Supplementary Materials

Supplementary Data S1 Data matrix used to run all analyses in this study

This matrix included each specimen's: species identity, catalog number, sex,

collection country, collection locality, geographic coordinates and their basis, and

morphometric data (Procrustes shape coordinates and centroid sizes). See "Metadata"

sheet for more information. Blank cells indicate missing data.

Supplementary Data S1 is listed as a separate file due to its large size.

Supplementary Table S1 Descriptions of digitized landmarks. Numbers preceding

landmark descriptions are the same as those in Figure 3. Midsagittal axis was used to

locate several landmarks.

1. Midpoint between caudal edges of incisors on midsagittal axis
2. Lateral-most edge of incisor
3. Lateral-most point on rostrum directly lateral to landmark 24
4. Rostral edge of inferior root of zygomatic plate at first overlap with caudal point of rostrum
5. Caudal edge of inferior root of zygomatic plate at insertion to maxillary bone
6. Lateral edge of zygomatic arch directly lateral to landmark 21
7. Lateral edge of zygomatic arch directly lateral to landmark 18
8. Lateral edge of zygomatic arch directly lateral to landmark 9
9. Rostral-most point of mandibular fossa at insertion to squamosal bone body
10. Caudal-most point of mandibular fossa at insertion to squamosal bone body
11. Midpoint of most lateral edge of external auditory meatus
12. Lateral edge of tympanic bulla directly lateral to 14 and 29
13. Caudal-most point on tympanic bulla at junction with occipital
14. Point on medial edge of tympanic bulla directly lateral to landmark 29
15. Point on rostral edge of tympanic bulla intersecting a line connecting landmarks 13 and 18
16. Rostral edge of eustachian canal root at insertion point to tympanic bulla
17. Midpoint of hamular process root at insertion point to pterygoid process
18. Posteromedial point of M3 on alveolus
19. Midpoint between lingual edges of M2 and M3 on alveolus
20. Midpoint between lingual edges of M1 and M2 on alveolus

21. Anteromedial edge of M1 on alveolus
22. Center of masseteric tubercle
23. Medial-most point on premaxillary-maxillary suture
24. Rostral-most point of incisive foramen at the point of the lateral incisive canal
25. Caudal-most point of incisive foramen at the point of the lateral incisive canal
26. Rostral-most point of palatine foramen
27. Caudal-most point of palatine foramen
28. Caudal-most point of palatine bone on midsagittal axis
29. Anteroventral-most point of foramen magnum on midsagittal axis
30. Posterodorsal-most point of foramen magnum on midsagittal axis.
31. Lateral-most point of foramen magnum
32. Lateral-most point of the occipital condyle

Supplementary Table S2 ANOVA table for preliminary linear models of effects of sex ('Sex'), species identity ('Species'), and their interaction on (a) logged cranial size and (b) cranial shape (Procrustes shape coordinates)

	df	SS	MS	R^2	F	Z	p
(a) Centroid size (log)							
Sex	1	0.0034	0.0034	0.0008	1.32	0.752	0.225
Species	13	3.4541	0.2657	0.8703	102.78	10.407	**0.001**
Sex × species	9	0.0277	0.0030	0.0069	1.18	0.556	0.300
Residuals	188	0.4860	0.0025	0.1224			
Total	211	3.9689					
(b) Procrustes shape							
Sex	1	0.0006	0.0006	0.0011	0.56	-1.491	0.957
Species	13	0.3168	0.0243	0.5908	22.12	16.837	**0.001**
Sex × species	9	0.0091	0.0010	0.0170	0.92	-0.517	0.686
Residuals	188	0.2071	0.0011	0.3862			
Total	211	0.5362					

Notes: df=degrees of freedom; SS=hierarchical (type-II) sums of squares; MS=mean squares; R^2=R-squared values; F=F-values; Z=effect sizes (standard deviates of F sampling distributions); p=p-values based on 999 permutations. The fit of each linear model was evaluated using RRPP. Model coefficients were estimated using ordinary least squares (OLS). Significant model terms are in bold. The seven specimens of unknown sex were not included in these models (*n*=212).