

S3. Bone profiler values of the analysed humeri and femora

C is the global bone compactness for the whole sectional area. P is the relative distance from the centre of the section to the point of inflection, where the most abrupt change in compactness is observed. P is thus proportional to the size of the medullary cavity. S is the reciprocal of the slope at the inflection point and generally reflects the width of the transition zone between the cortical bone and the medullary region.

Humerus	abbr.	C	S	P	Min	Max
Placodontia	Fig. 8					
<i>Psephoderma alpinum</i> PIMUZA/III 1476	Ps	91.2	0.2522054	0.100823	0.3284395	0.9974383
Placodontia indet. aff. <i>Cyamodus</i> SMNS 59831	-	82.3	0.0192668	0.0516515	0.0000011	0.8267046
Placodontia indet. aff. <i>Cyamodus</i> SMNS 15937	-	79.9	0.0588768	0.080027	1.00E+00	0.8125375
Placodontia indet. aff. <i>Cyamodus</i> MHI 2112-6 (part)	-	84.7	0.0149849	0.0350636	0.000000967	0.8487779
Placodontia indet. aff. <i>Cyamodus</i> SMNS 54569	-	87.1	0.0147433	0.0549787	0.685	0.874075
Placodontia indet. aff. <i>Cyamodus</i> SMNS 54582	-	84.7	0.0232605	0.155462	0.154	0.87024
Placodontia indet. aff. <i>Cyamodus</i> MHI 697	-	81.8	0.0130419	0.1688655	0.000000148	0.8424392
Placodontia indet. aff. <i>Cyamodus</i> SMNS 15891	-	85.9	0.0077368	0.0881896	0.000000244	0.8661181
Placodontia indet. aff. <i>Cyamodus</i> MHI 1096	-	78.5	0.0111719	0.1417196	0.000000433	0.8014756
<i>Paraplocodus broilii</i> PIMUZ T 5845	Pa	94.7	0.0971625	0.0000001	0.3456165	0.9467067
Placodontia indet. MB.R. 454	P	82.4	0.0796261	0.4757301	0.4843481	0.9367116
Placodontia indet. IGWH 9	P	82.7	0.2593411	0.0695503	0.000000897	0.9402868
Pachypleurosauria						
<i>Anarosaurus heterodontus</i> TWE 48000023	-	82.5	0.0369192	0.3300958	0.000000775	0.9329377
<i>Anarosaurus heterodontus</i> Wijk08-183	-	78.8	0.054676	0.2635428	0.000000341	0.8574109
<i>Neusticosaurus</i> sp. PIMUZ T 3455-2	Ne	92	0.051431	0.0000001	0.00000261	0.9237458

Nothosauria						
<i>Nothosaurus</i> sp. SMNS 84772	-	76.2	0.3090958	0.2595539	0.00000197	0.999999
<i>Nothosaurus ?giganteus</i> MB.R. 269	-	51.4	0.0665729	0.8226691	0.293	0.999999
<i>Nothosaurus</i> sp. MHI 754	-	70.9	0.1215368	0.4458386	0.0000000876	0.940332
<i>Simosaurus gaillardoti</i> SMNS 18698	-	81.7	0.175219	0.0483883	0.000000754	0.8711621
<i>Simosaurus gaillardoti</i> SMNS 52095	-	75.9	0.1203213	0.3304208	0.0418088	0.8910345
Pistosauria						
<i>Cymatosaurus</i> sp. IGWH 19	-	91.8	0.2037634	0.0689963	0.909758	0.999999
<i>Cymatosaurus</i> sp. Wijk11-39	-	84.7	0.1150202	0.2282219	0.000000764	0.934409
<i>Pistosaurus</i> sp.		91.4	0.0207013	0.0517014	0.000000817	0.9180916
Plesiosauria						
Ichthyosauria						
<i>Ichthyosaurus</i> sp. StIPB R 222	Ich	68	0.1273568	0.1281216	0.0232191	0.7214996
<i>Stenopterygius</i> sp. SMNS A	St	54.2	0.0307268	0.9294553	0.471013	0.9945984
Mosasauria						
<i>Dallasaurus turneri</i> SMU 76386	Da	89.8	0.0516712	0.4467431	0.5179167	0.999999
<i>Prognathodon</i> sp. IRScNB 1624	Pr	46.5	0.1007096	0.8509145	0.251967	0.999999
Crocodylia						
<i>Crocodylus</i> sp.	Cr	82.3	0.0470759	0.3662778	0.00000026	0.9601293
<i>Stenopterygius</i> sp.		72.6	0.0486055	0.5723891	0.5651298	0.8091993
Testudines						
Chelonoidea StIPB R 409	Ch	72.6	0.1031421	0.6081272	0.349319	0.9818974
<i>Dermochelys coriacea</i> OMNH unnumbered	De	56.7	0.0441581	0.9192567	0.4853482	0.999999
Diapsida indet.						
<i>Horaffia kugleri</i> SMNS 84816	-	86.3	0.0077258	0.0654034	0.000000722	0.8672099
<i>Horaffia kugleri</i> MHI 2112-1	-	87.2	0.0719306	0.0648492	0.00000505	0.887713
<i>Horaffia kugleri</i> MHI 2112-2	-	83.8	0.0460113	0.1610575	0.000000494	0.8664546
<i>Horaffia kugleri</i> MHI 2112-4 (part)	-	82.7	0.0720729	0.0000001	0.000000851164	0.8326156
Mammalia						

<i>Paleoparadoxia</i> sp. AMP AK0011	Pap	99.1	0.050096	0.2083801	0.8632984	0.9976097
Otariidae StIPB unnumbered	Ot	75.6	0.0916312	0.3795253	0.000000196	0.9150631
Otariidae StIPB unnumbered	Ot	72.2	0.1288439	0.4659179	0.2728689	0.887505
<i>Phocoena phocoena</i> MNHNAC 1881-232	Pp	42	0.0750872	0.8726646	0.233615	0.999999
<i>Leptonychotes weddellii</i> NSM M 29643	Le	76.3	0.0970976	0.7085641	0.548983	0.999999
<i>Trichechus manatus</i> ZFMK 73223	Tm	84.7	0.0495546	0.3919578	0.071788	0.9989915
<i>Mirounga leonine</i> Laurin et al. (2011)	MI	34.8	0.102654	0.8723616	0.1207943	0.999999
<i>Delphinus delphis</i> MNHN 1880-1310	Dd	32.9	0.1941883	0.7910332	0.0264792	0.8089076
<i>Tursiops truncatus</i> MNHNAC 1978-09	Tt	46.2	0.0944516	0.7790845	0.2733049	0.7728642
Femora						
Placodontia						
<i>Psephoderma alpinum</i> PIMUZ A/III0735	Ps	78.2	0.16647	0.502521	0.327674	1
<i>Paraplocodus broilii</i> PIMUZ T 5845	Pa	97.9	0.02887	0.348015	0.935841	0.98691
Placodontia indet. MB.R. 812	P	75.7	0.12631	0.222099	1.01E-07	0.83904
Placodontia indet. MB.R. 961	P	79.3	0.2023	0.295706	6.85E-07	0.98121
Placodontia indet. SMNS 54578	P	72.8	0.09033	0.443579	0.209233	0.87531
Placodontia indet. MB.R. 814.2	P	75.1	0.111339	0.317635	1.99E-07	0.874517
Placodontia indet. IGWH 23	P	83.5	0.14266	0.408616	0.420981	0.95714
Placodontia indet. SMNS 84545	P	77.5	0.0766466	0.1650459	9.96E-07	0.8117076
Eosauropterygia						
<i>Anarosaurus heterodontus</i> Wijk-HO-A568	-	85.4	0.028206	0.249154	2.17E-07	0.914454
<i>Neusticosaurus</i> sp.	-	94.1	0.020479	0.100766	8.70E-07	0.951613
<i>Nothosaurus</i> sp. Wijk05-11	-	85.8	0.114946	0.243863	2.94E-07	0.954017
<i>Nothosaurus</i> sp. MHI 279	-	70	0.03141	0.53516	3.91E-08	0.990768
<i>Nothosaurus</i> sp. MHI 756	-	83.5	0.063216	0.358611	2.54E-07	0.975223
<i>Nothosaurus</i> sp. MHI 1987	-	82.5	0.020176	0.361545	5.09E-07	0.952129
<i>Ceresiosaurus calcagnii</i>		91	0.0095684	0.0977743	4.44E-07	0.9195684

from Hugli 2011						
<i>Simosaurus gaillardoti</i> SMNS 18689		74.2	0.0266378	0.4645042	1.16E-07	0.9519623
<i>Simosaurus gaillardoti</i> SMNS 18038		87.3	0.0624372	0.2260992	3.49E-07	0.9331059
<i>Cymatosaurus</i> sp. IGWH 24	-	83.9	0.019728	0.325621	5.08E-07	0.941592
<i>Pistosaurus</i> sp. SMNS 84825	Pi	89.8	0.00532	0.051613	1.22E-06	0.90021
<i>Pistosaurus</i> sp. StIPB R 90	Pi	73.5	0.087861	0.543595	0.1861428	0.997228
<i>Plesiosaurus</i> sp. StIPB R90	Pl	74.7	0.0657891	0.2948545	0.000000148	0.8323505
Ichthyosauria						
<i>Ichthyosaurus</i> sp. LO 11904t	Ich	68.1	0.107999	0.866764	0.563628	0.999999
Crocodylia						
<i>Steneosaurus</i> sp. SMNS unnumbered	Ste	80.9	0.08959	0.306159	3.89E-07	0.919983
<i>Metriorhynchus</i> sp. SMNS 9427	Me	78.9	0.038623	0.386662	1.72E-07	0.935684
Teleosaurid indet. BHN 2R 883	Te	83.3	0.074591	0.364303	9.77E-08	0.983314
<i>Alligator mississippiensis</i> SMNS 10481	Al	89.1	0.075638	0.310733	6.95E-02	0.999999
Testudines						
<i>Dermochelys coriacea</i> OMNH unnumbered	De	64.3	0.061635	0.779624	0.4257667	0.999999
Mososauria						
<i>Dallasaurus turneri</i> SMU 76529	Da	65.1	0.022499	0.591683	0.0194296	0.999999