

APPENDIX 2. Postcranial anatomical measurements of *Paludidraco multidentatus* (MUPA-ATZ0101) and *Simosaurus gaillardoti*

Table S1. Selected measurements (in mm) of the vertebral elements for the holotype of *Paludidraco multidentatus* (MUPA-ATZ0101) and for the specimen SMNS 14733 of *Simosaurus gaillardoti* in the present study. **Abbreviations:** -, missing, not observable or not applicable; *, estimated measurement; **, distorted measurement due to bone deformation; cH, centrum height; cW, centrum width; tpH, transverse process height; tpW, transverse process width; tpD, distance across transverse processes; nsH, neural spine height; nsW, neural spine width; nsL, neural spine length; prD, distance across prezygapophyses; ptD, distance across postzygapophyses.

Taxon	Specimen	Element	cH	cW	cL	cH/ cL	tp H	tp W	tp D	ns H	ns W	ns L	pr D	pt D	nsH/ns W	nsH/tp D	prD/pt D	tpH/tp W
<i>P. multidentatus</i>	MUPA-ATZ0101	cc#1 (Figure 3A–C'; Appendix 1, Figure S1A–B)	21	16	10	2.1	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	cc#3 (Figure 3D–E'; Appendix 1, Figure S1A–B)	17	-	7**	2.4	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	cc#4 (Figure 3F–H'; Appendix 1, Figure S1A–B)	22	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	cc#5 (Figure 3F–H'; Appendix 1, Figure S1A–B)	22	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	C#9 (Figure 4B–B', D–D'; Appendix 1, Figure S1A)	30	-	20	1.5	20	8	-	30	6	25	-	-	5.00	-	-	2.50
<i>P. multidentatus</i>	MUPA-ATZ0101	cc#10 (Figure 4B–B'; Appendix 1, Figure S1B)	30	30	20	1.5	-	-	-	-	-	-	-	-	-	-	-	-

<i>P. multidentatus</i>	MUPA-ATZ0101	D2 (Figure 4D–D'; Appendix 1, Figure S1A)	30*	25*	22	1.4	-	-	-	40*	8	26*	-	30*	5.00	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	D5 (Figure 1A–A'; Appendix 1, Figure S1A)	45	-	30	1.5	50	-	-	65	-	33	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	D6 (Figure 1A–A'; Appendix 1, Figure S1A)	45	-	30	1.5	45	-	-	70	-	30	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	D8 (Figure 1A–A'; Appendix 1, Figure S1A)	45	-	30	1.5	45	-	-	70	-	32	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	D9 (Figure 1A–A'; Appendix 1, Figure S1A)	45	-	31	1.5	45	-	-	67	-	35	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	D10 (Figure 1A–A'; Appendix 1, Figure S1A)	42	-	30	1.4	47	-	-	70	-	34	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	D13 (Figure 1A–A'; Appendix 1, Figure S1A)	50	-	30	1.7	-	-	-	70*	-	40	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	D14 (Figure 1A–A'; Appendix 1, Figure S1A)	53	-	38	1.4	45*	-	-	75*	-	40	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	centrum #1 (Figure 8A–D; Appendix 1, Figure S1B)	42	30	30	1.4	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	centrum #2 (Figure 8E–H; Appendix 1, Figure S1B)	40	30	28	1.4	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	centrum #3 (Figure 8I–L; Appendix 1, Figure S1B)	43	34	25	1.7	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	centrum #4 (Figure 8M–P; Appendix 1, Figure S1B)	36	35	28	1.3	-	-	-	-	-	-	-	-	-	-	-	-

<i>P. multidentatus</i>	MUPA-ATZ0101	centrum #5 (Figure 8Q–T; Appendix 1, Figure S1B)	36	37	26	1.4	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	centrum #6 (Figure 8U–X; Appendix 1, Figure S1B)	38	31	24	1.6	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	centrum #7 (Figure 8Y–AB; Appendix 1, Figure S1A)	35	27	26	1.3	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	da#30 (Figure 1B–B'; Appendix 1, Figure S1A–B)	-	-	-	-	38	18	65	63	12*	-	37*	-	5.25	0.97	-	2.11
<i>P. multidentatus</i>	MUPA-ATZ0101	da#34? (Figure 5A–F; Appendix 1, Figure S1A–B)	-	-	-	-	27*	15	68	-	-	-	37	31	-	-	1.19	1.80
<i>P. multidentatus</i>	MUPA-ATZ0101	da#35 (Figure 5M–R; Appendix 1, Figure S1A–B)	-	-	-	-	35	17	60*	57	14	29	39*	26	4.07	0.95	1.50	2.06
<i>P. multidentatus</i>	MUPA-ATZ0101	da#36 (Figure 5G–L; Appendix 1, Figure S1A–B)	-	-	-	-	31	17	59	62	12	27	42	31	5.17	1.05	1.35	1.82
<i>P. multidentatus</i>	MUPA-ATZ0101	da#37 (Figure 2A–A', Figure 6A–D'; Appendix 1, Figure S1A–B)	-	-	-	-	25	12	45*	59	10	28	-	-	5.90	1.31	-	2.08
<i>P. multidentatus</i>	MUPA-ATZ0101	da#38 (Figure 2A–A', Figure 6E–H'; Appendix 1, Figure S1A–B)	-	-	-	-	-	-	-	55	10	30	-	-	5.50	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	da#39 (Figure 2A–A', Figure 6I–L'; Appendix 1, Figure S1A–B)	-	-	-	-	26	15	46*	64	10	22	25*	21*	6.40	1.39	1.19	1.73
<i>P. multidentatus</i>	MUPA-ATZ0101	da#40 (Figure 2B–B', Figure 7A–D'; Appendix 1, Figure S1A–B)	-	-	-	-	-	-	-	49	10	29	-	-	4.90	-	-	-

<i>P. multidentatus</i>	MUPA-ATZ0101	da#41 (Figure 2A–A', Figure 7E–H'; Appendix 1, Figure S1A–B)	-	-	-	-	-	-	-	53	5	35	16*	17*	10.60	-	0.94	-
<i>P. multidentatus</i>	MUPA-ATZ0101	centrum #8 (Figure 8AC–AF; Appendix 1, Figure S1A)	35	34	20	1.8	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	centrum #9 (Figure 8AG–AJ; Appendix 1, Figure S1B)	37	35	19	1.9	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	sa1 (Figure 2A–A', Figure 9A–E'; Appendix 1, Figure S1A–B)	-	-	-	-	25*	12*	46*	47	5	33	-	18*	9.40	1.02	-	2.08
<i>P. multidentatus</i>	MUPA-ATZ0101	sc1 (Figure 2A–A', Figure 9F–I; Appendix 1, Figure S1A–B)	37	36	19**	1.9	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	sa2 (Figure 2A–A', Figure 9A–E'; Appendix 1, Figure S1A–B)	-	-	-	-	31	13	50*	43	3	28	25*	24*	14.33	0.86	1.04	2.38
<i>P. multidentatus</i>	MUPA-ATZ0101	sc2 (Figure 2A–A', Figure 9J–M; Appendix 1, Figure S1A–B)	27**	34**	33	0.8	-	-	-	-	-	-	-	-	-	-	-	-
<i>P. multidentatus</i>	MUPA-ATZ0101	S3 (Figure 2A–A', Figure 10A–E'; Appendix 1, Figure S1A–B)	-	25	27	-	25	12	46*	47	4	28	28*	20*	11.75	1.02	1.40	2.08
<i>P. multidentatus</i>	MUPA-ATZ0101	ca1 (Figure 2A–A', Figure 10A–E'; Appendix 1, Figure S1A–B)	-	-	-	-	26	11*	41*	47	3	30	19*	19	15.67	1.15	1.00	2.36
<i>P. multidentatus</i>	MUPA-ATZ0101	cac1 (Figure 10F–I; Appendix 1, Figure S1A–B)	26	30	22	1.2	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. gaillardoti</i>	SMNS 14733	cervical centrum no. 124a (Appendix 1, Figure S5F–I)	17	19	16	1.1	-	-	-	-	-	-	-	-	-	-	-	-

<i>S. gaillardoti</i>	SMNS 14733	cervical centrum no. 143 (Appendix 1, Figure S5O–S)	23	24	21	1.1	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. gaillardoti</i>	SMNS 14733	cervical centrum no. 213 (Appendix 1, Figure S5J–N)	22	22	20	1.1	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. gaillardoti</i>	SMNS 14733	dorsal centrum no. 23 (Appendix 1, Figure S6V–Y)	30	30	27	1.1	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. gaillardoti</i>	SMNS 14733	dorsal centrum no. 24 (Appendix 1, Figure S6Z–AC)	30	30	27	1.1	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. gaillardoti</i>	SMNS 14733	dorsal centrum no. 159 (Appendix 1, Figure S6AD–AG)	31	31	27	1.1	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. gaillardoti</i>	SMNS 14733	dorsal centrum no. 178 (not depicted)	29	29	27	1.1	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. gaillardoti</i>	SMNS 14733	dorsal centrum no. 198 (not depicted)	30	30	27	1.1	-	-	-	-	-	-	-	-	-	-	-	-
<i>S. gaillardoti</i>	SMNS 14733	dorsal arch no. 134 (Appendix 1, Figure S6E–I)	-	-	-	-	30	15	56	55	9	28	37	35	6.11	0.98	1.06	2.00
<i>S. gaillardoti</i>	SMNS 14733	dorsal arch no. 162 (not depicted)	-	-	-	-	30	14	55	50	9	25	35	37	5.56	0.91	0.95	2.14
<i>S. gaillardoti</i>	SMNS 14733	dorsal arch no. 184 (not depicted)	-	-	-	-	33	15	56	56	10	24	37	34	5.60	1.00	1.09	2.20
<i>S. gaillardoti</i>	SMNS 14733	sacral vertebra no. 147 (Appendix 1, Figure S7K)	26	28	25	1.0	20	7	43	37	9	22	31	28	4.11	0.86	1.11	2.86
<i>S. gaillardoti</i>	SMNS 14733	sacral vertebra unnumbered 1 (Appendix 1, Figure S7N–O)	26	23	25	1.0	28	8	41	45	7	25	24	22	6.43	1.10	1.09	3.50
<i>S. gaillardoti</i>	SMNS 14733	sacral vertebra unnumbered 2	26	28	26	1.0	22	8	41	40	7	26	24	23	5.71	0.98	1.04	2.75

<i>S. gaillardoti</i>	SMNS 14733	(Appendix 1, Figure S7M–N)																	
		sacral vertebra no. 113																	
		(Appendix 1, Figure S7L)	27	27	26	1.0	19	7	42	41	9	23	27	27	4.56	0.98	1.00	2.71	

Figure S1. Graphic scheme showing the measurements considered for the vertebral elements in (A) cranial, (B) lateral, and (C) caudal views.

Abbreviations: cH, centrum height; cW, centrum width; tpH, transverse process height; tpW, transverse process width; tpD, distance across transverse processes; nsH, neural spine height; nsW, neural spine width; nsL, neural spine length; prD, distance across prezygapophyses; ptD, distance across postzygapophyses.

