

**Supplementary Table S1.** Description of landmarks employed in the analyses. A) Landmarks taken on Cv; B) Landmarks taken on Th and Thm; C) Landmarks taken on ThTa, TaTm, Tm, and TmTp; D) Landmarks taken on Tp; and E) Landmarks taken on TS. #: order in which landmarks were digitized. In bold, landmarks on the anterior epiphyses; underlined, landmarks on the posterior epiphyses. NA: neural arch; NS: neural spine; TP: transverse process; R: right; L: left; proximal or distal with respect to the centrum. \* indicate landmarks taken by projecting radiated figures. See Supplementary Figure S2.

A)

#	Description
1	<b>Center of anterior epiphysis</b>
2	<b>Mid-point on dorsal border of anterior epiphysis*</b>
3	<b>Mid-point on R lateral border of anterior epiphysis*</b>
4	<b>Mid-point on ventral border of anterior epiphysis*</b>
5	<b>Mid-point on L lateral border of anterior epiphysis*</b>
6	<b>Mid-point between 2 and 3*</b>
7	<b>Mid-point between 3 and 4*</b>
8	<b>Mid-point between 4 and 5*</b>
9	<b>Mid-point between 5 and 2*</b>
10	Mid-point on the tip of R TP
11	Maximum posterior curve on the extreme of R TP
12	Most posterior point on the R posterior zygapophysis
13	Most posterior point on the L posterior zygapophysis
14	In posterior view, mid-point in the intersection between NA and NS
15	Mid-point on dorsal tip of NS
16	Maximum posterior curve on the extreme of L TP
17	Mid-point on the tip of L TP
18	Maximum anterior curve on the extreme of L TP
19	In anterior view, mid-point in the intersection between NA and NS
20	Maximum anterior curve on the extreme of R TP
21	<u>Center of posterior epiphysis</u>
22	<u>Mid-point on dorsal border of posterior epiphysis*</u>
23	<u>Mid-point on R lateral border of posterior epiphysis*</u>
24	<u>Mid-point on ventral border of posterior epiphysis*</u>
25	<u>Mid-point on L lateral border of posterior epiphysis*</u>
26	<u>Mid-point between 22 and 23*</u>
27	<u>Mid-point between 23 and 24*</u>
28	<u>Mid-point between 24 and 25*</u>
29	<u>Mid-point between 25 and 22*</u>
30	Intersection between radius and anterior border of NS (proximal)*
31	Intersection between radius and anterior border of NS (distal)*
32	Intersection between radius and posterior border of NS (proximal)*
33	Intersection between radius and posterior border of NS (distal)*

B)

#	Description
1	<b>Center of anterior epiphysis</b>
2	<b>Mid-point on dorsal border of anterior epiphysis*</b>
3	<b>Mid-point on R lateral border of anterior epiphysis*</b>
4	<b>Mid-point on ventral border of anterior epiphysis*</b>
5	<b>Mid-point on L lateral border of anterior epiphysis*</b>
6	<b>Mid-point between 2 and 3*</b>
7	<b>Mid-point between 3 and 4*</b>
8	<b>Mid-point between 4 and 5*</b>
9	<b>Mid-point between 5 and 2*</b>
10	Mid-point on the tip of R TP
11	Maximum posterior curve on the extreme of R TP
12	Most posterior point on the R posterior zygapophysis
13	Most posterior point on the L posterior zygapophysis
14	In posterior view, mid-point in the intersection between NA and NS
15	Mid-point on dorsal tip of NS
16	Maximum posterior curve on the extreme of L TP
17	Mid-point on the tip of L TP
18	Maximum anterior curve on the extreme of L TP
19	Most anterior point on the L anterior zygapophysis
20	Most anterior point on the R anterior zygapophysis
21	In anterior view, mid-point in the intersection between NA and NS
22	Maximum anterior curve on the extreme of R TP
23	<u>Center of posterior epiphysis</u>
24	<u>Mid-point on dorsal border of posterior epiphysis*</u>
25	<u>Mid-point on R lateral border of posterior epiphysis*</u>
26	<u>Mid-point on ventral border of posterior epiphysis*</u>
27	<u>Mid-point on L lateral border of posterior epiphysis*</u>
28	<u>Mid-point between 24 and 25*</u>
29	<u>Mid-point between 25 and 26*</u>
30	<u>Mid-point between 26 and 27*</u>
31	<u>Mid-point between 27 and 24*</u>
32	Intersection between radius and anterior border of NS (proximal)*
33	Intersection between radius and anterior border of NS (distal)*
34	Intersection between radius and posterior border of NS (proximal)*
35	Intersection between radius and posterior border of NS (distal)*

C)

#	Description
1	<b>Center of anterior epiphysis</b>
2	<b>Mid-point on dorsal border of anterior epiphysis*</b>
3	<b>Mid-point on R lateral border of anterior epiphysis*</b>
4	<b>Mid-point on ventral border of anterior epiphysis*</b>
5	<b>Mid-point on L lateral border of anterior epiphysis*</b>
6	<b>Mid-point between 2 and 3*</b>
7	<b>Mid-point between 3 and 4*</b>
8	<b>Mid-point between 4 and 5*</b>
9	<b>Mid-point between 5 and 2*</b>
10	Mid-point on the tip of R TP
11	Maximum posterior curve on the extreme of R TP
12	In posterior view, mid-point in the intersection between NA and NS.
13	Mid-point on dorsal tip of NS
14	Maximum posterior curve on the extreme of L TP
15	Mid-point on the tip of L TP
16	Maximum anterior curve on the extreme of L TP
17	Most anterior point on L metapophysis
18	Most anterior point on R metapophysis
19	In anterior view, mid-point in the intersection between NA and NS
20	Maximum anterior curve on the extreme of R TP
21	<u>Center of posterior epiphysis.</u>
22	<u>Mid-point on dorsal border of posterior epiphysis*</u>
23	<u>Mid-point on R lateral border of posterior epiphysis*</u>
24	<u>Mid-point on ventral border of posterior epiphysis*</u>
25	<u>Mid-point on L lateral border of posterior epiphysis*</u>
26	<u>Mid-point between 22 and 23*</u>
27	<u>Mid-point between 23 and 24*</u>
28	<u>Mid-point between 24 and 25*</u>
29	<u>Mid-point between 25 and 22*</u>
30	Intersection between radius and anterior border of NS (proximal)*
31	Intersection between radius and anterior border of NS (distal)*
32	Intersection between radius and posterior border of NS (proximal)*
33	Intersection between radius and posterior border of NS (distal)*
34	Intersection between radius and anterior border of R TP (proximal)*
35	Intersection between radius and anterior border of R TP (distal)*
36	Intersection between radius and posterior border of R TP (proximal)*
37	Intersection between radius and posterior border of R TP (distal)*
38	Intersection between radius and anterior border of L TP (proximal)*
39	Intersection between radius and anterior border of L TP (distal)*

- 40 Intersection between radius and posterior border of L TP (proximal)\*
  - 41 Intersection between radius and posterior border of L TP (distal)\*
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D)

#	Description
1	<b>Center of anterior epiphysis</b>
2	<b>Mid-point on dorsal border of anterior epiphysis*</b>
3	<b>Mid-point on R lateral border of anterior epiphysis*</b>
4	<b>Mid-point on ventral border of anterior epiphysis*</b>
5	<b>Mid-point on L lateral border of anterior epiphysis*</b>
6	<b>Mid-point between 2 and 3*</b>
7	<b>Mid-point between 3 and 4*</b>
8	<b>Mid-point between 4 and 5*</b>
9	<b>Mid-point between 5 and 2*</b>
10	<b>In anterior view, ventral tip of R chevron anterior articulation facets</b>
11	<b>In anterior view, ventral tip of L chevron anterior articulation facets</b>
12	Mid-point on the tip of R TP.
13	Maximum posterior curve on the extreme of R TP.
14	In posterior view, mid-point in the intersection between NA and NS.
15	Mid-point on dorsal tip of NS
16	Maximum posterior curve on the extreme of NS
17	Maximum posterior curve on the extreme of L TP
18	Mid-point on the tip of L TP
19	Maximum anterior curve on the extreme of L TP
20	Most anterior point on L metapophysis
21	Most anterior point on R metapophysis
22	In anterior view, mid-point in the intersection between NA and NS
23	Maximum anterior curve on the extreme of R TP
24	<u>Center of posterior epiphysis*</u>
25	<u>Mid-point on dorsal border of posterior epiphysis*</u>
26	<u>Mid-point on R lateral border of posterior epiphysis*</u>
27	<u>Mid-point on ventral border of posterior epiphysis*</u>
28	<u>Mid-point on L lateral border of posterior epiphysis*</u>
29	<u>Mid-point between 25 and 26*</u>
30	<u>Mid-point between 26 and 27*</u>
31	<u>Mid-point between 27 and 28*</u>
32	<u>Mid-point between 28 and 25*</u>
33	<u>In posterior view, ventral tip of R chevron posterior articulation facets</u>
34	<u>In posterior view, ventral tip of L chevron posterior articulation facets</u>

E)

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- 1 **Center of anterior epiphysis**
  - 2 **Mid-point on dorsal border of anterior epiphysis\***
  - 3 **Mid-point on R lateral border of anterior epiphysis\***
  - 4 **Mid-point on ventral border of anterior epiphysis\***
  - 5 **Mid-point on L lateral border of anterior epiphysis\***
  - 6 **Mid-point between 2 and 3\***
  - 7 **Mid-point between 3 and 4\***
  - 8 **Mid-point between 4 and 5\***
  - 9 **Mid-point between 5 and 2\***
  - 10 **In anterior view, ventral tip of R chevron anterior articulation facets**
  - 11 **In anterior view, ventral tip of L chevron anterior articulation facets**
  - 12 Most anterior point on L metapophysis
  - 13 Most anterior point on R metapophysis
  - 14 In anterior view, mid-point in the intersection between NA and NS.
  - 15 Mid-point on dorsal tip of NS
  - 16 Maximum posterior curve on the extreme of NS
  - 17 In posterior view, mid-point in the intersection between NA and NS
  - 18 Center of posterior epiphysis\*
  - 19 Mid-point on dorsal border of posterior epiphysis\*
  - 20 Mid-point on R lateral border of posterior epiphysis\*
  - 21 Mid-point on ventral border of posterior epiphysis\*
  - 22 Mid-point on L lateral border of posterior epiphysis\*
  - 23 Mid-point between 25 and 26\*
  - 24 Mid-point between 26 and 27\*
  - 25 Mid-point between 27 and 28\*
  - 26 Mid-point between 28 and 25\*
  - 27 In posterior view, ventral tip of R chevron posterior articulation facets
  - 28 In posterior view, ventral tip of L chevron posterior articulation facets
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