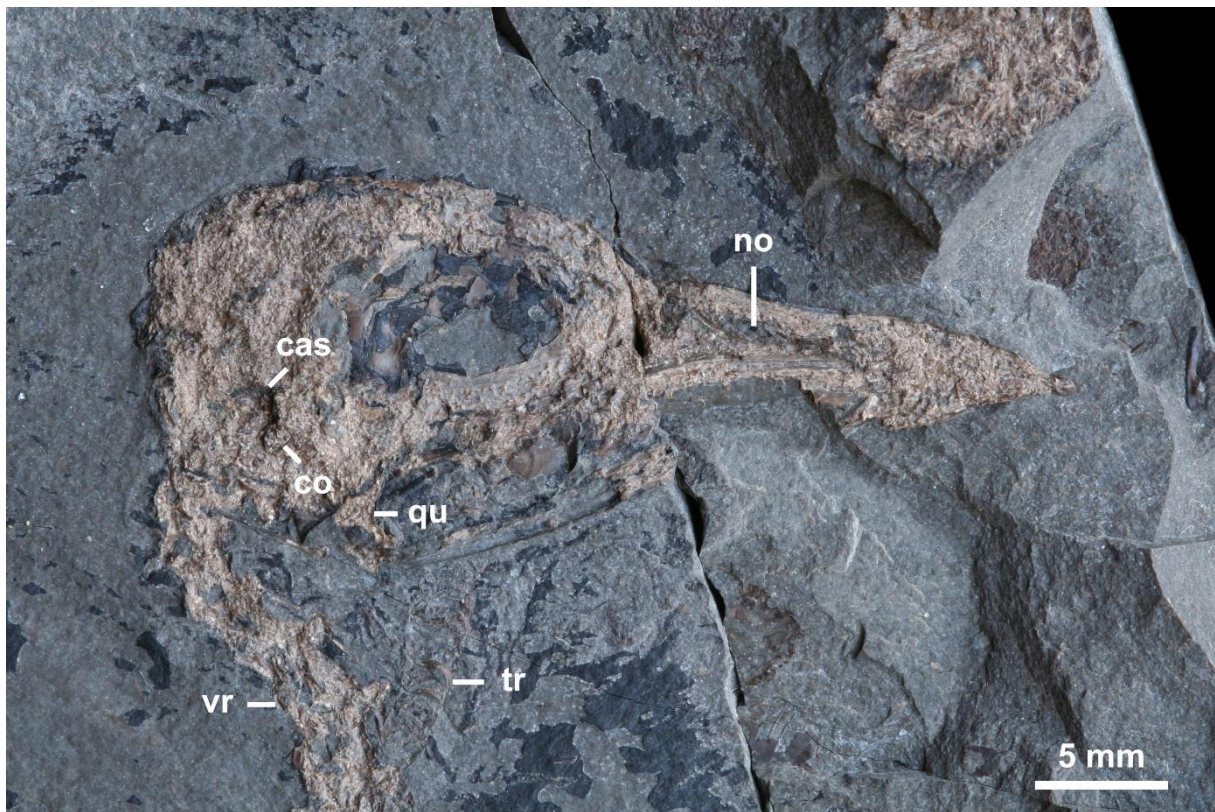


Fig. S1 *Crosnoornis nargizia* gen. et sp. nov., holotype, specimen MSFK RR 01/2013a+b from Rudawka Rymanowska, exposure 01, Poland, early Oligocene. Head, slab A; *cas* canales semicirculares ossei, *co* cochlea, *no* narial openings, *qu* quadratum, *tr* tracheal rings, *vr* vertebrae

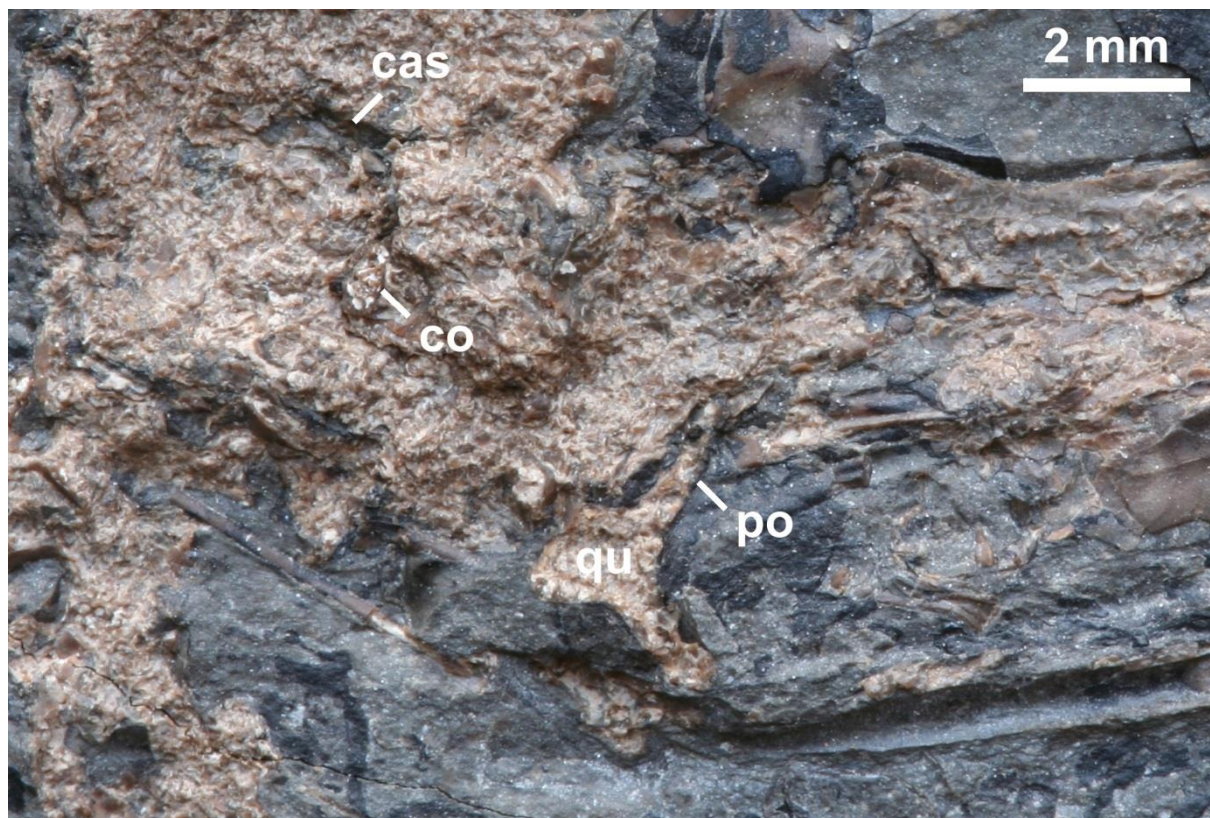


Fig. S2 *Crosnoornis nargizia* gen. et sp. nov., holotype, specimen MSFK RR 01/2013a+b from Rudawka Rymanowska, exposure 01, Poland, early Oligocene. Fragment of Fig. S1, slab A; *cas* canales semicirculares ossei, *co* cochlea, *po* processus orbitalis, *qu* quadratum

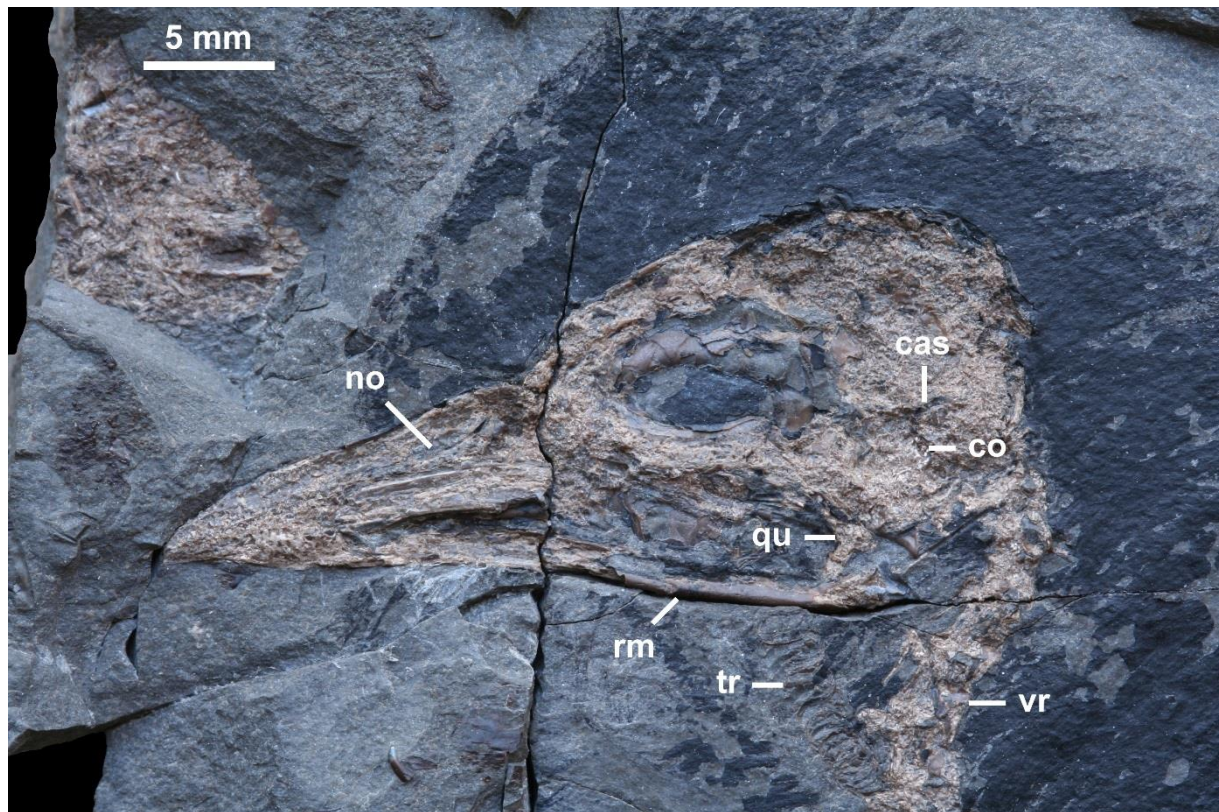


Fig. S3 *Crosnoornis nargizia* gen. et sp. nov., holotype, specimen MSFK RR 01/2013a+b from Rudawka Rymanowska, exposure 01, Poland, early Oligocene. Head, slab B; *cas* canales semicirculares ossei, *co* cochlea, *no* narial openings, *rm* ramus mandibulae, *qu* quadratum, *tr* tracheal rings, *vr* vertebrae

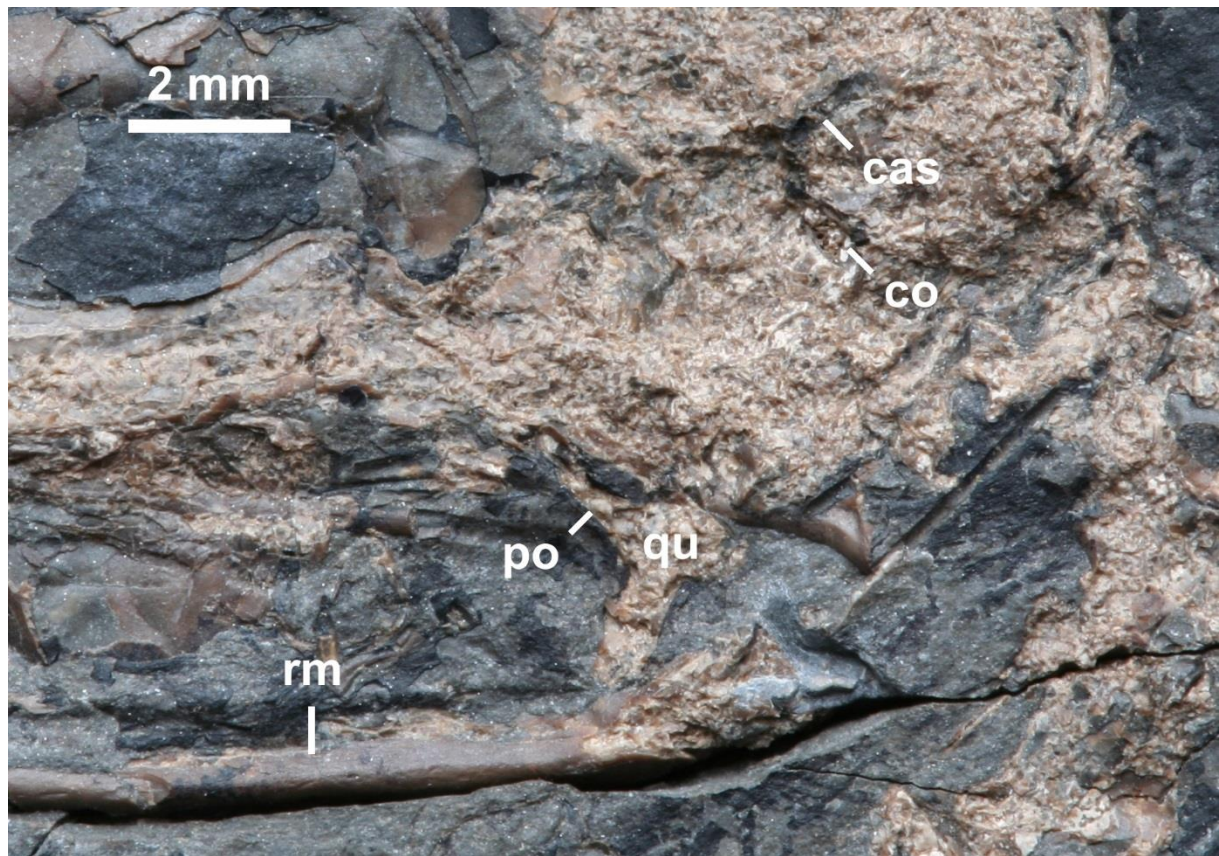


Fig. S4 *Crosnoornis nargizia* gen. et sp. nov., holotype, specimen MSFK RR 01/2013a+b from Rudawka Rymanowska, exposure 01, Poland, early Oligocene. Fragment of Fig. S3, slab B; *cas* canales semicirculares ossei, *co* cochlea, *po* processus orbitalis, *rm* ramus mandibulae, *qu* quadratum

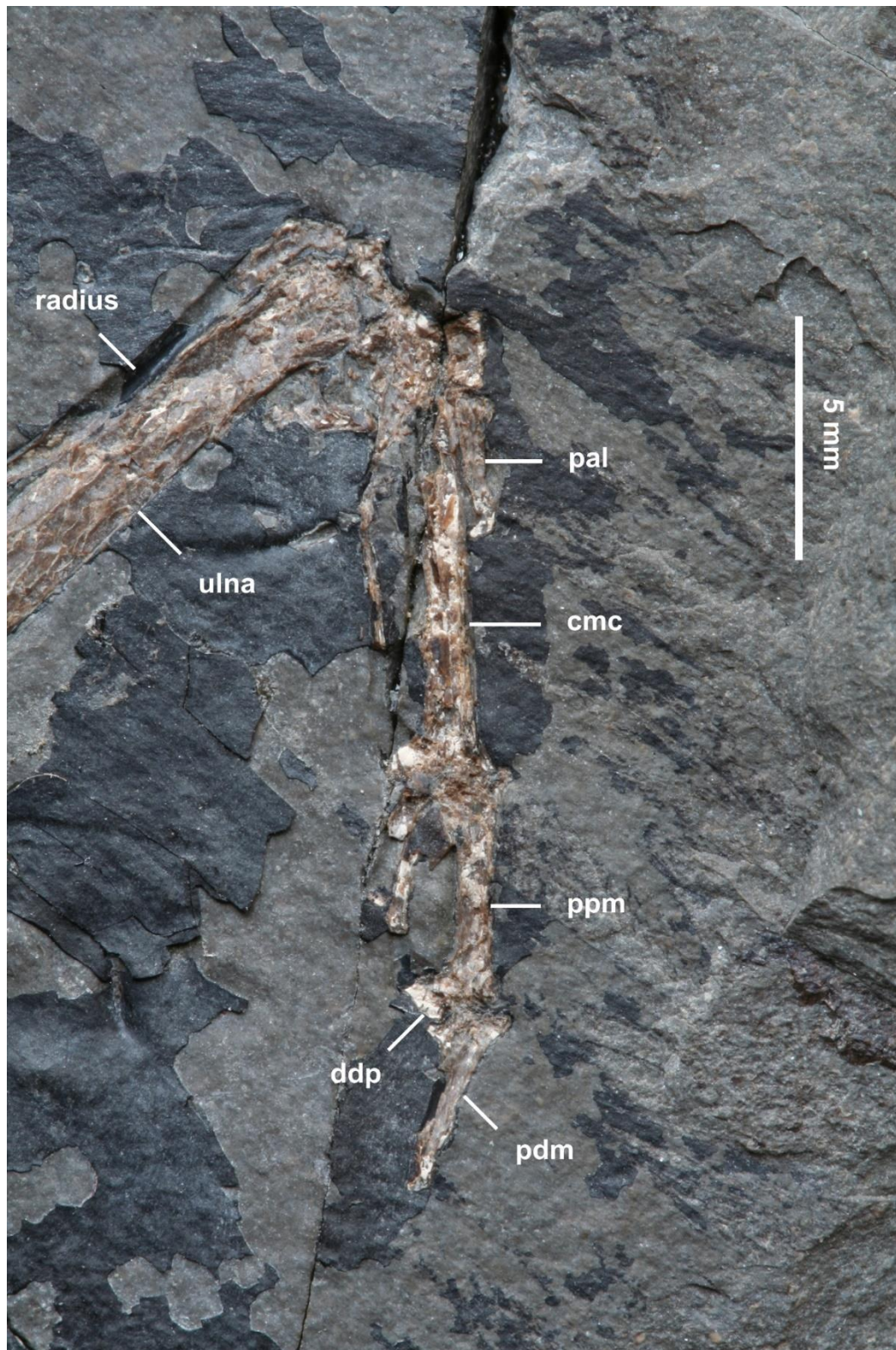


Fig. S5 *Crosnoornis nargizia* gen. et sp. nov., holotype, specimen MSFK RR 01/2013a+b from Rudawka Rymanowska, exposure 01, Poland, early Oligocene. Distal end of right wing, slab A; *cmc* carpometacarpus, *ddp* distally directed protrusion (of phalanx proximalis digiti majoris), *pal* phalanx digiti alulae, *pdm* phalanx distalis digiti majoris, *ppm* phalanx proximalis digiti majoris

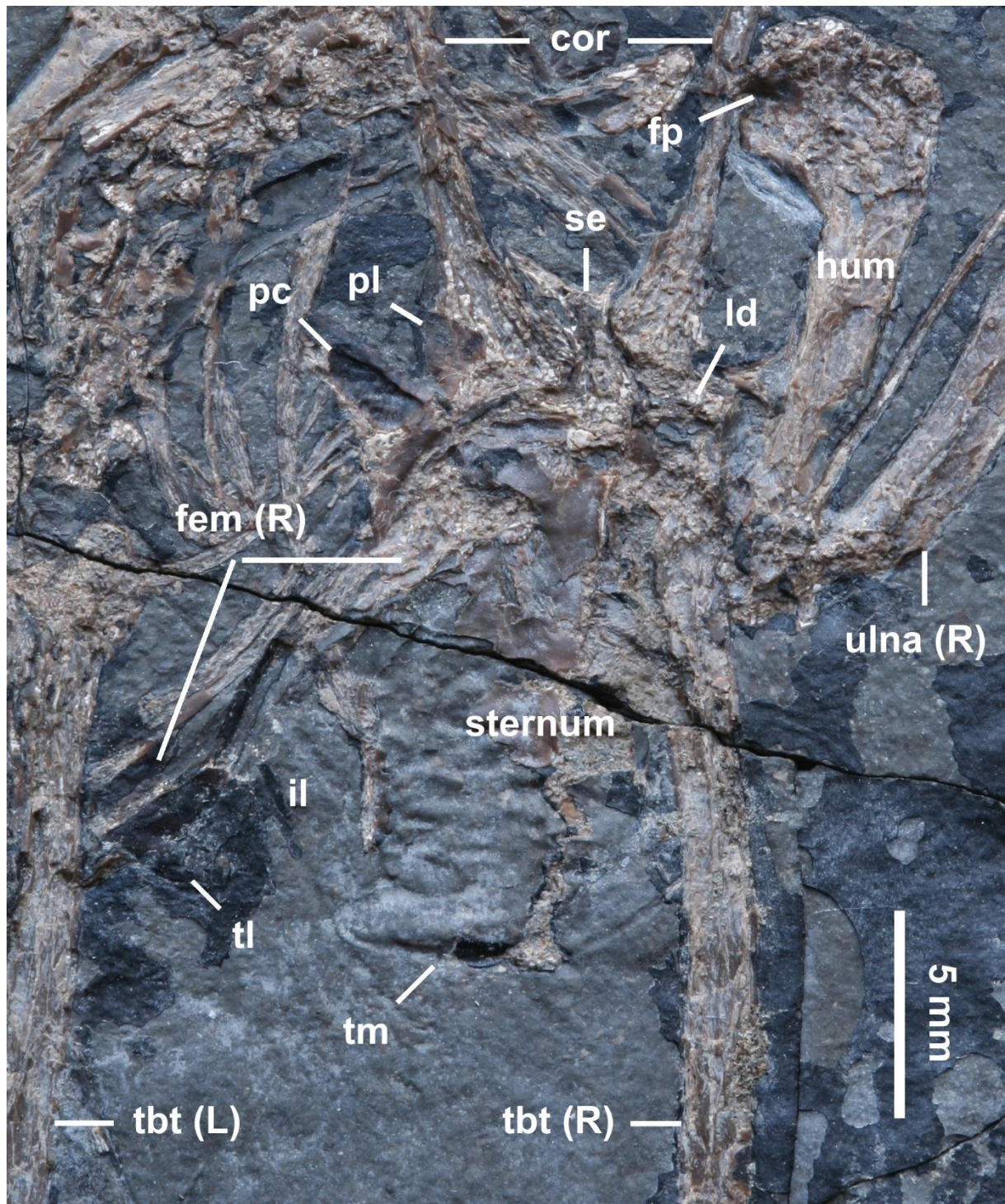


Fig. S6 *Crosnoornis nargizia* gen. et sp. nov., holotype, specimen MSFK RR 01/2013a+b from Rudawka Rymanowska, exposure 01, Poland, early Oligocene. Sternum in dorsal view, and adjacent bones, slab A; *left (L)* and *right (R)* elements are indicated. *cor* coracoid, *fem* femur, *fp* fossa pneumaticipitalis, *hum* humerus, *il* incisura lateralis, *ld* labrum dorsale, *pc* processus craniolateralis, *pl* processus lateralis, *se* spina externa, *tbt* tibiotarsus, *tl* trabecula lateralis, *tm* trabecula mediana

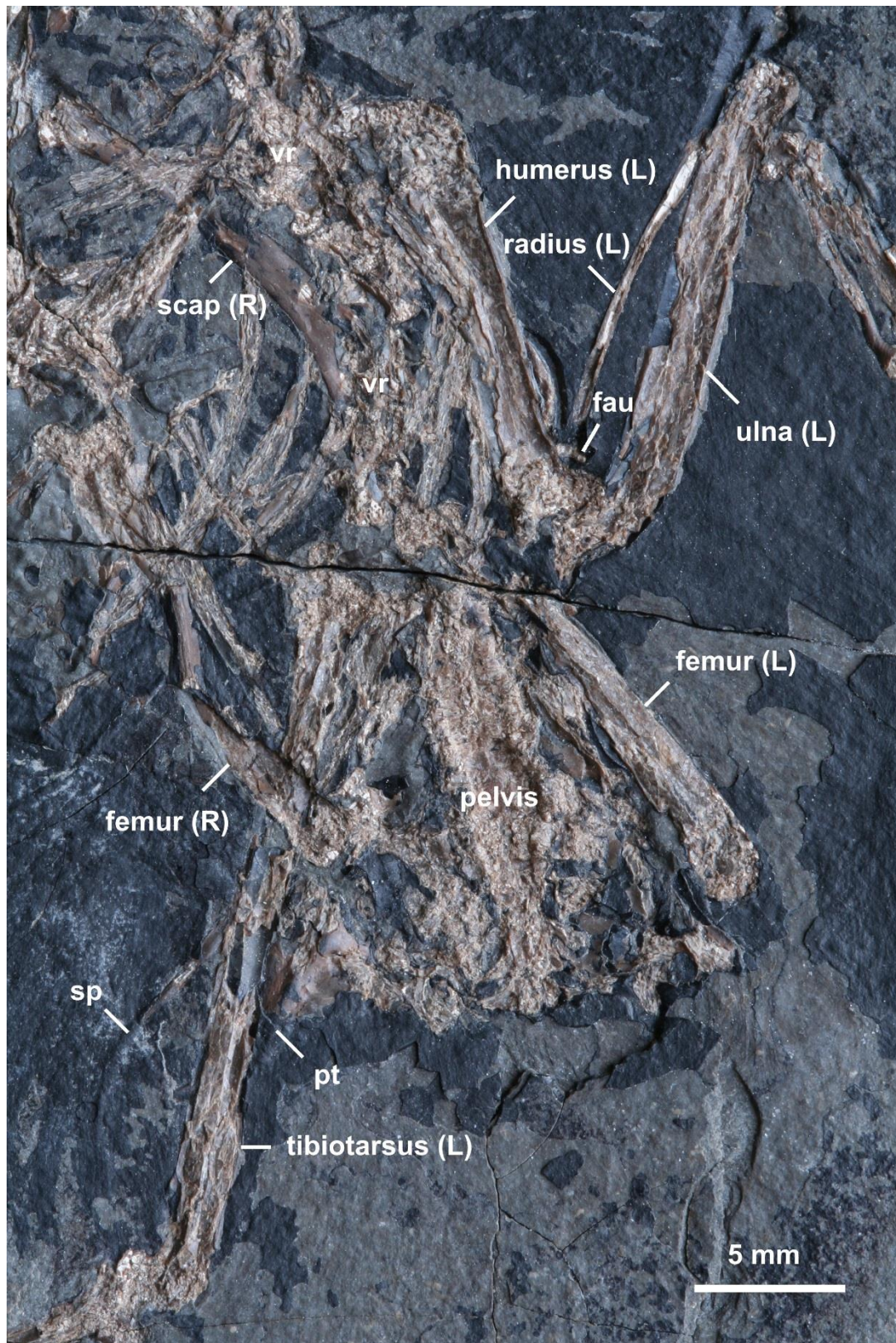


Fig. S7 *Crosnoornis nargizia* gen. et sp. nov., holotype, specimen MSFK RR 01/2013a+b from Rudawka Rymanowska, exposure 01, Poland, early Oligocene. Pelvis in ventral view, and adjacent bones, slab B; *left* (L) and *right* (R) elements are indicated. *fau* facies articularis ulnaris, *pt* processus terminalis ischii, *scap* scapula, *sp* scapus pubis, *vr* vertebrae

Table S1 Comparison of the total length (left/right, in mm) of individual bones of *Crosnoornis nargizia* gen. et sp. nov., holotype, specimen MSFK RR 01/2013a+b from Rudawka Rymanowska, with the measurements of other Oligocene passeriforms. Only specimens known from more than one skeletal element are included. Abbreviations: *brc* braincase, *cmc* carpometacarpus, *cor* coracoid, *fem* femur, *hcl* hallux: claw, *hpp* hallux: proximal phalanx, *hum* humerus, *pdm* phalanx distalis digiti majoris, *pmi* phalanx digiti minoris, *ppm* phalanx proximalis digiti majoris, *rad* radius, *ros* rostrum, *tbt* tibiotarsus, *tmt* tarsometatarsus

Species/specimen	brc	ros	cor	hum	ulna	rad	cmc	ppm	pdm	pmi	fem	tbt	tmt	hpp	hcl
<i>Crosnoornis nargizia</i>	19.5	16.3	13.9/14.1	16.1	19.2/19.4	18.1	9.7	5.1/5.2	4.1/4.0	2.5/2.8	17.6	26.4	19.0/20.2	7.6	4.4
^{1,2} <i>Wieslochia weissi</i>	19.2	12.5	-	17.7	23.8	-	~13.4	-	-	-	16.5/17.3	29.5	>17.4	-	-
³ NT-LBR-014	21.5	15.1	15.7	19.4	25.2	-	13.6	6.5	-	-	18.6	28.7	20.4	-	-
⁴ SMF Av 504	-	-	-	-	-	-	10.4	4.8	4.0	-	-	-	-	-	-
⁵ <i>Jamna szybiaki</i>	-	>11.4	~14.9/15.2	17.1/17.4	~18.8/18.2	~16.0/~15.6	~9.7/~9.2	5.5/~5.1	3.1/~2.9	-	>8.8	30.6/31.6	-	-	-
⁶ <i>Resoviaornis jamrozi</i>	-	-	13.1/~13.0	12.5/~12.4	17.0	14.9/~12.9	8.0	3.9	2.3/2.5	-	13.4/~13.3	>28.0	-	-	-
⁷ <i>Winnicavis gorskii</i>	-	-	-	18.6	24.5/23.4	22.3/21.4	9.4	4.3	3.1	1.5	-	-	-	-	-
⁸ ZPALWr. A/4004	-	-	-	-	-	-	-	-	-	-	17.1	36.3	25.7	7.6	4.7
⁹ ZPALWr. A/4005	-	-	-	-	-	-	-	-	-	-	-	-	18.0	7.4	4.9

¹ Mayr, Manegold 2006a, ² Mayr, Manegold 2004 (for *Wieslochia*, most of the measurements are from paper ¹, and only the missing ones were supplemented from paper ², and the length of the braincase was calculated from the difference between the length of the skull and the rostrum), ³ Riamon et al. 2020, ⁴ Mayr, Manegold 2006b, ⁵ Bochenski et al. 2011, ⁶ Bochenski et al. 2013, ⁷ Bochenski et al. 2018, ⁸ Bochenski et al. 2014a, ⁹ Bochenski et al. 2014b.

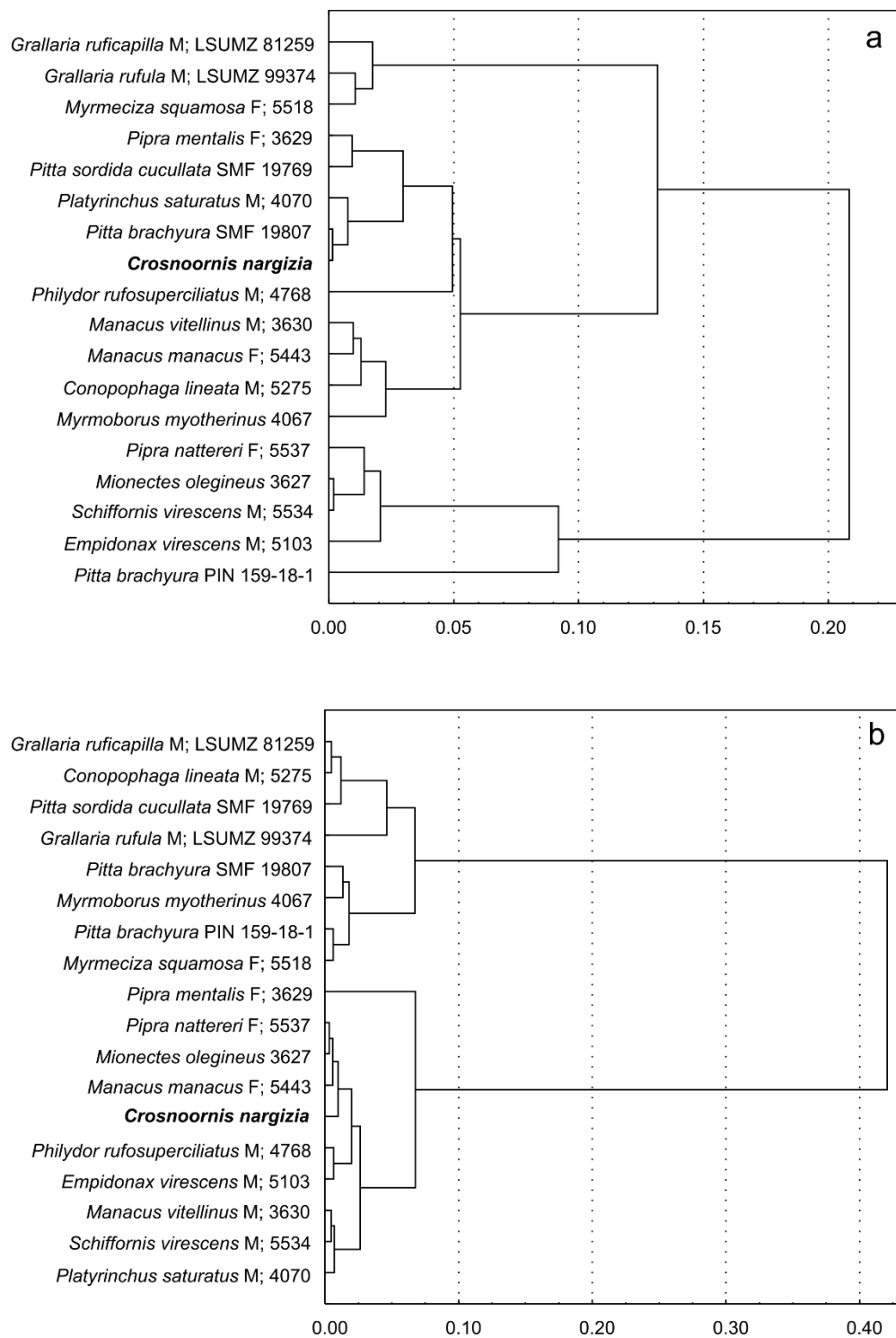


Fig. S8 Cluster analysis of the proportions of the bones of the wing (A) and the leg (B) of *Crosnoornis nargizia* and extant *Suboscines*, based on the measurements in Table S2. The proportion of the length of individual bones in the wing and leg was calculated by dividing their length by the sum of the lengths of all three bones making up the wing or leg. The hierarchical agglomeration method with the Euclidean distance and Ward linkages was applied

Table S2 The lengths [mm] of the main bones of the wing and leg (left/right) of *Crosnoornis nargizia* and chosen extant Suboscines used in the cluster analysis (see Fig. S8).

Abbreviations: *cmc* carpometacarpus, *fem* femur, *hum* humerus, *tbt* tibiotarsus, *tmt* tarsometatarsus

Species	hum	ulna	cmc	fem	tbt	tmt
<i>Crosnoornis nargizia</i> MSFK RR 01/2013a+b	16.1/-	19.2/19.4	9.7/9.7	17.6/17.6	26.4/-	19.0/20.2
¹ <i>Grallaria ruficapilla</i> M; LSUMZ 81259	26.80	26.20	14.30	31.70	64.40	52.90
¹ <i>Grallaria rufula</i> M; LSUMZ 99374	20.90	21.20	11.20	24.30	51.60	46.30
<i>Pipra mentalis</i> F; 3629	16.80	20.50	9.40	14.90	21.10	14.00
<i>Pipra nattereri</i> F; 5537	13.57	17.10	8.86	11.88	18.37	13.42
<i>Manacus vitellinus</i> M; 3630	16.70	19.10	8.96	18.24	28.92	21.41
<i>Manacus manacus</i> F; 5443	14.84	17.52	7.95	15.36	23.71	17.73
<i>Mionectes olegineus</i> 3627	15.30	20.10	10.30	12.90	20.10	14.80
<i>Schiffornis virescens</i> M; 5534	19.62	25.75	13.08	19.53	31.14	23.41
<i>Platyrinchus saturatus</i> M; 4070	16.44	19.52	10.11	14.44	23.56	17.51
<i>Conopophaga lineata</i> M; 5275	18.34	21.25	10.39	18.89	37.46	30.86
² <i>Pitta sordida cucullata</i> SMF 19769	33.00	40.50	19.40	27.00	52.50	42.30
² <i>Pitta brachyura</i> SMF 19807	33.50	40.30	20.30	27.10	50.70	39.20
³ <i>Pitta brachyura</i> PIN 159-18-1	29.50	46.20	18.80	24.90	46.20	37.10
<i>Myrmoborus myotherinus</i> 4067	17.47	19.03	9.37	18.52	32.56	25.77
<i>Myrmeciza squamosa</i> F; 5518	17.42	18.22	9.20	18.47	33.82	27.77
<i>Philydor rufosuperciliatus</i> M; 4768	20.26	22.51	12.94	19.23	30.86	22.02
<i>Empidonax virescens</i> M; 5103	16.38	22.26	11.76	14.09	22.07	15.65

¹ Collection of the Museum of Natural Science, Louisiana State University, USA.

² Collection of the Senckenberg Research Institute, Frankfurt/M, Germany.

³ Collection of the Borissiak Paleontological Institute, Russian Academy of Sciences.

The remaining specimens come from the collection of the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences.