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SUPPLEMENTARY ONLINE MATERIAL FOR

Post-collection taphonomy, sampling effects and the role of the collector in palaeontological collections: a case study from an early Late Triassic bone accumulation from southernmost Brazil

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Supplementary Online Material

SOM 1. Detailed list of all sampling activities that took place in the Schoenstatt Sanctuary outcrop.

SOM 2. Results of the Chi-Squared tests focusing on the curatorial activity of the three institutions with respect to fossil anatomy.

SOM 3. Results of the Chi-Squared tests focusing on the curatorial activity of the three institutions with respect to fossil taxonomy.

Table S1. List of the specimens which have undergone modification with respect to the cataloguing and their previously occupied position within the collections.

SOM 1. Detailed list of all sampling activities that took place in the Schoenstatt Sanctuary outcrop, including the number of specimens catalogued by sampling, the number of elements (including bones, bone fragments, and indeterminates) associated with each numbered specimen, as well as the number of elements in which post-sampling damage was recognized, and those of the latter that have been the subject of restoration. The listed percentages were calculated as follows: a) % breakage = (Anthropogenically broken / Elements per specimens) * 100, and b) % glued = (glued elements / Anthropogenically broken) * 100. Percentages greater than 100% are due to multiple breakages per element and/or multiple breakages within multi-element specimens. The table also includes those samples present in the collection but whose sampling date is not known, as well as those “not found”.

Institution	Date of sampling	Catalogued specimens	Elements per specimens	Anthrop. broken	% breakage	glued elements	% glued	Additional observations
UFRGS	1995, 23 October	14	40	28	70,00%	13	46,43%	
	1996, 29-31 May	12	30	38	126,67%	17	44,74%	
	-, 18 August	13	60	44	73,33%	13	29,55%	
	-, 29 November	1	46	40	86,96%	4	10,00%	
	1997, 7 June	8	166	138	83,13%	20	14,49%	
	-, 24 October	1	134	100	74,63%	3	3,00%	
	1998 (generic)	1	1	1	100,00%	-	-	
	2002, March	3	4	4	100,00%	2	50,00%	
	-, August	1	1	1	100,00%	1	100,00%	
	2003, 21 March	17	17	12	70,59%	8	66,67%	
	-, 2-4 April	41	144	140	97,22%	47	33,57%	
	-, August	5	12	10	83,33%	6	60,00%	
	-, October	2	2	1	50,00%	1	100,00%	
	2003 (generic)	2	5	5	100,00%	3	60,00%	
	2008, 2-3 Oct.	3	64	61	95,31%	19	31,15%	Including a rhizolith
	-, 14 December	1	44	12	27,27%	5	41,67%	
	2010, July	1	1	-	-	-	-	
	2011, 23 March	1	6	1	16,67%	1	100,00%	Uncatalogued
	2017, 1 July	3	3	3	100,00%	1	33,33%	
	2019, 25 May	1	8	4	50,00%	2	50,00%	Uncatalogued
Undated 1	9	9	12	133,33%	7	58,33%	Catalogued	
Undated 2	1	34	34	100,00%	5	14,71%	Uncatalogued	
Not found	10	-	-	-	-	-		
Total		151	831	689	82,91%	178	25,83%	
PUC-RS	1996, February	34	131	114	87,02%	38	33,33%	
	1999, 5 Sept.	2	9	9	100,00%	2	22,22%	
	-, 12 October	4	121	30	24,79%	6	20,00%	
	2000, 27 Sept.	1	22	22	100,00%	10	45,45%	Rhizoliths
	2001, November	-	-	-	-	-	-	
	Undated	1	15	4	26,67%	2	50,00%	Uncatalogued
	Not found	3	-	-	-	-	-	
Total		45	298	179	60,07%	58	32,40%	
MCN/SEMA-RS	1998, 12 April	11	59	41	69,49%	11	26,83%	
	-, 1-3 May	32	213	238	111,74%	71	29,83%	
	-, 2 November	3	31	17	54,84%	3	17,65%	
	2000, July	18	159	137	86,16%	17	12,41%	
	-, Aug.-Dec.	37	203	108	53,20%	55	50,93%	
	2002, 22 Feb.	56	339	296	87,32%	72	24,32%	
	-, 18 March	1	81	29	35,80%	2	6,90%	
	1998-2002 (gen.)	32	273	163	59,71%	27	16,56%	
	2011, 8 October	6	32	15	46,88%	1	6,67%	
	2013, 14 March	8	34	23	67,65%	13	56,52%	
	Undated	5	9	5	55,56%	1	20,00%	Uncatalogued
	Not found	2	-	-	-	-	-	
	Total		211	1433	1072	74,81%	273	25,47%
TOTAL	1995-2019	407	2562	1940	75,72%	509	26,24%	

SOM 2

Results of the Chi-Squared tests focusing on the curatorial activity of the three institutions with respect to fossil anatomy.

Institution	Class	Anthropogenic breakage	Not broken	Glued elements	Not glued
UFRGS	Cranial	130	12	70	60
	Post-cranial	99	12	52	47
	Others	460	162	56	404
	χ^2	29,668		134,85	
	p	< 0.000001		< 0.000001	
PUC-RS	Cranial	73	10	22	51
	Post-cranial	18	7	11	7
	Others	88	116	25	63
	χ^2	50.825		7.5849	
	p	< 0.000001		0.02254	
MCN/SEMA-RS	Cranial	176	15	61	115
	Post-cranial	354	54	145	209
	Others	542	351	67	475
	χ^2	138.72		101.65	
	p	< 0.000001		< 0.000001	

SOM 3

Results of the Chi-Squared tests focusing on the curatorial activity of the three institutions with respect to fossil taxonomy.

Institution	Taxonomic group	Anthropogenic breakage	Not broken	Glued elements	Not glued
UFRGS	Cynodontia	661	185	160	504
	Archosauriformes	26	1	17	6
	Others	1	0	1	0
	rhizoliths	1	0	0	1
	χ^2	5.6985		32.014	
p	0.12724		< 0.000001		
PUC-RS	Cynodontia	144	129	42	102
	Archosauriformes	2	1	1	1
	Others	11	3	5	6
	rhizoliths	22	0	10	12
	χ^2	21.412		3.5378	
p	0.0000864		0.3159		
MCN/SEMA-RS	Cynodontia	1059	414	265	794
	Archosauriformes	10	2	6	4
	Others	3	4	2	1
	rhizoliths	0	0	0	0
	χ^2	3.693		9.0752	
p	0.15779		0.010699		

Table S1. List of the specimens which, after a) revision, b) recognition of complementary fragments catalogued and archived separately, and c) anatomical identification of unidentified fragments, have undergone modification with respect to the cataloguing and their previously occupied position within the collections

<i>Specimen</i>	<i>Original description</i>	<i>Variation of description and actual content</i>	<i>New collocation after revision and restoration</i>	<i>Further observation</i>
UFRGS-PV-0425-T	Indeterminate fragments, vertebra, skull?	Skull fragments, left radius proximal end, vertebra, and indeterminate fragments	A concretionary and indeterminate fragment belongs to a major block, specimen UFRGS-PV-0453-Tb	Two further indeterminate fragments were recognized as one and glued together during this work
UFRGS-PV-0430-T	Indeterminate fragments	Right femur distal end, and indeterminate fragments	Two concretionary and indeterminate fragment belongs to a major block, specimen UFRGS-PV-0453-Ta and UFRGS-PV-0453-Tb	Two further indeterminate fragments were recognized as one and glued together during this work
UFRGS-PV-0431-T	Broken left maxilla	Fragmentary lower jaw, laterally compressed and fused on the shaft of a right femur	Counterpart of UFRGS-PV-0452-T + UFRGS-PV-0453-T (one element), stored together with this specimen number.	Previously, it also contained a fragment belonging to UFRGS-PV-1365-T, recognized as another taxonomic group, and therefore separated during this work
UFRGS-PV-0439-T	Lower jaw fragments	Right hemimandible fragment	Counterpart of UFRGS-PV-0478-T and stored together	
UFRGS-PV-0442-T	Indeterminate fragments and a vertebra	Fragments of humeri, vertebra, neural arc fragment, indeterminate fragments	An indeterminate fragment belongs to a major block, specimen UFRGS-PV-0453-Ta. Four indeterminate fragments were recognized as parts of a neural arc	
UFRGS-PV-0452-T	Indeterminate fragment	Fragmentary right femur fused with lower jaw coronoid processes	Counterpart of UFRGS-PV-0431-T and UFRGS-PV-0453-T (one element)	
UFRGS-PV-0453-Ta	Indeterminate fragments	Several bones embedded in a concretionary block	A concretionary block, including elements from the specimens UFRGS-PV-(0430+0442+0453+0456+0583)-T	
UFRGS-PV-0453-Tb	Indeterminate fragments	Several bones embedded in a concretionary block	A concretionary block, including elements from the specimens UFRGS-PV-(0425 + 0430 + 0437 + 0453 + 0460)-T	
UFRGS-PV-0456-T	Long bone fragments and indeterminate fragments	-	An indeterminate fragment catalogued with this number belongs to UFRGS-PV-0453-Ta and repositioned, although the other elements include was collected in a different outcrop from the same AZ	
UFRGS-PV-0460-T	Indeterminate fragments	-	A fragment belongs to UFRGS-PV-0453-Tb	

UFRGS-PV-0478-T	Lower jaw fragments	Left hemimandible	Counterpart of UFRGS-PV-0439-T and stored together	
UFRGS-PV-0576-T	Skull fragment	-	The specimen now includes two more fragments, formerly part of specimens UFRGS-PV-0582-T and UFRGS-PV-0583-T	
UFRGS-PV-0583-T	Several fragments	Indeterminate fragments and fragments of skull, teeth, vertebrae, ribs, and ulna	An indeterminate concretionary fragment catalogued with this number belongs to UFRGS-PV-0453-Ta and repositioned. An indeterminate fragment is counterpart of a fragmentary humerus stored with the number UFRGS-PV-0582-T (which includes many other elements), and stored together	Two further indeterminate fragments were recognized as one and glued together during this work
UFRGS-PV-0874-T	Indeterminate fragment	Lower jaw fragment	Complementary part of UFRGS-PV-0876-T and UFRGS-PV-0950-T	
UFRGS-PV-0892-T	Lower jaw fragment	Articular and coronoid portion of right ramus	Complementary part of UFRGS-PV-0891-T	
UFRGS-PV-0893-T	Maxilla fragment	-	Complementary part of UFRGS-PV-1298-T, and stored together	
UFRGS-PV-0906-T	Indeterminate fragment	Coronoid process fragment	Complementary part of UFRGS-PV-0905-T, and stored together	
UFRGS-PV-0911-T	Non-mammalian cynodont lower jaw fragment	-	Complementary part of UFRGS-PV-0915-T and UFRGS-PV-0933-T, and stored together. The fragments previously stored in UFRGS-PV-0915-T were described as "indeterminate fragments", apart from a group of nearly 40 bone fragments	
UFRGS-PV-0915-T	Indeterminate fragments	Right humerus, tooth fragment, left ilium fragment, neural arch, indeterminate fragments	The number of indeterminate fragments was greater, since 7 of these were recognized as lower jaw fragments, complementary to UFRGS-PV-0911-T and UFRGS-PV-0933-T, and stored together	
UFRGS-PV-0930-T	Indeterminate fragments	Vertebra, rib fragment, and indeterminate fragments	The number of indeterminate fragments was greater, since one of these were recognized as a neural arch and counterpart of centrum stored in UFRGS-PV-0936-T, while another was recognized as part of the pubis UFRGS-PV-0937-T, and stored together with their respective positions	
UFRGS-PV-0933-T	Non-mammalian cynodont lower jaw fragment	-	Complementary part of UFRGS-PV-0911-T and UFRGS-PV-0915-T, and stored together.	
UFRGS-PV-	Indeterminate	Lower jaw fragment	Complementary part of UFRGS-	

0950-T	fragment		PV-0874-T and UFRGS-PV-0876-T	
MCN-PV 10114	Several thoracic ribs associated in the same block	19 whole and fragmentary thoracic ribs	The number of ribs were 20, since a distal portion of these was identified as complementary to MCN-PV 10128, and stored together	
MCN-PV 10128	Left femur, two vertebrae, and fragmentary ribs associated	-	The specimen is complementary of MCN-PV 10114, MCN-PV 10129 and MCN-PV 10156	
MCN-PV 10129	Rib and two vertebrae associated	-	The specimen is complementary of MCN-PV 10114, MCN-PV 10128 and MCN-PV 10156	
MCN-PV 10156	Several ribs	Rib fragment	The specimen is complementary of MCN-PV 10114, MCN-PV 10129 and MCN-PV 10156	
MCN-PV 10183	Several associated post-cranial bones	Partially prepared almost complete cynodont post-cranial skeleton	The specimen is the main portion of a young individual that also includes MCN-PV 10183b, MCN-PV 10353 and possibly MCN-PV 10354	
MCN-PV 10183b	-	Articulated fragmentary right scapula, coracoid and humerus	Part of the individual MCN-PV 10183	
MCN-PV 10184b	-	Post-cranial elements (left tibia, rib fragment, and other indeterminates) embedded in concretion	The specimen is part of the block MCN-PV 10184, repositioned and glued in its original position in the main block	
MCN-PV 10353	Concretion block embedding several bones	Post-cranial semi-articulated elements embedded in concretion	Part of the individual MCN-PV 10183	
MCN-PV 10354	Cranial and post-cranial semi-articulated elements embedded in concretion	-	Part of the individual MCN-PV 10183	
MCN-PV 10383	Indeterminate fragments	Indeterminate fragments	A fragment was identified as ischium boot of the ischium MCN-PV 10355, and relocated in respective position	
MCP-PV 4027	Indeterminate fragment	Right femur distal end	Complementary of MCP-PV 4018, and stored together	