



http://app.pan.pl/SOM/app66-Hubner_etal_SOM.pdf

SUPPLEMENTARY ONLINE MATERIAL FOR

Research history, taphonomy, and age structure of a mass accumulation of the ornithopod dinosaur *Dysalotosaurus lettowvorbecki* from the Upper Jurassic of Tanzania

Tom R. Hübner, Christian Foth, Wolf-Dieter Heinrich, Daniela Schwarz,
and Robert Bussert

Published in *Acta Palaeontologica Polonica* 2021 66 (2): 275-300.

<https://doi.org/10.4202/app.00687.2019>

Supplementary Online Material

Table S1. Overview of right femora of *Dysalotosaurus lettowvorbecki* from the Ig/WJ locality.

Table S2. Overview of left femora of *Dysalotosaurus lettowvorbecki* from the Ig/WJ locality.

Table S3. Age distribution $d(x)$ of *Dysalotosaurus lettowvorbecki* and total number of individuals N from the Ig/WJ locality and bonebed 3, 4, and GPIT collection.

Institutional abbreviations.—GPIT, Paläontologische Sammlung, Eberhard-Karls-Universität-Tübingen, Tübingen, Germany; GZG, Geowissenschaftliches Zentrum of the Georg-August-Universität Göttingen, Göttingen, Germany; MB, Museum für Naturkunde Berlin, Berlin, Germany (now MfN); NHMUK, Natural History Museum, London, UK; SMNS – Staatliches Museum für Naturkunde, Stuttgart, Germany.

References

- Hübner, T.R. 2011. *Ontogeny in Dysalotosaurus lettowvorbecki*. 318 pp. Ph.D. Thesis, Ludwig-Maximilians-Universität, München.
- Hübner, T.R. 2012. Bone histology in *Dysalotosaurus lettowvorbecki* (Ornithischia: Iguanodontia) – variation, growth, and implications. *PLoS ONE* 7: e29958.

Table S1. Overview of right femora of *Dysalotosaurus lettowvorbecki* from the Ig/WJ locality, including the original field numbers, the bonebed assignment, the distal mediolateral width of the femora (DMW) and the estimated ages x from ordinary least square regression analysis (original regression values in parentheses). *Specimens that age was estimated from histological studies (Hübner 2011, 2012). Further abbreviations: F – Femur; Ig – Iguanodontid bed; oN – without number; WJ – Werner Janensch; x – unreadable Number on specimen.

Specimen	Field number	Bonebed	DMW [mm]	Age x [y]
GZG.V 6379*	WJ	4	16.10	0
GPIT/RE/4156	WJ 974x	3	18.70	1 (0.9)
GZG.V 6653*	WJ	4	24.90	2
GPIT/RE3544	WJ	NA	22.20	2 (1.8)
GPIT/RE/4887	WJ 9213	4	23.80	2 (2.2)
GPIT/RE/3572	WJ	NA	25.90	3 (2.7)
GZG.V 6545	WJ	4	27.10	3 (3.0)
SMNS F 113	WJ	4	28.30	3 (3.3)
GZG.V 6467*	WJ	4	29.3	4
GPIT/RE/3522	WJ 10047	4	29.10	4 (3.5)
MB.R. oN	WJ 4843	NA	29.40	4 (3.6)
GPIT/RE/3506	WJ	NA	30.2	4 (3.8)
GZG.V 6461	WJ	4	30.7	4 (4.0)
GPIT/RE/3534	WJ	NA	31	4 (4.0)
GPIT/RE/3493	WJ	NA	31.1	4 (4.1)
GPIT/RE/3503	WJ	NA	31.2	4 (4.1)
GZG.V 6590*	WJ	4	31.6	4
GPIT/RE/3508	WJ	NA	32.2	4 (4.3)
SMNS F 14*	WJ	4	30.6	4
GPIT/RE/5650*	WJ 9576	4	32.3	4
GZG.V 6652*	WJ	4	33.3	5
GZG.V 6386*	WJ	4	35.3	5
SMNS F 104	WJ	4	33	5 (4.5)
GPIT/RE/3580	WJ 9313	4	33.2	5 (4.6)
GPIT/RE/3504	WJ	NA	34	5 (4.8)
GZG.V.6574	WJ	4	34.4	5 (4.9)
GPIT/RE/3529	WJ	NA	35.4	5 (5.2)
GPIT/RE/3474	WJ	NA	35.8	5 (5.3)
SMNS oN2	WJ	4	36	5 (5.3)
GPIT/RE/3486	WJ	NA	36	5 (5.3)
GPIT/RE/3535	WJ	NA	37.9	6 (5.8)
GPIT/RE/3472	WJ	NA	37.9	6 (5.8)
GPIT/RE/3483	WJ	NA	38.6	6 (6.0)
GPIT/RE/3485	WJ	NA	38.9	6 (6.1)
GZG.V 6211	WJ	4	39.8	6 (6.3)

MB.R. oN	WJ 3017	NA	39.5	6 (6.2)
MB.R.2509	NA	NA	40	6 (6.3)
GPIT/RE/3469	WJ	NA	40.5	7 (6.5)
GPIT/RE/3498	WJ	NA	41.1	7 (6.6)
GZG.V 6237	WJ	4	41.7	7 (6.8)
GZG.V 6569	WJ	4	42.2	7 (6.9)
GPIT/RE/ 3552	WJ	NA	42.8	7 (7.1)
GPIT/RE/ 5075	WJ 9124	4	43	7 (7.1)
GZG.V 6379	WJ	4	43.1	7 (7.1)
GZG.V 6211	WJ	4	43.2	7 (7.2)
GZG.V 6563	WJ	4	43.2	7 (7.2)
GPIT/RE/3579	WJ	NA	43.3	7 (7.2)
GPIT/RE/3566	WJ	NA	43.3	7 (7.2)
GPIT/RE/3567	WJ	NA	43.6	7 (7.3)
GPIT/RE/6038	WJ	NA	44	7 (7.4)
NHMUK R6861	NA	NA	44	7 (7.4)
MB.R. oN	WJ 1652	3	44	7 (7.4)
GPIT/RE/3587*	WJ	NA	44.6	8
SMNS F 106	WJ	4	44.8	8 (7.6)
MB.R. oN	Ig 897	3	45.1	8 (7.7)
GPIT/RE/3586	WJ 9219	4	45	8 (7.6)
MB.R. oN	WJ 968	3	45	8 (7.6)
GPIT/RE/3553	WJ	NA	46	8 (7.9)
GZG.V 6234	WJ	4	46.8	8 (8.1)
MB.R. oN	WJ 1648	3	48	8 (8.4)
SMNS F 4*	WJ	4	52	9
MB.R.2501	Ig 982	3	49.2	9 (8.7)
GPIT/RE/3582	WJ 9999	4	50	9 (8.9)
MB.R. oN	WJ	NA	51.4	9 (9.3)
MB.R. oN	WJ	NA	51.4	9 (9.3)
MB.R.2500	Ig 976	3	53.5	10 (9.8)
GZG.V 6330	WJ	4	55.9	10 (10.4)
MB.R. oN	Ig 792	3	57.1	11 (10.7)
MB.R. oN	WJ 759	3	59	11 (11.2)
GPIT/RE/3555	WJ	NA	59.9	11 (11.4)
SMNS F 7	WJ	4	61.2	12 (11.8)
MB.R. Corset	Ig 420-515	3	61.8	12 (11.9)
MB.R. Corset	Ig 355-1	3	63.1	12 (12.3)
GZG.V 6572	WJ	4	63.6	12 (12.4)
MB.R. oN	WJ 1790	3	64.4	13 (12.6)
MB.R. oN	WJ 764	3	65	13 (12.8)
MB.R.5099	WJ	NA	65.2	13 (12.8)
MB.R. oN	Ig 824	3	65	13 (12.8)
GZG.V oN	WJ	4	66.8	13 (13.2)
MB.R.2503	Ig 993	3	69	14 (13.8)
SMNS F 121	WJ	4	71.1	14 (14.3)

NHMUK oN2	NA	NA	70.1	14 (14.1)
GZG.V 6395*	WJ	4	70.3	14
GPIT/RE/3414*	WJ	NA	70.7	14
MB.R. oN	Ig 676	3	71.9	15 (14.5)
GPIT/RE/3588*	WJ	NA	72.5	15
SMNS F 1*	WJ	4	74.1	15
GZG.V 6330	WJ	4	72.1	15 (14.6)
SMNS F 108	WJ	4	73.2	15 (14.9)
GPIT/RE/3519	WJ	NA	73.7	15 (15.0)
MB.R. oN	Ig 838	3	74	15 (15.1)
MB.R. oN	Ig 968	3	74.1	15 (15.1)
GPIT/RE/3515	WJ	NA	74.9	15 (15.3)
MB.R. oN	Ig 960	3	75	15 (15.3)
MB.R. Corset	Ig 88	3	75.2	15 (15.4)
MB.R. oN	Ig/WJ 853	NA	75.2	15 (15.4)
MB.R. Corset	Ig 537-562	3	75.5	16 (16.5)
MB.R. oN	Ig 912	3	76	16 (15.6)
NHMUK oN1	NA	NA	76.2	16 (15.6)
SMNS F 2*	WJ	4	77.8	16
GZG.V 6223	WJ	4	76	16 (15.6)
SMNS F 117	WJ	4	76.2	16 (15.6)
MB.R. oN	Ig 97	3	76.3	16 (15.7)
SMNS F 107	WJ	4	76.8	16 (15.8)
MB.R. oN	WJ 1852	3	77	16 (15.8)
GZG.V6633	WJ	4	77	16 (15.8)
MB.R. oN	Ig 874	3	77.6	16 (16.0)
NHMUK R12278r	NA	NA	77.8	16 (16.0)
MB.R. oN	Ig 855	3	78	16 (16.1)
MB.R.2508	NA	NA	79	16 (16.4)
MB.R.2511	Ig 977	3	79	16 (16.4)
MB.R.2505	NA	NA	79	16 (16.4)
GPIT/RE/3516	WJ	NA	80.1	17 (16.6)
MB.R. oN	NA	NA	80	17 (16.6)
MB.R.2505	Ig 986/1	3	81	17 (16.9)
MB.R. oN	Ig 827	3	81	17 (16.9)
MB.R. Corset	Ig 279-291	3	81.4	17 (17.0)
GPIT/RE/3518	WJ	NA	82	17 (17.1)
MB.R. oN	Ig 52	3	82.9	17 (17.4)
NHMUK R12277	NA	NA	84	18 (17.6)
MB.R. oN	Ig 374	3	90.3	19 (19.3)
MB.R. Corset	Ig 133-191-1	3	91.8	20 (19.6)

Table S2. Overview of left femora of *Dysalotosaurus lettowvorbecki* from the Ig/WJ locality, including the original field numbers, the bonebed assignment, the distal mediolateral width of the femora (DMW) and the estimated ages x from ordinary least square regression analysis (original regression values in parentheses). *Specimens that age was estimated from histological studies (Hübner 2011, 2012). Abbreviations as in Table S1.

Specimen	Field number	Bonebed	DMW [mm]	Age x [y]
GPIT/RE/3573	WJ	NA	24.30	2 (2.3)
GPIT/RE/3558	WJ 9578	4	27.20	3 (3.0)
MB.R.2519	WJ 9051	4	28.00	3 (3.3)
GPIT/RE/1713/174	WJ	NA	28.20	3 (3.3)
SMNSoN8	WJ	4	29.2	4 (3.6)
GZG.V 6573	WJ	4	29.2	4 (3.6)
GZG.V 6660	WJ	4	29.3	4 (3.6)
GPIT/RE/3525	WJ	NA	29.4	4 (3.6)
SMNS F 112	WJ	4	29.9	4 (3.7)
MB.R. oN	WJ 813	3	30	4 (3.8)
GPIT/RE/3524	WJ 10015	4	31.6	4 (4.2)
GPIT/RE/3512	WJ	NA	30.3	4 (3.8)
GPIT/RE/3593	WJ	NA	30.8	4 (4.0)
GPIT/RE/3530	WJ	NA	32	4 (4.3)
GPIT/RE/3537	WJ	NA	30.6	4 (3.9)
GZG.V 6665*	WJ	4	33.3	5
MB.R. oN	WJ 1444	NA	32.8	5 (4.5)
GPIT/RE/3523	WJ	NA	32.9	5 (4.5)
GPIT/RE/3510	WJ	NA	33.2	5 (4.6)
GPIT/RE/3538	WJ	NA	33.2	5 (4.6)
GPIT/RE/3594	WJ	NA	33.7	5 (4.7)
GPIT/RE/3475	WJ	NA	33.9	5 (4.8)
GZG.V 6505	WJ	4	33.9	5 (4.8)
GPIT/RE/5377	WJ 9366	4	34.5	5 (4.9)
GPIT/RE/4075	WJ 8793	4	34.6	5 (4.9)
GPIT/RE/3480	WJ	NA	35	5 (5.1)
GZG.V 6590 28*	WJ	4	35.3	5
GPIT/RE/3599	WJ	NA	35.3	5 (5.1)
GPIT/RE/5131	WJ 9379	4	36.2	5 (5.4)
GPIT/RE/6158	WJ 9864	4	36.7	6 (5.5)
GPIT/RE/5205	WJ 9300	4	37.9	6 (5.8)
MB.R. Corset	Ig 335-2	3	40.2	6 (6.4)
MB.R. oN	Ig	NA	41	7 (6.6)
GPIT/RE/3578	WJ 9970	4	42	7 (6.8)
MB.R.25171	WJ 718	NA	42.2	7 (6.9)
SMNS F 111	WJ	4	42.8	7 (7.1)
GZG.V 6211 22*	WJ	4	41.9	7
MB.R. Corset	Ig 248-254	3	43.3	7 (7.2)
MB.R. Corset	Ig 122-276	3	43.3	7 (7.2)
MB.R. oN	WJ	NA	44	7 (7.4)

MB.R.3299	NA	NA	44.1	7 (7.4)
GPIT/RE/3557	WJ	NA	44.1	7 (7.4)
GZG.V 6381/6434*	WJ	4	45.9	8
GPIT/RE/3495	WJ	NA	44.4	8 (7.5)
GPIT/RE/3467	WJ	NA	44.9	8 (7.6)
GPIT/RE/3584	WJ 929x	3	46.1	8 (7.9)
SMNS F 7855	WJ	4	46.9	8 (8.1)
MB.R. oN	WJ	NA	47	8 (8.1)
GZG.V 6348	WJ	4	50.3	9 (9.0)
SMNSoN3	WJ	4	52	9 (9.4)
MB.R. oN	Ig 466	3	52	9 (9.4)
MB.R. oN	WJ 843	4	53	10 (9.7)
MB.R. oN	Ig 910	3	54.1	10 (10.0)
GZG.V 6260	WJ	4	57.1	11 (10.7)
MB.R. oN	WJ 3007	NA	59	11 (11.2)
MB.R. oN	Ig 856	3	62	12 (12.0)
SMNSoN6	WJ	4	61.8	12 (11.9)
GZG.V 6325	WJ	4	62	12 (12.0)
MB.R. Corset	Ig 133-191-2	3	62.4	12 (12.1)
SMNSoN4	WJ	4	63.3	12 (12.3)
MB.R.5100	NA	NA	64.3	13 (12.6)
GZG.V 6483	WJ	4	64.7	13 (12.7)
MB.R.3302	NA	NA	65.7	13 (12.9)
MB.R. oN	Ig 717	3	65.7	13 (12.9)
MB.R. oN	Ig 985	3	66.7	13 (13.2)
MB.R. oN	Ig 243	3	66.8	13 (13.2)
MB.R. Corset	Ig 402-414-2	3	66.8	13 (13.2)
MB.R. oN	WJ 698/2	3	66.9	13 (13.2)
SMNS F 119	WJ	4	67.8	14 (13.5)
SMNS F 110	WJ	4	68.2	14 (13.6)
GPIT/RE/3482	WJ	NA	68.3	14 (13.6)
SMNS F 115	WJ	4	68.9	14 (13.8)
GZG.V 6314	WJ	4	68.9	14 (13.8)
MB.R. oN	Ig 35	3	69	14 (13.8)
SMNSoN5	WJ	4	70	14 (14.0)
MB.R. oN	Ig 944	3	70.1	14 (14.1)
SMNSoN1	WJ	4	70.8	14 (14.2)
GPIT/RE/1713/30	WJ	NA	70.9	14 (14.3)
MB.R. Corset	Ig 133-191-3	3	71	14 (14.3)
MB.R.2507	Ig 986	3	71.4	14 (14.4)
GZG.V 6273	WJ	4	71.9	15 (14.5)
GPIT/RE/3484	WJ	NA	72.3	15 (14.6)
MB.R.2506	Ig 988	3	72.8	15 (14.8)
MB.R. oN	Ig 856	3	72.5	15 (14.7)
MB.R. Corset	Ig 402-414-1	3	72.5	15 (14.7)

MB.R. oN	Ig 883/2	3	74	15 (15.1)
GPIT/RE/3545	WJ	NA	74.1	15 (15.1)
MB.R.1502	Ig 962	3	74.5	15 (15.2)
MB.R. oN	Ig 940	3	74.6	15 (15.2)
MB.R. oN	Ig 788	3	74.7	15 (15.2)
MB.R. oN	Wj 698/1	3	75.1	15 (15.3)
MB.R. oN	Ig 15	3	74.9	15 (15.3)
SMNS F 109	WJ	4	76.9	16 (15.8)
MB.R. oN	Ig 871	3	77	16 (15.8)
MB.R. oN	Ig 849	3	77.5	16 (16.0)
MB.R. oN	Ig 912	3	78	16 (16.1)
GZG.V 6277	WJ	4	78.1	16 (16.1)
SMNS F 116	WJ	4	78.1	16 (16.1)
GPIT/RE/4573	WJ	NA	78.2	16 (16.1)
MB.R. oN	Ig 759	3	80	17 (16.6)
MB.R.2504	Ig 979	3	81	17 (16.9)
GPIT/RE/3465	WJ	NA	82	17 (17.1)
GZG.V 6361	WJ	4	82.2	17 (17.2)
MB.R. oN	WJ 8580	4	85.2	18 (17.9)
MB.R. Corset	Ig 256-282	3	86.3	18 (18.2)
MB.R.2144	Ig 85	3	90	19 (19.2)

Table S3. Age distribution $d(x)$ of *Dysalotosaurus lettowvorbecki* and total number of individuals N from the Ig/WJ locality and bonebed 3, 4, and GPIT collection using two different approaches (total vs. average) for estimating the number of individuals per age (3-point average values in parentheses; see material and methods for details).

Age x [y]	$d(x)$ Total				$d(x)$ Average			
	All	BB 3	BB 4	GPIT	All	BB 3	BB 4	GPIT
0	1	0	1	0	1 (1.0)	1 (0.5)	1 (0.5)	0 (0.0)
1	1	1	0	0	2 (1.7)	0 (0.3)	1 (1.0)	0 (0.3)
2	3	0	2	1	2 (2.3)	0 (0.3)	1 (1.3)	1 (0.7)
3	3	0	2	1	6 (6.0)	0 (0.3)	3 (3.3)	2 (2.3)
4	12	1	6	5	9 (9.3)	0 (0.3)	5 (4.7)	4 (4.3)
5	14	0	6	7	10 (9.7)	1 (0.7)	4 (4.3)	4 (4.3)
6	7	1	2	4	11 (10.7)	1 (1.0)	4 (4.3)	5 (5.0)
7	15	2	6	7	10 (10.0)	1 (1.3)	3 (3.3)	4 (4.3)
8	8	3	3	2	9 (9.3)	2 (1.7)	4 (3.7)	3 (3.0)
9	5	1	2	0	5 (5.0)	2 (1.7)	2 (2.0)	1 (0.7)
10	2	1	1	0	3 (3.3)	1 (1.3)	1 (1.3)	0 (0.3)
11	3	2	1	1	3 (3.0)	2 (1.7)	2 (1.7)	0 (0.3)
12	5	2	3	0	5 (5.0)	2 (2.3)	2 (1.7)	0 (0.3)
13	8	5	1	0	8 (8.3)	4 (3.7)	3 (3.3)	1 (0.7)
14	12	4	6	2	11 (10.7)	6 (6.0)	3 (2.7)	1 (1.3)
15	12	9	3	3	11 (11.0)	5 (5.3)	3 (3.3)	2 (1.7)
16	16	6	5	1	12 (11.7)	6 (5.7)	3 (2.7)	2 (1.7)
17	7	4	1	2	8 (8.0)	3 (3.3)	2 (1.7)	1 (0.7)
18	2	1	1	0	3 (3.0)	2 (1.7)	1 (0.7)	1 (0.7)
19	1	1	0	0	1 (1.0)	1 (0.7)	0 (0.3)	0 (0.0)
20	1	1	0	0	1 (0.7)	1 (0.7)	0 (0.0)	0
21	0	0	0	0	0 (0.3)	0 (0.3)	0 (0.0)	0
N (total)	138	45	52	36	131	41	48	32