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SUPPLEMENTARY ONLINE MATERIAL FOR

Postcranial osteology of the first early-stage juvenile skeleton of *Plateosaurus trossingensis* from the Norian of Frick, Switzerland

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Supplementary Online Material

Table S1: Measurements of vertebrae of juvenile *Plateosaurus* (MSF 15.8). pos: position in vertebral collumn, zl: zygapophyseal length, ah: neural arch height, sh: neural spine height, sl: neural spine length (anteroposterior), dpw: transverse width through diapophyses or transverse process, cl: centrum length (measured between ventral rims), ha: anterior centrum height, wa: anterior centrum width, hp: posterior centrum height, wp: posterior centrum width. – denotes values that are not measurable or collections numbers that are absent. Where two field numbers are given, the first refers to the neural arch, the second to the centrum. All measurements are in mm.

pos	field number	zl	ah	sh	sl	dpw	cl	ha	wa	hp	wp
c2	2001	47.8	14.0	6.0	35.4	–	–	–	–	–	–
c3	669/939	56.7	18.2	6.1	30.9	14.9	43	12.7	14.1	13.8	14.1
c4	1032/979	74.5	17.3	4.7	36.7	13.4	53.0	9.8	19.7	10.9	20.5
c6	2002/592	60.4	31.2	10.7	36.4	24.3	54.2	26.1	14.4	21.8	16.5
c9	671/905	59.9	27.3	7.1	30.9	61.2	37.1	23.7	13.4	23.1	13.2
d1	2003	–	–	–	–	–	28.5	27.2	16.7	25.9	17.1
d2	908/978	45.4	31.9	15.1	13.4	63.4	36.1	27.1	15.8	25	15.3
d3	2004/2005	41.8	46.3	21.1	11.9	67.1	26.8	20.7	24.9	19.7	24.9
d4	477	39.3	33.8	12.1	22.3	59.3	–	–	–	–	–
d5	2006	–	16.8	12.8	20.4	–	–	–	–	–	–
d6	654/906	49.8	23.3	14.5	32.0	53.8	36.1	27.0	16.8	24.7	20
d7	1076/437	57.4	30.9	13.7	41.2	57.4	32.1	24.9	21.7	24.2	21.6
d8	885	58.4	26.5	11.8	41.0	–	–	–	–	–	–
d9	728/679	56.8	39.8	20.9	32.2	35.0	32.2	26.8	17.2	24.4	18.4
d12	468/2007	41.9	49.2	21.5	23.3	60.0	30.3	25.8	31.7	24.3	26.2
s1	558	48.7	27.8	11.6	31.9	68.7	–	–	–	–	–
ca	889	45.4	59.0	36.2	29.6	–	–	–	–	–	–
ca	972	43.7	53.0	27.0	15.8	–	–	–	–	–	–
ca	476	39.0	45.5	31.9	12.2	60.9	–	–	–	–	–
ca	2008	–	–	–	–	–	–	27.9	12.7	–	–
ca	975	–	–	–	–	–	27.5	29.1	27.5	28.7	17.4
ca	488	–	–	–	–	–	29.6	28.6	15.4	29.7	13.4
ca	1058	–	–	–	–	–	33.2	23.3	13.7	23	12.9
ca	371	24.9	11.7	7.5	4.5	–	21.5	11.7	–	–	–

Table S2: Measurements of ribs and haemal arches of juvenile *Plateosaurus* (MSF 15.8). pos: position of rib, l: preserved rib shaft length (measured from the tuberculum along the outer surface of the shaft), lmax: maximum preserved length of haemal arch, d: maximum proximal shaft diameter, dart: anteroposterior diameter of articular facet. All measurements are in mm.

pos	field number	l	d	
anterior cervical	2010	31	4.9	
middle cervical	1055	62	6.3	
posterior cervical	2011	71	9.0	
anterior dorsal	886	100	15.0	
anterior dorsal	384	147	10.9	
anterior dorsal	521	164	17.8	
anterior dorsal	676	152	13.0	
?middle dorsal	976	205	8.8	
middle dorsal	977	156	8.2	
middle dorsal	871	290	14.0	
middle dorsal	822	89	12.4	
posterior dorsal	891	211	8.7	
posterior dorsal	423	221	9.6	
posterior dorsal	676	67	10.7	
posterior dorsal	727	47	10.0	
haemal arches			**lmax**	**dart**
haemal	1043		50.0	7.9
haemal	2009	53.1	9.7	
haemal	531		47.0	8.2
haemal	785		58.4	11.1
haemal	726		78.7	10.8

Table S3: Measurements of pectoral and pelvic girdles of juvenile *Plateosaurus* (MSF 15.8). All measurements in mm.

bone	field number	measurement	value
right ilium	486	anteroposterior blade length	98.8
left ilium	717	anteroposterior blade length	132.7
right ilium	486	anteroposterior length of acetabulum (incl. peduncles)	65.9
left ilium	717	anteroposterior length of acetabulum (incl. peduncles)	102.8
right ilium	486	dorsoventral depth of acetabulum	35.1
left ilium	717	dorsoventral depth of acetabulum	49.6
right ilium	486	dorsoventral depth above acetabulum (lateral)	44.1
left ilium	717	dorsoventral depth above acetabulum (lateral)	32.1
right pubis	383	maximum length	183
right pubis	383	mediolateral diameter at midshaft	38.8
right pubis	383	sagittal diameter at midshaft	5.7
right pubis	384	maximum diameter of obturator foramen	5.7
ischium	421	shaft length	71.5
ischium	421	combined transverse width through facets for ilium	106.7
ischium	421	combined transverse width through facets for pubis	82.1
ischium	421	combined transverse minimum diameter of shaft	26.7
ischium	421	sagittal minimum diameter of shaft	17.7
ischium	421	combined ransverse diameter of distal expansion	41.8
right scapula	870	maximum length (straight)	179
left scapula	551	maximum length (straight)	177
right scapula	870	maximum length (along outer curve)	186
left scapula	551	maximum length (along outer curve)	179
right scapula	870	anteroposterior width (minimum)	17.2
left scapula	551	anteroposterior width (minimum)	22.3
right scapula	870	anteroposterior width (dorsal expansion)	37.9
left scapula	551	anteroposterior width (dorsal expansion)	53.2
right scapula	870	anteroposterior width (maximum at base)	47.3
left scapula	551	anteroposterior width (maximum at base)	60.5
right scapula	870	mediolateral width at glenoid rim	27.8
left scapula	551	mediolateral width at glenoid rim	16.6
right scapula	870	mediolateral width at narrowest point of blade	11.0
left scapula	551	mediolateral width at narrowest point of blade	8.3
right scapula	870	glenoid length	35.5
left scapula	551	glenoid length	28.1
right coracoid	1035	anteroposterior length	74.7
left coracoid	552	anteroposterior length	79.0
right coracoid	1035	mediolateral width (dorsal margin)	19.3
left coracoid	552	mediolateral width (dorsal margin)	19.8
right coracoid	1035	dorsoventral depth	33.0
left coracoid	552	dorsoventral depth	35.5
right coracoid	1035	glenoid length	30.0
left coracoid	552	glenoid length	29.0

Table S4: Measurements of forelimb of juvenile *Plateosaurus* (MSF 15.8). Articular lengths are measured between the centres of articular surfaces. l: left, mc: metacarpal, p: phalanx, r: right, u: ungual. All measurements are in mm.

bone	field number	measurement	value
right humerus	825	greatest length	121.4
left humerus	520	greatest length	109.3
right humerus	825	mediolateral diameter below deltopectoral crest	19.0
left humerus	520	mediolateral diameter below deltopectoral crest	16.8
right humerus	825	anteroposterior diameter below deltopectoral crest	13.3
left humerus	520	anteroposterior diameter below deltopectoral crest	18.3
right humerus	825	greatest width of proximal expansion	55.2
left humerus	520	greatest width of proximal expansion	54.4
right humerus	825	width of distal end	49.8
left humerus	520	width of distal end	46.8
right humerus	825	length of deltopectoral crest	41.8
left humerus	520	length of deltopectoral crest	55.1
right humerus	825	height of deltopectoral crest	14.0
left humerus	520	height of deltopectoral crest	16.0
right radius	526	greatest length	62.2
right radius	526	articular length	56.5
left radius	680	greatest length	84.3
left radius	680	articular length	70.1
right ulna	525	greatest length	79.5
right ulna	525	articular length	68.0
mc (r)		**greatest/articular length**	**proximal width (anteroposterior)**
I	490	32.1/22.5	20.1
II	490	41.0/40.0	19.3
III	490	38.7/35.9	15.7
IV	490	28.0/27.5	12.8
mc (l)		**greatest/articular length**	**proximal width (anteroposterior)**
I	2032	29.2/20.5	16.8
II	480	40.8/37.5	21.4
III	668	36.4/34.9	13.3
IV	2033	29.1/28.1	12.0
V	597	24.4/16.7	11.7
p (r)		**greatest/articular length**	**proximal width (anteroposterior)**
I-1	490	32.7/23.4	20.6
III-1	490	17.5/16.9	13.6
III-2	490	17.4/15.1	12.3
III-3	490	17.3/12.9	12.2
IV-1	490	13.5/11.7	8.4
V-1	490	7.2/7.2	5.9
V-2	490	4.4/3.8	3.8
u (r)		**greatest/articular length**	**height of articular facet**
U-I	490	42.0/34.0	17.1
U-II	490	35.0/28.0	15.3
U-III	490	18.7/14.5	10.7

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p (l)		greatest/articular length	proximal width (anteroposterior)
I-1	467	30.9/23.3	11.2
II-1	489	25.0/17.9	13.0
II-2	477	22.6/14.8	12.4
III-1	1077	19.5/14.4	14.2
III-2	677	13.0/8.8	8.9
III-3	481	16.6/12.2	6.5
IV-1	2014	10.8/8.7	5.4
IV-2	2015	–/–	4.4
V-1	671	8.8	7.0
u (l)		**greatest/articular length**	**height of articular facet**
U-I	2016	39.1/32.2	14.8
U-II	2017	33.5/27.8	13.6
U-III	2018	20.7/17.6	9.0

Table S5: Measurements of hindlimb of juvenile *Plateosaurus* (MSF 15.8). Articular lengths are measured between the centres of articular surfaces. Measurements of fourth trochanter refer to proximal/distal ends of crest respectively. l: left, mt: metatarsal, p: phalanx, r: right, u: ungual. All measurements are in mm.

bone	field number	measurement	value
right femur	380	greatest length	236.0
left femur	565	greatest length	243.0
right femur	380	mediolateral diameter at head	53.9
left femur	565	mediolateral diameter at head	29.3
right femur	380	mediolateral diameter below 4th trochanter	31.5
left femur	565	mediolateral diameter below 4th trochanter	18.5
right femur	380	anteroposterior diameter below 4th trochanter	18.2
left femur	565	mediolateral diameter below 4th trochante	32.7
right femur	380	4th trochanter from proximal end	67.7/114.1
left femur	565	4th trochanter from proximal end	66.1/114.3
left tibia	381	greatest length	211.0
left fibula	518	greatest length	195.0
right astragalus	585	mediolateral width	58.5
left astragalus	420	mediolateral width	51.0
mt (r)		**greatest/articular length**	**greatest proximal width**
II	420	81.1/72.0	27.5
III	420	94.7/82.7	32.8
IV	420	71.1/61.1	33.0
V	826	52.5/52.5	26.0
mt (l)		**greatest/articular length**	**greatest proximal width**
I	420	49.6/36.1	25.2
II	420	85.2/75.9	33.0
III	420	96.2/91.9	30.7
IV	420	87.6/86.7	32.4
p (r)		**greatest/articular length**	**mediolateral proximal width**
I-1	420	34.0/21.4	23.3
II-1	420	35.4/25.7	14.0
II-2	420	22.3/16.0	13.5
III-1	420	33.9/26.5	17.0
III-2	420	25.7/18.8	19.6
III-3	420	24.7/17.0	16.2
u (r)		**greatest/articular length**	**height of articular facet**
U-I	420	35.7/28.6	12.8
U-II	420	46.8/38.3	16.9
U-III	420	40.4/34.9	11.4

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p (l)	field number	greatest/articular length	mediolateral proximal width
I-1	2019	33.8/23.6	21.0
II-1	2019	–/18.0	–
II-2	2019	26.0/22.3	17.7
III-1	2019	23.1/21.4	23.4
III-2	2019	22.4/15.8	17.3
III-3	2019	18.9/16.2	16.7
IV-1	2019	28.1/19.9	14.3
IV-2	2019	23.0/17.1	15.7
IV-3	2019	22.2/13.0	13.4
IV-4	2019	18.2/11.1	12.1
u (l)		**greatest/articular length**	**height of articular facet**
U-I	2019	34.2/31.2	14.8
U-II	2019	37.9/30.1	16.2
U-III	2019	29.1/24.4	13.6
U-IV	2019	31.9/27.2	7.8

Table S6: Selected comparative measurements and proportions of juvenile and adult *Plateosaurus* specimens. A: juvenile individual MSF 15.8B., B: SMNS 13200 (von Huene 1926), C: *P.* "reinigeri" (von Huene 1907), D: GPIT 1 Mallison (2010ab, measurements other than femur, humerus and metatarsal are measured digitally from published figures and are approximate), E: MSF 23 (Klein & Sander 2007), F: SMNS F14A (Klein & Sander 2007), G: SMNS F29A (Klein & Sander 2007), Ta: Average for specimens from Trossingen (Klein & Sander 2007). The Segment length estimation is based on comparison with SMNS 13200. Skull length from premaxilla to the occipital condyle is estimated for MSF 15.8B. based on the 96 mm long dentary and plates in von Huene (1926). Where the measurements of right and left elements differ due to compaction, the longer measurement is used, under the assumption that it is closer to the original length. All measurements are in cm.

	A	B	C	D	E	F	G	TA
Skull	15.3	31.0	–	32	–	–	–	–
Neck	44.9	107.5	–	102	–	–	–	–
Torso	63.6	176.0	–	163	–	–	–	–
Femur	24.3	68.5	63	59.5	–	63.5	72.0	–
Tibia	21.1	50.0	–	50	–	55.0	59.0	–
Fibula	19.5	52.0	–	50	–	–	–	–
Metatarsal III	9.2	22.0	–	23.1	–	–	–	–
Humerus	12.1	40.0	40	35.0	–	41.0	43.5	–
Radius	7.0	24.0	–	21	–	–	–	–
Manus (Mc & Digit II)	9.8	25.2	–	24	–	–	–	–
Head/Neck	0.30	0.29	–	0.31	–	–	–	–
Neck/Torso	0.71	0.61	–	0.63	–	–	–	–
Femur/Torso	0.38	0.39	–	0.37	–	–	–	–
Tibia/Femur	0.87	0.73	–	0.84	–	0.87	0.82	0.80
Fibula/Femur	0.80	0.76	–	0.84	0.92	–	–	0.80
Metatarsal III/Femur	0.38	0.32	–	0.39	–	–	–	–
Humerus/Femur	0.50	0.58	0.64	0.59	0.68	0.65	0.60	0.62
Radius/Humerus	0.58	0.60	–	0.60	–	–	–	–
Manus/(Radius+Humerus)	0.51	0.39	–	0.43	–	–	–	–
(Forelimb)/Femur	1.19	0.93	–	0.94	–	–	–	–

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