

**THE UNUSUAL TAIL OF *TETHYSHADROS INSULARIS* (DINOSAURIA,  
HADROSAUROIDEA) FROM THE ADRIATIC ISLAND OF THE EUROPEAN  
ARCHIPELAGO**

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**Supplementary information**

**Estimate of the total tail length - Tables**

Tab. 1 – SC 57021, measurements and ratios of the centra of the preserved caudal vertebrae. Length (L) measured as maximum central length including the haemapophyseal facets and the inclination of the articular surfaces in the proximal centra; height (H) measured at the mid of the centrum; width (W) is the maximum width at the posterior articular facet; R is the length/height ratio; and rr is the ratio between the length of a centrum and the length of the preceding one. Measurements are in millimetres. Legend: \* incomplete element.

n.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<b>L</b>	-	-	-	72	65	*36	*30	59	51	50	50.5	50	46	45	44	44	47	45	44.5
<b>H</b>	-	-	-	40	43	43	49	~33	~35	35	40	33	33	30	23	22	22	18	18
<b>W</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>R</b>	-	-	-	1.80	1.51	-	-	1.79	1.46	1.43	1.26	1.51	1.39	1.50	1.91	2.00	2.14	2.50	2.47
<b>rr</b>				0.90	-	-	-	0.86	0.98	1.01	0.99	0.92	0.98	0.98	1	1.07	0.96	0.99	

n	20	21	22	23	24	25	26	27	28	29	30	31	32	33
<b>L</b>	46.5	46	44	43.5	43.5	42	40	40	40	40	39	36	34	35
<b>H</b>	19	19	17.5	18	~17	15.5	15	15	16	16	14	12	10	--
<b>W</b>	-	-	-	~30	--	28	~27	~23	~24	~25	25	28	27	-
<b>R</b>	2.45	2.42	2.51	2.42	2.56	2.70	2.67	2.67	2.50	2.50	2.78	3.00	3.40	-
<b>rr</b>	1.04	0.99	0.96	0.99	1	0.97	0.95	1	1	1	0.97	0.92	0.94	1.03

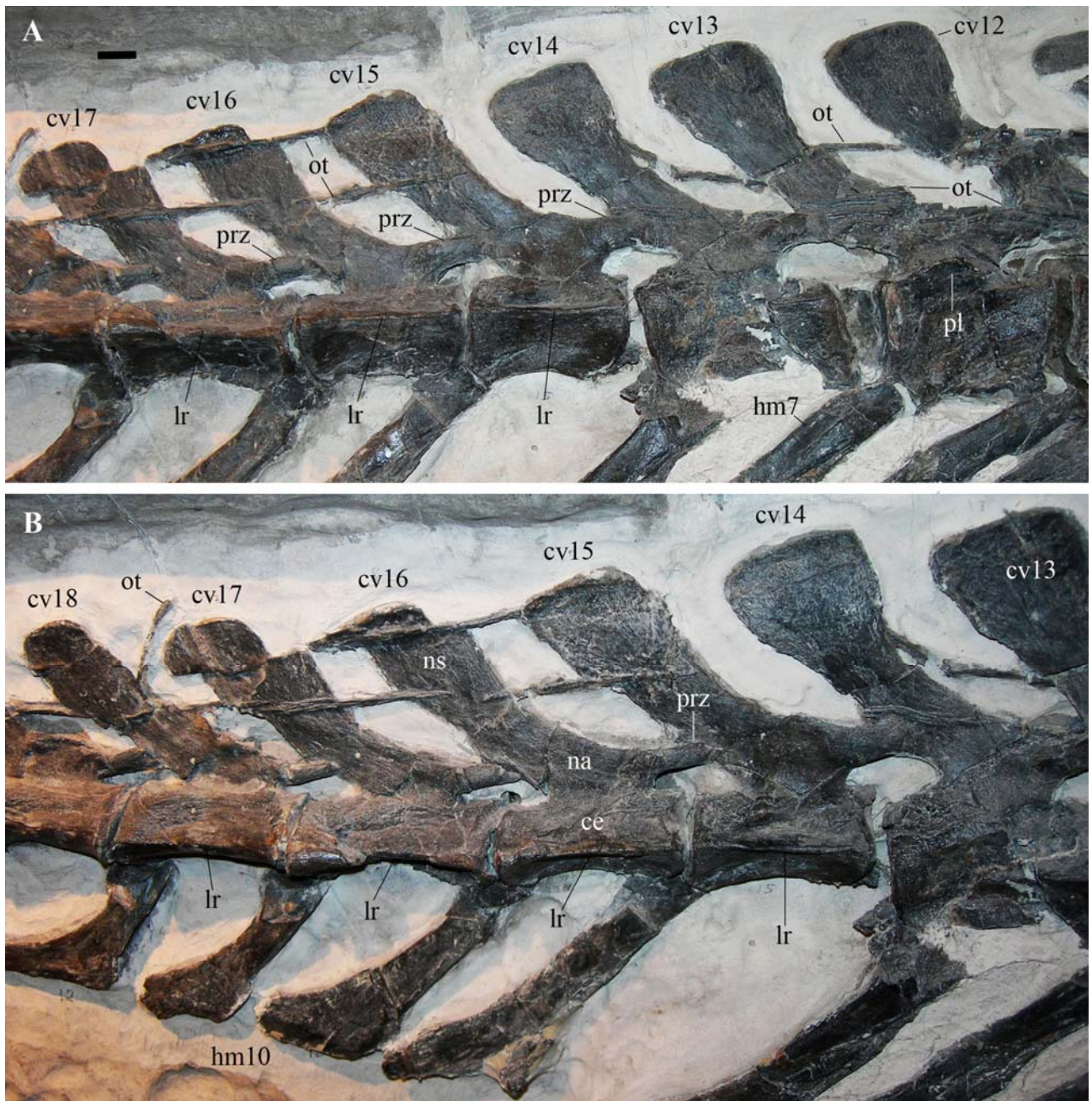
Tab. 2 – SC 57021, estimated length of the caudal vertebra centra distal to caudal 33 based on the assumption that this specimen had the same vertebral count as TMP 98.58.1. Estimate A (red) is calculated by the mean ratio of vertebrae 9-33 of SC 57021 (0.98). Estimate B is based on the ratio between the length of each caudal centrum and the length of the preceding one in tail vertebrae 33-77 of TMP 98.58.1 (see Tab. 3). As the length of centra 68, 72 and 76 of TMP 98.58.1 is uncertain, the mean of the ratios of the last 10 measurable centra of TMP 98.58.1 (0.93) was used to estimate the length of the corresponding centra in SC 57021. Measurements are in millimetres.

n	34	35	36	37	38	39	40	41	42	43	44	45	46	47
A	34.30	33.61	32.94	32.28	31.64	31.00	30.38	29.78	29.18	28.60	28.02	27.46	26.92	26.38
B	34.65	34.65	33.26	30.93	32.48	31.18	29.94	29.64	29.34	27.87	27.87	27.87	27.59	26.49
48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
25.85	25.33	24.83	24.33	23.84	23.37	22.90	22.44	21.99	21.55	21.12	20.70	20.28	19.88	19.48
23.84	23.60	24.54	24.54	23.31	22.15	21.27	21.05	19.79	21.08	19.90	17.91	19.53	16.99	17.33
63	64	65	66	67	68	69	70	71	72	73	74	75	76	77
19.09	18.71	18.34	17.97	17.61	17.26	16.91	16.57	16.24	15.92	15.60	15.29	14.98	14.68	14.39
15.25	16.01	14.41	14.12	11.15	10.37	9.65	8.68	8.42	7.83	7.28	6.12	5.69	5.29	4.92

Tab. 3 – Length of the centra of the caudal vertebrae and the ratio between the length of a centrum and the length of the preceding one in caudal vertebrae 32-77 of TMP 98.58.1. Length (L) measured as maximum central length and rr is the ratio between the length of a centrum and the length of the preceding one. Measurements are in millimetres. Legend: ?, uncertain measurement; +, the mean of the ratios of the last 10 measurable centra of TMP 98.58.1 (0.93) was used to estimate the length of these centra in Table 2.

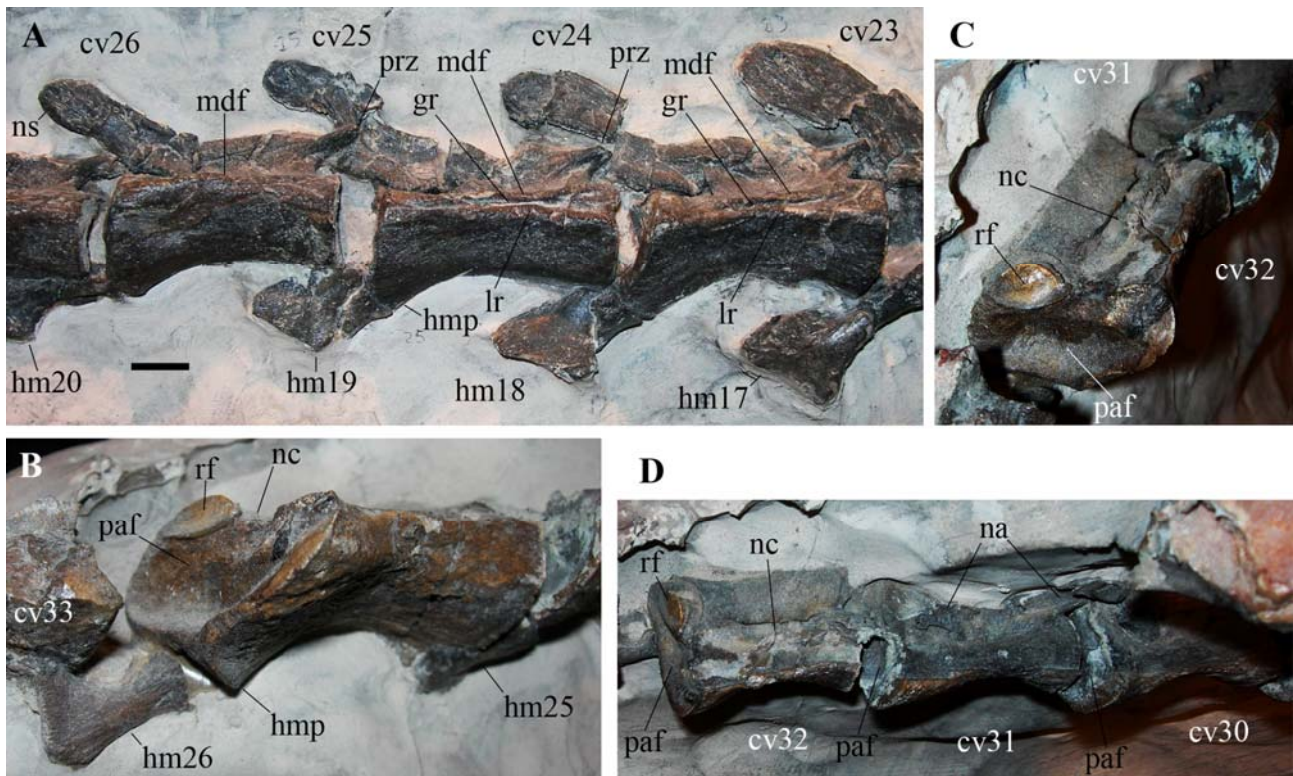
n	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
L	25.8	25.5	25.5	24.4	22.8	23.9	23.0	22.0	21.9	21.8	20.8	20.8	20.9	20.7	19.9
rr		0.99	1.00	0.96	0.93	1.05	0.96	0.96	0.99	0.99	0.95	1.00	1.00	0.99	0.96
	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
L	18	17.9	18.6	18.6	17.6	16.8	16.1	16	15	16	15.1	13.6	14.9	12.9	13.1
rr	0.90	0.99	1.04	1.00	0.95	0.95	0.96	0.99	0.94	1.07	0.94	0.90	1.09	0.87	1.02
	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77
L	11.5	12.1	10.9	10.7	8.4	-	8.7	7.8	7.6	-	6.4	5.4	5.00	-	6.5
rr	0.88	1.05	0.90	0.98	0.79	+	+	0.90	0.97	+	+	0.84	0.93	+	+

Supplementary figures



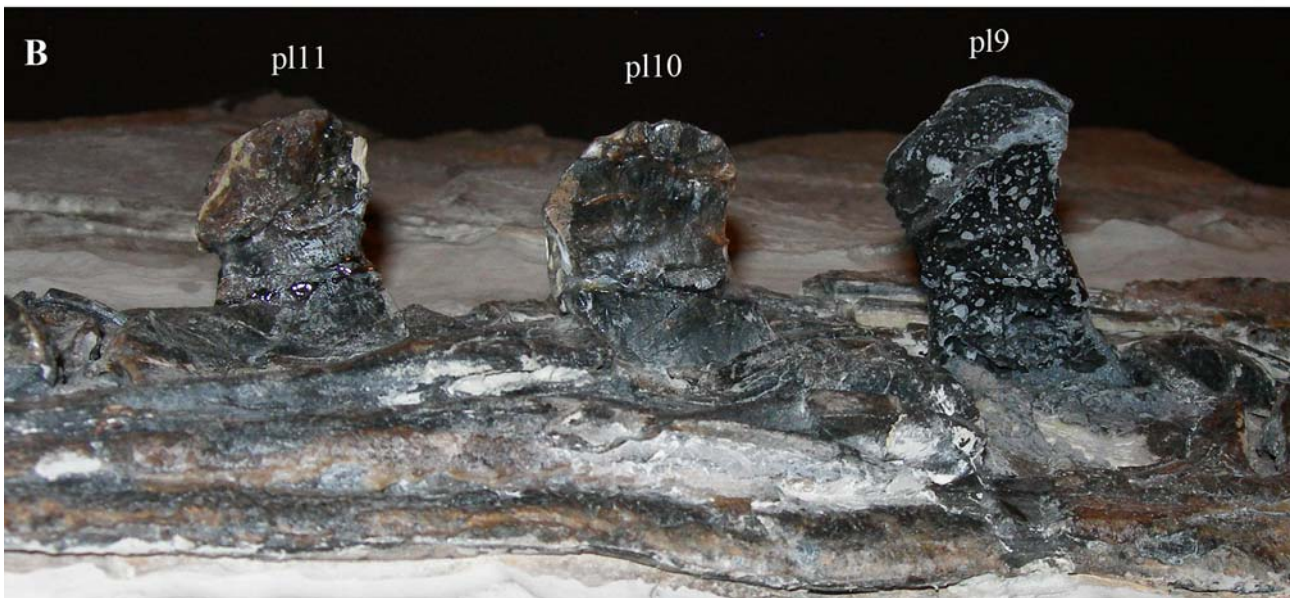
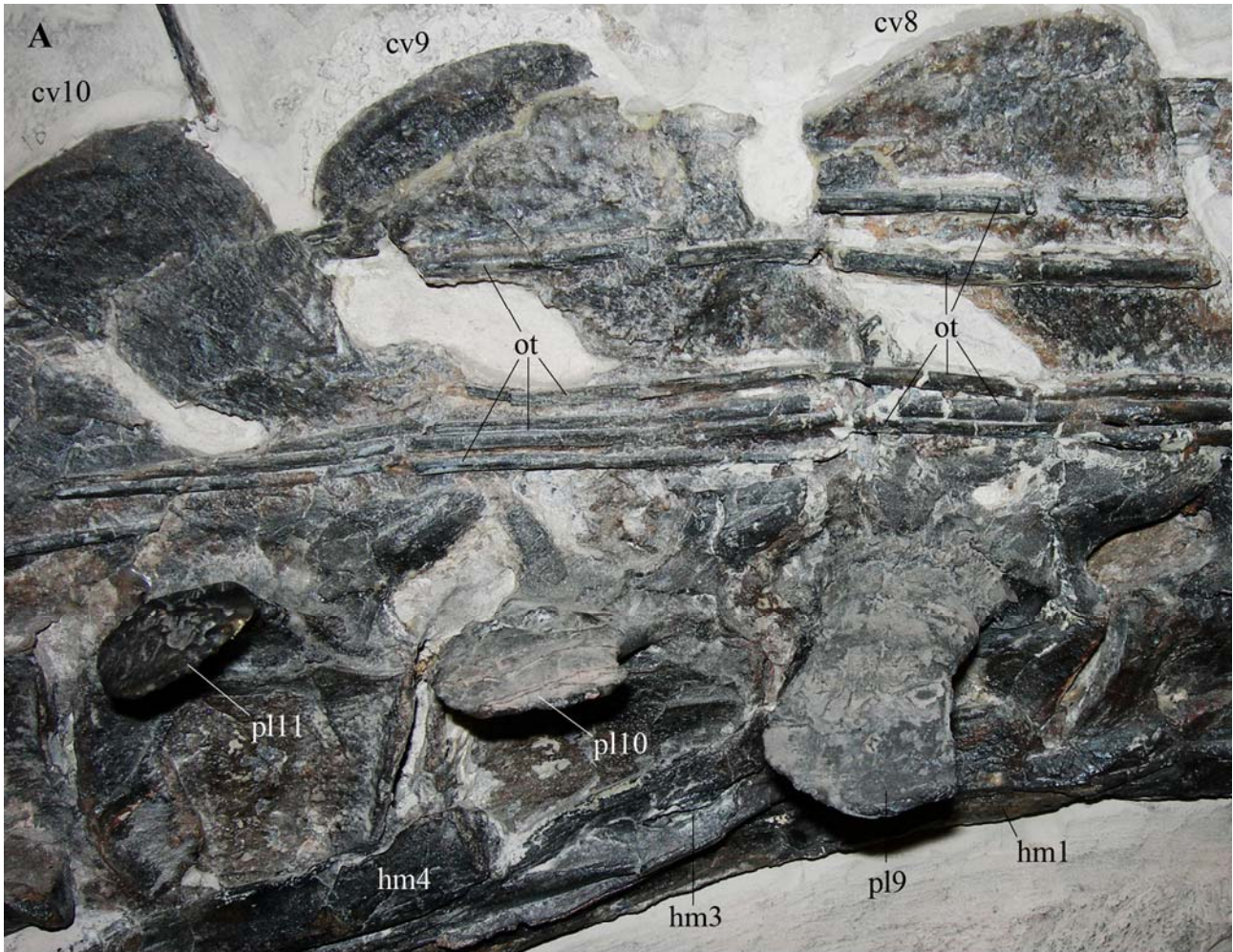
SI Fig. 1 - The first mid-caudal vertebrae (caudals 15-18) of the holotype of *Tethyshadros insularis*. A) Lateral view, showing also the last proximal caudals; B) laterodorsal view showing the dorsal side of the centra. Abbreviations: ce, vertebral centrum; cv12-18, caudal vertebrae 12-18; hm 7 and 10, haemapophyses 7 and 10; lr, lateral longitudinal ridge on the centrum; na, neural arch; ns, neural spine; ot, ossified tendons; pl, pleurapophysis; and prz, prezygapophysis. The scale bar in A equals 10 mm.





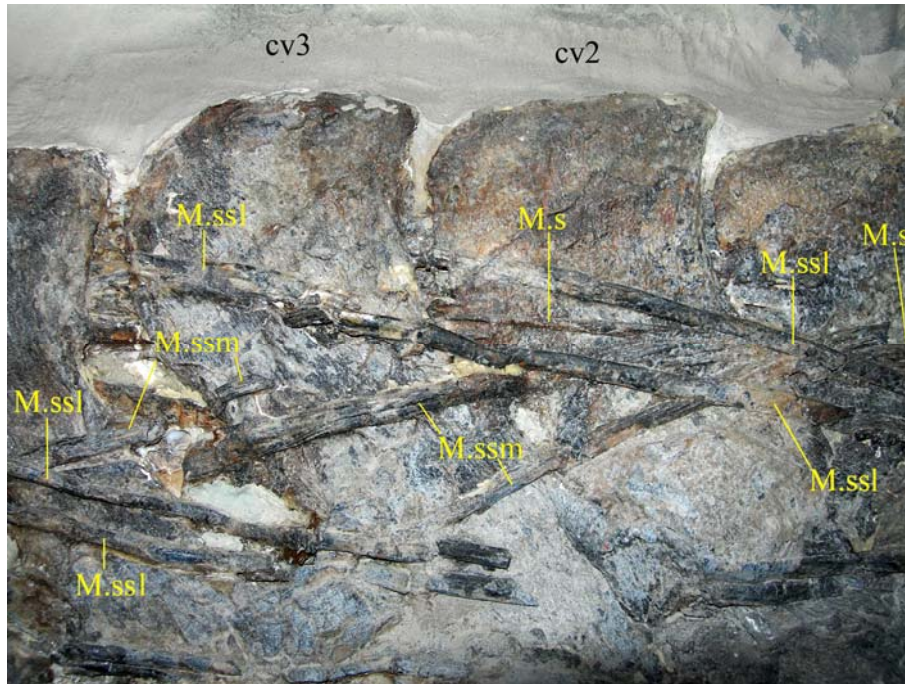
SI Fig. 2 - The last preserved mid-caudal vertebrae (caudals 23-26 and 30-33) of the holotype of *Tethyshadros insularis*. A) Caudals 24-26, right lateral view; B) caudal 32, right posterolateral view; C) caudal 32, posterodorsal view; D) caudals 30-32, right dorsolateral view. Abbreviations: cv23-26 and 30-33, caudal vertebrae 23-26 and 30-33; gr, groove; hm17-20 and 25-26, haemapophyses 17-20 and 25-26; hmp, haemapophyseal process of the centrum; lr, lateral longitudinal ridge on the centrum; mdf, margin of the dorsal facet of the centrum; na, neural arch; nc, neural canal; ns, neural spine; paf, posterior articular facet of the centrum; prz, prezygapophysis; and rf, rounded facet on the posterior margin of the centrum. The scale in A equals 10 mm; for size of vertebrae 30-33 see text Fig. 4D.





SI Fig. 3 - Pleurapophyses of caudal vertebrae 9-11 of the holotype of *Tethyshadros insularis*. Lateral (A) and ventral (B) views. Abbreviations: cv8-10, caudal vertebrae 8-10; hm1, 3 and 4, haemapophyses 1, 3 and 4; hmp, haemapophyseal process of the centrum; ot, ossified tendons; pl9-11, pleurapophyses of the caudal vertebrae 9-11. For size, see text Fig. 4A.

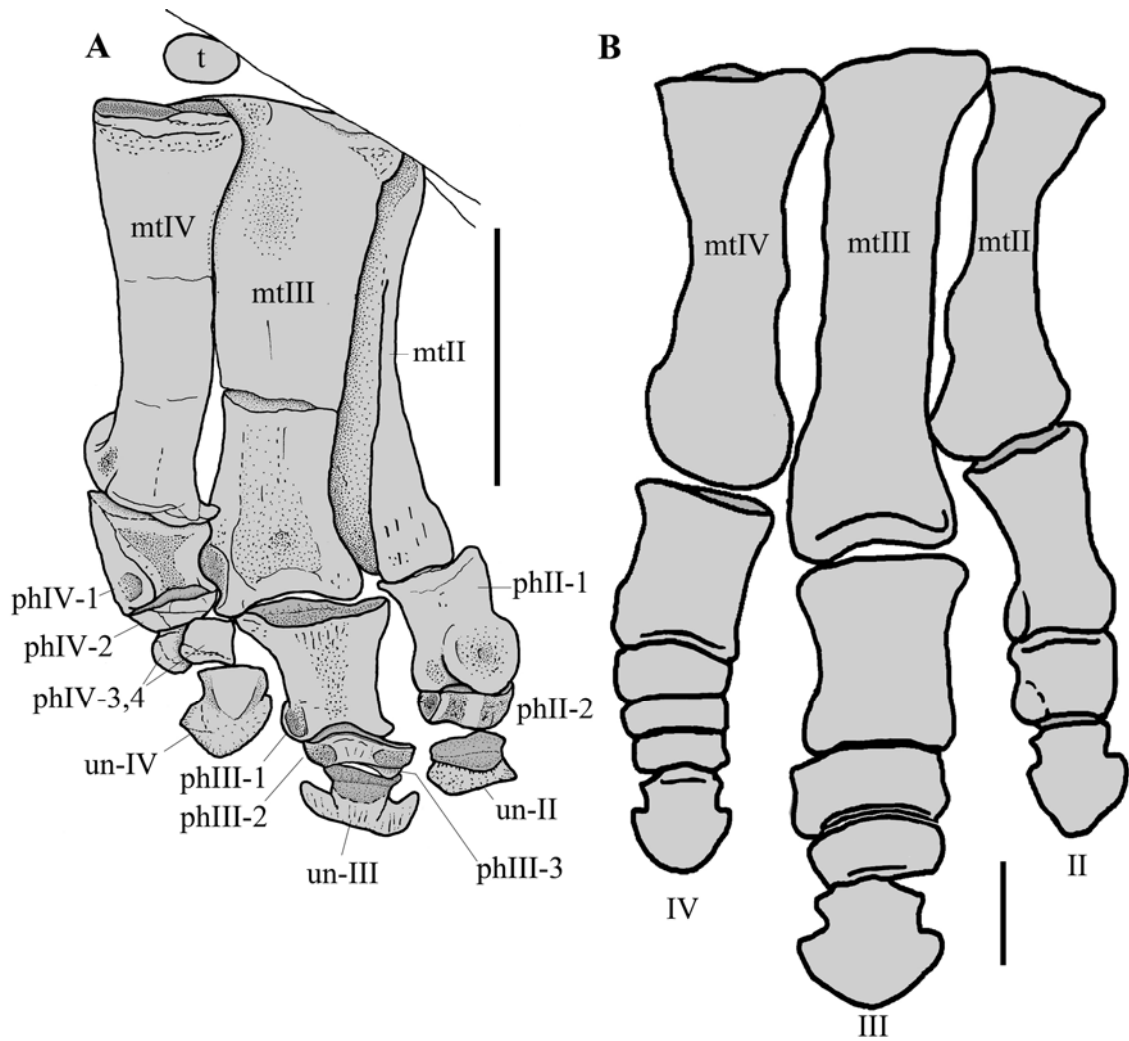




SI Fig. 4 - Ossified tendons in the tail of SC 57021, holotype of *Tethyshadros insularis*, and their muscular affinity. Abbreviations: cv2-3, neural spines of cervical vertebrae 2-3; M.s, tendon of the *M. spinalis*; M.ssl, tendon of the lateral part of the *M. semispinalis* (*M. tendinoarticularis*); and M.ssm, tendon of the medial part of the *M. semispinalis* (*M. articulospinalis*). For scale see text Figure 5.



SI Fig. 5 - Haemal arches from the lower Maastrichtian Basturs Poble site, Tremp Syncline, Conca Dellà, Catalonia. A) MCD-4850a, anterior view; B) MCD-4850a, left lateral view; C) MCD-4943, possible haemal spine, lateral view; D) MCD-4806, posterolateral view; E) MCD-4880, left lateral view; F) MCD-4880, posterior view. The scale bar equals 100 mm.



SI Fig. 6 - Comparison between the pedes of *Tethyshadros insularis* and a hadrosaurid. A) Right pes of the holotype of *Tethyshadros insularis*, anterodorsal view; B) right pes of the saurolophine hadrosaurid *Saurolophus* sp. (AMNH 5271), anterodorsal view (drawn after Moreno et al. 2006). Abbreviations: II-IV, pes digits II-IV; mtII-IV, metatarsal II-IV; phII-1 and 2, phalanges 1 and 2 of digit II; phIII-1 to 3, phalanges 1 to 3 of digit III; phIV-1 to 4, phalanges 1 to 4 of digit IV; t, tarsal; un-II-IV, ungual phalanges of digits II-IV. The scale equals 100 mm.