Supplementary Material of Bone connectivity and the evolution of ichthyosaur fins

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Figure S1: Mapped network properties.

Figure S2: Forefins showing ball-and-socket joints.

File S1. Results of PERMANOVA.

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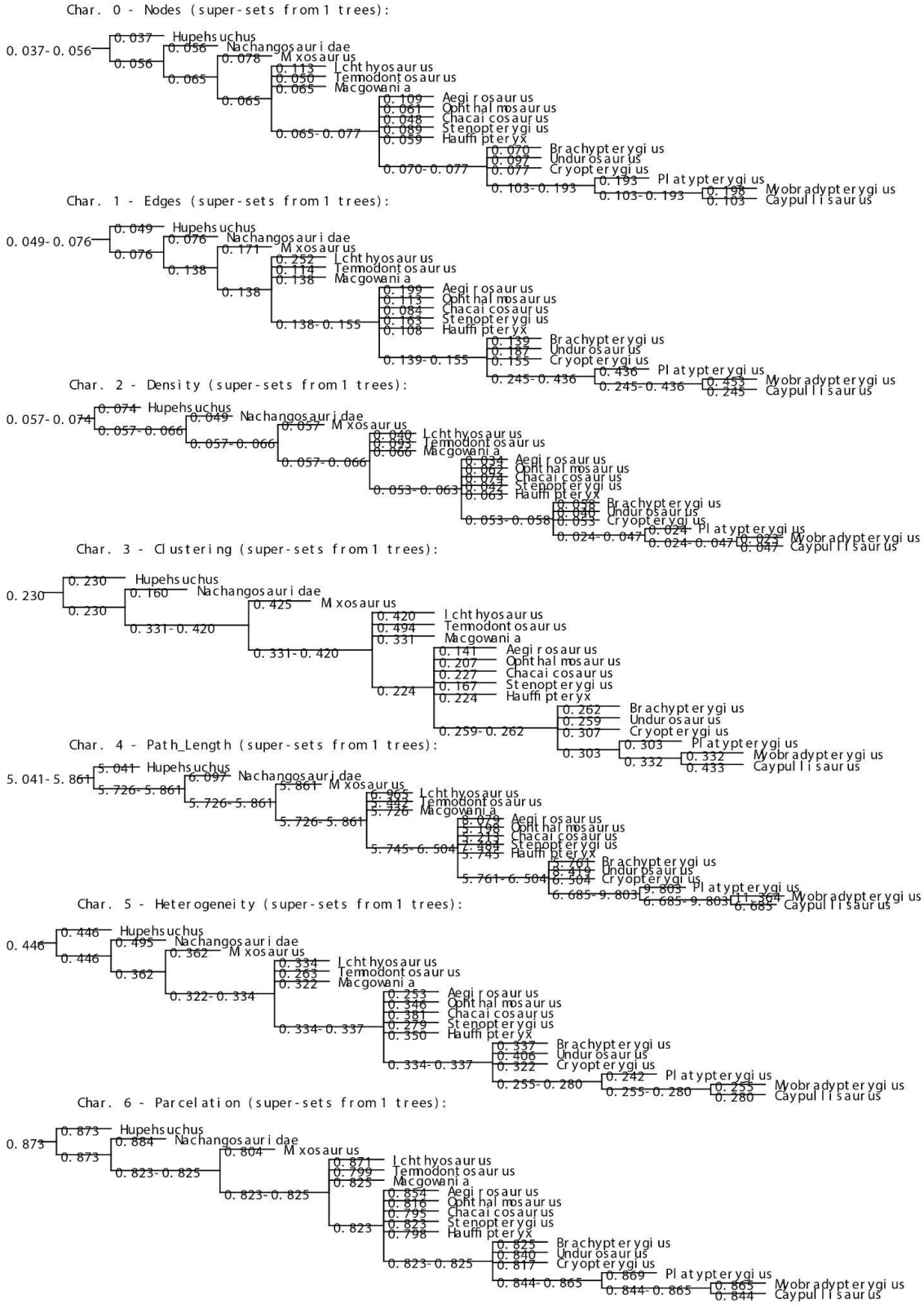

Figure S1. Values of network descriptor on the branches

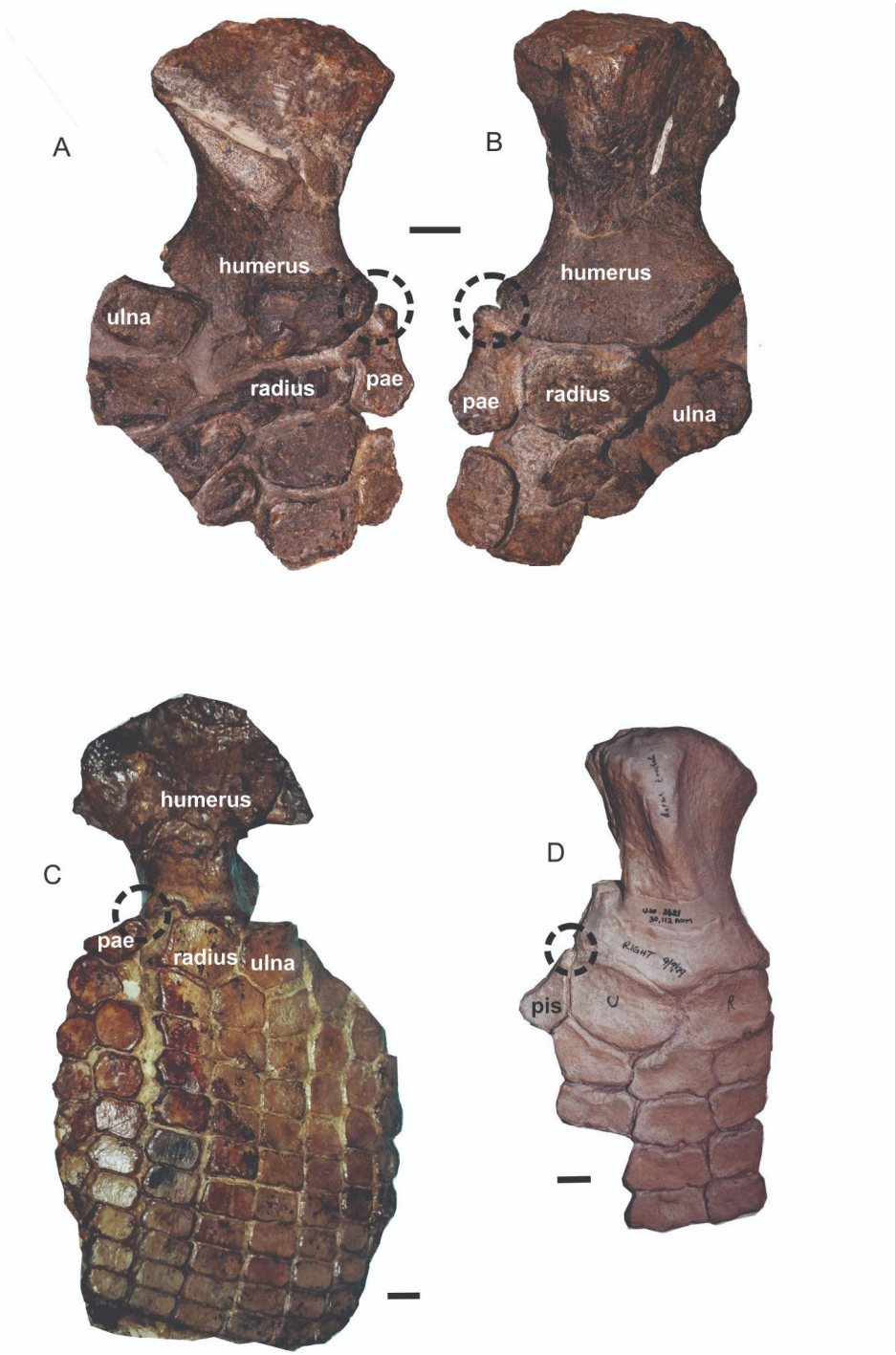

Figure S2. Forefins showing ball-and-socket joints. A-B, Tithonian (Late Jurassic) platypterygiine MLP 85-I-15-1 misidentified as *Caypullisaurus bonapartei* by Fernández [48](fig 2)in dorsal (A) dorsas (B) ventral views. C, forefin of *Platypterygius australis* QM 3348 in dorsal and slightly anterior view. D, ROM 30,112 cast of the forefin of *Pl. americanus* UW 2421, in dorsal view. Anatomical abbreviations: pae, pre-radial accessory element; pis, pisiform. Institutional abbreviations: MLP, Museo de La Plata, Argentina; QM, Queensland Museum, Australia; ROM, Royal Ontario Museum, Canada; UW, University of Wyoming, US. Dash circle indicates the ball-and-socket joint (see text for explanation. Scale bars equal 2 cm.

File S1

Results of one-way PERMANOVA, p-values, uncorrected and sequential Bonferonni significance.

Permutation N: 9999, Total sum of squares: 265.9, Within-group sum of squares: 161.6, F: 5.277, p (same): 0.0259.

p-values, uncorrected significance

	ICHTHYOSA	*ICHTHYOS	REPTILE SE(	BIRD	MAMMAL SI	LIMB	FIN
ICHTHYOSA		0.1197	0.8167	0.1248	0.0021	0.0002	0.0001
*ICHTHYOS	0.1197		0.3335	1	0.3779	0.1391	0.502
REPTILE SE(	0.8167	0.3335		0.2242	0.1536	0.0372	0.0031
BIRD	0.1248	1	0.2242		0.1314	0.0697	0.1647
MAMMAL SI	0.0021	0.3779	0.1536	0.1314		0.6439	0.0962
LIMB	0.0002	0.1391	0.0372	0.0697	0.6439		0.0079
FIN	0.0001	0.502	0.0031	0.1647	0.0962	0.0079	

p-values, sequential Bonferroni sign

	ICHTHYOSA	*ICHTHYOS	REPTILE SE(	BIRD	MAMMAL SI	LIMB	FIN
ICHTHYOSA		0.1197	0.8167	0.1248	0.0021	0.0002	0.0001
*ICHTHYOS	0.1197		0.3335	1	0.3779	0.1391	0.502
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FIN	0.0001	0.502	0.0031	0.1647	0.0962	0.0079	

References

48 . Fernández, M.S. Nuevo Material de *Caypullisaurus bonapartei* Fernández (Reptilia: Ichthyosauridae) Del Jurásico Superior de La Cuenca Neuquina, Argentina. *Ameghiniana* **1998**, *35*, 21–24.