Supplementary data

Cranial dimensions as estimators of body mass and locomotor habits in extant and fossil
rodents

ORNELLA C. BERTRAND,* MICHAEL A. SCHILLACI, and MARY T. SILCOX

Department of Anthropology, University of Toronto Scarborough —

Scarborough, Ontario, M1C 1A4, Canada,

ornella.bertrand@mail.utoronto.ca; schillaci@utsc.utoronto.ca; msilcox@utsc.utoronto.ca

*Corresponding author

Journal of Vertebrate Paleontology

TABLE S1. List of the extant specimens used in the linear regression analysis but not included in the PCA or CVA analyses, with associated catalogue number, sex, body mass (g) and cranial dimensions (mm; abbreviations in the text). **Abbreviations:** **ROMM**, Royal Ontario Museum Mammalogy; **ROMV**, Royal Ontario Museum Vertebrate Paleontology; **AMNH**, American Museum of Natural History.

Genus	Catalogue no.	sex	Body		Cranial dimensions (mm)								
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
<i>Anomalurus</i>	ROMM												
<i>derbianus</i>	56111	F	775.00	58.47	13.30	3.56	7.98	2.92	7.68	9.11	18.04	27.99	26.09
	ROMM												
<i>Castor canadiensis</i>	111459	F	12500.00	128.55	28.32	7.67	14.8	7.97	16.02	19.11	37.87	49.87	70.27
	ROMM												
<i>Castor canadiensis</i>	18521	F	14742.00	117.50	28.30	7.18	14.93	8.16	13.58	18.46	35.84	48.20	66.28
	ROMM												
<i>Castor canadiensis</i>	18583	F	19958.00	127.02	26.62	8.94	16.54	9.56	13.89	17.46	37.61	46.98	71.02
	ROMM												
<i>Castor canadiensis</i>	19686	M	14742.00	118.54	26.71	6.80	15.21	8.54	15.75	18.45	35.46	47.13	67.00

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM												
<i>Castor canadensis</i>	25559	F	14515.00	122.38	27.93	8.08	14.49	7.99	14.13	17.68	37.60	46.03	69.85
	ROMM												
<i>Castor canadensis</i>	18752	F	12388.00	122.05	29.17	7.94	15.43	7.68	13.78	20.38	34.75	46.58	68.82
	ROMM												
<i>Castor canadensis</i>	18753	F	9525.00	129.07	32.29	8.40	15.40	8.16	14.07	19.48	37.85	47.16	77.21
	ROMM												
<i>Castor canadensis</i>	18548	F	19759.00	135.82	30.00	7.95	15.26	8.49	14.84	16.27	39.29	49.68	77.18
	ROMM												
<i>Castor canadensis</i>	18551	M	14912.00	117.4	26.84	6.47	13.59	7.72	14.46	17.79	35.68	48.51	65.64
	ROMM												
<i>Castor canadensis</i>	18342	M	18144.00	128.41	28.34	8.14	14.39	7.68	15.47	18.92	38.51	45.51	71.24

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM												
<i>Castor canadensis</i>	19689	F	19901.00	125.90	28.64	10.38	16.47	8.66	13.56	20.55	38.75	46.94	73.25
<i>Castor canadensis</i>	ROMV 5587	M	12937.00	129.92	26.45	9.6	16.32	8.29	15.76	20.03	35.64	44.15	69.67
	ROMM												
<i>Geomys bursarius</i>	79804	F	265.00	49.09	7.73	2.46	4.42	2.97	6.09	6.14	14.58	16.63	28.32
<i>Orthogeomys</i>	ROMM												
<i>hispidus cayoensis</i>	34632	F	428.00	53.80	10.42	3.54	4.58	3.23	7.33	7.92	18.58	19.29	32.47
	ROMM												
<i>Thomomys talpoides</i>	102659	M	210.00	42.12	8.18	2.17	3.62	1.93	5.81	5.58	12.84	14.59	23.47
<i>Thomomys talpoides</i>	ROMV 5570	M	120.00	37.25	7.94	2.28	4.72	1.67	5.05	4.92	11.54	13.65	20.08
<i>Chaetodipus</i>	ROMM												
<i>penicillatus</i>	111490	F	14.00	24.08	3.06	1.41	2.32	0.81	3.53	3.95	7.45	10.38	8.94

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM												
<i>Perognathus parvus</i>	112519	M	15.50	24.94	3.92	1.32	3.11	1.32	4.29	4.23	7.71	11.17	9.79
<i>Dipodomys</i>	ROMM												
<i>merriami</i>	24838	M	55.00	36.74	4.48	1.74	3.23	1.32	4.36	4.35	10.83	16.52	12.81
<i>Heteromys</i>	ROMM												
<i>desmarestianus</i>	99298	M	80.00	37.83	5.97	1.50	4.55	1.28	4.28	5.49	9.39	13.76	15.4
	ROMM												
<i>Liomys salvini</i>	101310	M	46.00	30.91	5.10	1.48	2.96	1.48	4.56	5.02	8.77	11.85	13.04
<i>Cryptomys</i>	ROMM												
<i>hottentotus</i>	70817	F	62.70	29.73	6.29	2.42	3.59	1.96	5.34	4.90	11.06	14.34	16.25
	ROMM												
<i>Georchus capensis</i>	87630	F	148.00	40.87	7.74	3.09	3.94	2.27	4.83	4.52	15.13	16.2	22.71

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
<i>Heliophobius</i>	ROMM												
<i>argenteocinereus</i>	73121	F	155.00	34.95	8.02	2.37	3.39	2.78	5.17	5.02	13.39	15.68	19.56
<i>Heterocephalus</i>	ROMM												
<i>glaber</i>	80083	M	49.50	21.07	3.56	1.40	2.91	1.56	4.12	3.56	8.29	11.37	10.23
<i>Dolichotis</i>	ROMM												
<i>patagonum</i>	90847	M	8950.00	127.69	26.73	6.29	14.73	9.18	17.45	10.27	39.65	52.98	70.24
	ROMM												
<i>Cavia guianae</i>	31765	M	660.00	62.81	15.30	4.30	7.13	2.14	7.20	7.75	17.09	26.01	32.11
<i>Cavia porcellus</i>	ROMV 6369	M	1115.00	74.04	17.03	5.00	6.57	3.31	7.23	7.38	17.48	25.74	37.21
<i>Chinchilla</i>	ROMM												
<i>chinchilla</i>	31267	M	340.20	60.23	13.97	3.72	6.06	1.80	7.59	7.20	19.56	23.02	26.78

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
<i>Chinchilla</i>													
<i>chinchilla</i>	ROMV 5786	M	462.00	62.90	13.03	4.38	6.13	3.04	6.58	7.79	20.20	24.47	29.93
	ROMM												
<i>Cuniculus paca</i>	100935	F	8200.00	134.52	27.02	7.01	14.12	7.38	12.59	13.88	34.85	53.54	72.80
	ROMM												
<i>Cuniculus paca</i>	98051	M	8500.00	126.92	24.76	6.85	14.18	6.50	15.11	16.41	34.37	49.70	68.90
	ROMM												
<i>Dasyprocta aguti</i>	32001	M	4500.00	112.43	17.69	5.66	11.71	6.18	9.77	12.67	27.68	38.22	48.74
<i>Dasyprocta</i>	ROMM												
<i>punctata</i>	33526	F	3600.00	111.99	18.16	5.23	12.85	5.99	9.73	11.45	27.27	36.75	47.85
	ROMM												
<i>Myoprocta exilis</i>	31656	M	1039.00	79.98	14.02	3.67	8.36	4.74	13.49	11.11	22.75	30.95	34.04

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM												
<i>Proechimys cuvieri</i>	98034	F	225.00	55.32	8.44	2.47	4.90	1.49	6.27	6.75	13.08	20.25	19.69
	ROMM												
<i>Mesomys hispidus</i>	105592	M	200.00	44.39	7.50	2.16	5.42	2.33	6.06	6.55	12.50	18.15	17.36
	ROMM												
<i>Echimys saturnus</i>	105384	M	362.00	57.14	14.06	3.41	7.10	2.13	8.16	8.24	14.30	20.93	26.57
<i>Octodon degus</i>	ROMV 6873	F	117.00	42.12	9.08	2.41	5.90	2.46	6.35	5.66	13.46	16.43	19.54
<i>Erethizon dorsatum</i>	ROMM												
<i>dorsatum</i>	22461	F	9072.00	92.69	25.93	8.67	9.87	6.51	10.79	13.83	30.24	40.10	53.49
	ROMM												
<i>Erethizon dorsatum</i>	101209	F	6000.00	86.82	25.21	7.56	10.42	5.06	11.17	13.34	29.08	39.88	48.52
<i>Sphiggurus</i>	ROMM												
<i>insidiosus</i>	31683	F	662.00	72.81	16.74	4.63	8.89	3.63	10.47	11.43	24.01	32.16	33.70

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM												
<i>Myocastor coypus</i>	32056	M	3402.00	99.68	29.13	7.61	12.95	3.65	12.43	12.69	27.73	37.74	54.30
	ROMM												
<i>Myocastor coypus</i>	91310	F	3600.00	118.31	28.24	8.49	12.18	4.44	14.58	12.65	27.69	40.23	62.59
<i>Thryonomys</i>	ROMM												
<i>gregorianus</i>	65094	M	1700.00	72.29	15.19	5.66	8.30	3.78	9.84	10.40	23.07	32.12	33.68
<i>Thryonomys</i>	ROMM												
<i>swinderianus</i>	65095	M	1700.00	73.79	14.79	6.01	8.32	3.63	9.38	10.16	20.75	32.59	30.28
<i>Thryonomys</i>	ROMM												
<i>swinderianus</i>	71141	M	5400.00	93.47	19.59	6.77	11.65	5.76	10.79	12.44	32.17	41.19	42.29
<i>Napaeozapus</i>	ROMM												
<i>insignis insignis</i>	95054	F	25.00	23.71	3.88	1.21	3.08	1.12	3.99	4.27	7.25	11.31	9.31

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM												
<i>Zapus hudsonius</i>	94986	M	16.00	22.48	3.77	1.04	2.94	1.19	3.81	4.27	7.15	9.61	9.07
<i>Oryzomys</i>	ROMM												
<i>megacephalus</i>	100250	F	44.00	27.75	4.80	1.33	3.26	1.66	4.17	4.68	7.92	12.06	11.26
	ROMM												
<i>Neacomys paracou</i>	100947	F	21.00	22.28	2.92	1.01	2.67	1.05	3.68	4.29	6.69	10.28	8.51
<i>Oecomys</i>	ROMM												
<i>auyantepui</i>	114122	M	46.00	26.24	3.97	1.30	3.23	1.14	3.66	4.46	8.43	12.68	12.38
	ROMM												
<i>Rheomys thomasi</i>	101294	F	29.00	26.7	4.76	1.33	4.25	1.78	4.47	5.52	8.24	13.16	10.97
<i>Nectomys</i>	ROMM												
<i>squamipes</i>	104495	M	165.00	41.29	7.47	2.17	4.77	2.32	5.37	6.89	11.31	16.85	18.34

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM												
<i>Sigmodon alstoni</i>	31565	M	82.50	33.10	5.80	2.13	4.25	1.98	3.79	5.02	9.68	12.94	14.44
	ROMM												
<i>Sigmodon alstoni</i>	31703	F	90.00	32.48	4.89	1.98	3.94	2.04	3.98	4.51	9.91	13.24	13.96
	ROMM												
<i>Sigmodon hispidus</i>	99319	M	72.00	33.25	5.74	1.93	3.91	2.15	4.21	4.85	9.41	14.14	15.08
<i>Melanomys</i>	ROMM												
<i>caliginosus</i>	105819	F	34.00	28.71	4.53	1.48	4.05	2.03	4.25	4.84	8.96	12.92	11.85
<i>Oligoryzomys</i>	ROMM												
<i>fulvescens</i>	31837	M	7.70	19.39	2.76	0.83	2.56	1.05	3.39	3.68	6.25	9.14	7.17
	ROMM												
<i>Scolomys melanops</i>	106127	F	35.00	22.19	2.58	0.98	3.41	1.52	4.13	4.43	7.89	11.09	8.31

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
<i>Thomasomys</i>	ROMM												
<i>niveipes</i>	77296	F	37.80	29.84	4.72	1.42	3.62	1.57	4.15	4.55	9.26	13.05	12.38
<i>Zygodontomys</i>	ROMM												
<i>brevicauda</i>	75226	F	76.80	30.91	4.55	1.57	3.87	1.78	4.24	4.69	9.26	12.27	12.36
<i>Zygodontomys</i>	ROMM												
<i>brevicauda</i>	91401	F	86.60	31.12	4.61	1.40	3.75	1.72	3.82	4.34	9.54	12.12	12.96
<i>Clethrionomys</i>	ROMM												
<i>gapperi</i>	99197	M	12.00	21.90	5.39	1.03	2.85	1.07	4.14	4.17	7.10	10.5	11.07
<i>Dicrostonyx</i>	ROMM												
<i>richardsoni</i>	103887	M	41.00	29.25	8.03	1.49	3.15	1.57	3.88	4.17	8.63	14.45	18.62
<i>Lemmus</i>	ROMM												
<i>trimucronatus</i>	100595	M	20.80	24.5	6.71	1.20	2.71	1.20	4.05	4.48	7.57	12.17	14.01

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM												
<i>Ondatra zibethicus</i>	31296	F	1100.00	64.76	15.55	3.69	7.29	3.27	9.40	9.04	18.42	25.11	40.39
<i>Ondatra zibethicus</i>	ROMV 7074	M	1995.00	66.79	16.48	3.47	7.34	3.51	8.77	8.05	19.80	26.61	40.14
<i>Ondatra zibethicus</i>	ROMV 5611	F	773.00	63.36	16.65	3.55	7.34	4.29	8.86	7.76	17.99	24.05	38.25
<i>Ondatra zibethicus</i>	ROMV 6877	M	834.50	63.36	16.58	3.7	7.83	3.74	9.45	8.39	19.43	25.42	38.27
<i>Ondatra zibethicus</i>	ROMV 2943	M	1050.00	66.17	16.35	3.41	7.36	3.64	9.60	8.18	18.63	25.09	39.48
<i>Phenacomys</i>	ROMM												
<i>intermedius</i>	80647	F	31.80	24.59	6.07	1.40	3.06	1.42	3.76	4.01	6.35	10.90	12.46
<i>Peromyscus</i>	ROMM												
<i>mexicanus</i>	101388	M	47.00	33.07	4.61	1.35	4.15	1.51	4.66	5.86	9.04	14.40	13.56
	ROMM												
<i>Scotinomys teguina</i>	101523	M	13.00	22.14	3.79	0.96	2.66	1.31	3.74	3.97	6.76	10.12	9.49

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
<i>Reithrodontomys</i>	ROMM												
<i>mexicanus</i>	97545	F	15.00	23.70	3.18	1.01	3.02	1.16	3.95	4.06	7.47	11.63	6.86
	ROMM												
<i>Tylomys nudicaudus</i>	35233	M	241.00	51.01	8.69	2.18	5.47	3.27	4.70	7.02	11.47	17.55	21.73
	ROMM												
<i>Otorylomys phyllotis</i>	98525	F	58.00	34.52	7.06	1.95	4.13	1.88	4.79	5.56	8.90	14.48	15.71
<i>Mastomys</i>	ROMM												
<i>erythroleucus</i>	72056	M	60.00	31.28	4.41	1.72	3.87	1.92	4.54	5.17	8.96	12.42	13.96
	ROMM												
<i>Mus musculoides</i>	56128	F	5.50	17.17	3.10	1.11	2.37	1.00	3.15	3.62	5.69	8.63	7.32
<i>Lemniscomys</i>	ROMM												
<i>striatus</i>	100079	M	25.00	31.08	5.16	1.74	3.67	1.52	3.92	5.05	9.03	13.20	12.89

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM												
<i>Aethomys hindei</i>	100080	M	45.00	36.22	6.23	2.24	3.78	2.12	4.09	5.75	10.30	13.81	16.31
	ROMM												
<i>Rattus rattus</i>	56197	M	95.00	36.58	6.28	1.84	4.07	1.94	5.14	5.50	10.53	15.34	15.74
<i>Malacomys</i>	ROMM												
<i>cansdalei</i>	100502	F	70.00	39.23	5.26	1.61	4.51	2.27	4.66	5.56	9.66	13.97	17.02
	ROMM												
<i>Hylomyscus alleni</i>	100484	F	23.00	24.07	3.67	1.18	3.16	1.27	4.06	4.45	7.53	11.10	10.60
	ROMM												
<i>Dephomys defua</i>	100485	M	43.00	34.29	5.16	1.77	3.70	1.34	4.22	5.09	8.68	13.37	14.28
	ROMM												
<i>Praomys tullbergi</i>	100508	M	52.00	33.92	4.91	1.44	3.68	1.50	4.31	5.21	8.94	12.45	15.58

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
<i>Grammomys</i>	ROMM												
<i>cometes</i>	81407	M	35.00	29.15	4.50	1.32	3.73	1.73	4.82	4.52	9.20	12.85	11.27
	ROMM												
<i>Dasymys incomtus</i>	64970	M	72.30	34.91	7.47	2.51	4.15	2.24	4.58	5.34	10.37	13.39	18.11
	ROMM												
<i>Dasymys incomtus</i>	73291	M	69.00	35.69	7.61	2.44	4.13	2.22	4.95	5.59	10.71	14.08	19.06
	ROMM												
<i>Arvicanthis niloticus</i>	81401	F	96.00	34.28	6.45	2.18	3.88	2.09	4.40	4.80	10.14	13.58	15.88
<i>Lophuromys</i>	ROMM												
<i>flavopunctatus</i>	73183	M	68.00	30.36	4.75	1.81	4.08	1.99	4.38	5.03	8.96	12.17	12.68
<i>Lophuromys</i>	ROMM												
<i>flavopunctatus</i>	81386	M	91.00	32.72	5.28	1.97	4.13	1.74	4.41	5.25	8.94	12.29	14.06

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM												
<i>Tatera robusta</i>	100084	M	50.00	41.61	6.65	2.10	4.44	1.50	5.39	6.21	12.88	17.34	17.71
	ROMM												
<i>Acomys cahirinus</i>	82852	M	42.00	30.53	4.84	1.50	3.49	1.51	4.04	4.44	8.37	12.52	12.79
<i>Tachyoryctes</i>	ROMM												
<i>spendens</i>	71913	F	170.00	41.32	9.77	2.95	4.16	3.01	5.08	5.69	12.93	18.87	24.37
	ROMM												
<i>Cricetomys emini</i>	100511	F	550.00	68.58	10.99	3.08	8.02	3.97	7.05	9.36	18.12	22.39	33.45
	ROMM												
<i>Graphiurus parvus</i>	79628	M	17.50	25.98	3.59	1.03	3.16	1.37	3.86	4.60	7.40	11.68	8.35
	ROMM												
<i>Tamias townsendii</i>	112509	F	79.00	38.39	6.12	1.92	4.36	1.92	5.61	5.90	12.44	17.09	15.94

TABLE S1. (Continued)

Genus	Catalogue no.	sex	Body	Cranial dimensions (mm)									
			mass (g)	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
ROMM													
<i>Xerus erythropus</i>	100085	M	600.00	60.91	13.01	3.74	7.56	2.85	7.45	8.92	20.57	25.19	25.84

TABLE S2. List of the extant Scuiromorpha used in all analyses (Least squares regression, PC and CV analyses) with associated catalogue number, sex, body mass (g), locomotor habits and cranial dimensions (mm; abbreviations in the text). **Abbreviations:** **ROMM**, Royal Ontario Museum Mammalogy; **ROMV**, Royal Ontario Museum Vertebrate Paleontology; **AMMN**, American Museum of Natural History.

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM													
<i>Aplodontia rufa</i>	17184	M	1276.0	Terrestrial	72.13	18.78	5.11	8.48	3.62	10.28	10.70	19.84	30.46	38.10
	ROMV													
<i>Aplodontia rufa</i>	6571	F	953.0	Terrestrial	72.03	18.61	5.07	8.13	3.62	8.13	9.94	19.62	28.67	38.68
<i>Spermophilus</i>	ROMM													
<i>richardsonii</i>	91960	F	330.0	Terrestrial	48.60	10.90	3.10	6.10	2.87	5.91	7.01	14.38	19.98	22.16
<i>Spermophilus</i>	ROMV													
<i>adocetus</i>	810	F	180.5	Terrestrial	45.19	9.04	2.69	6.60	2.71	5.77	6.85	14.91	19.79	18.76

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
<i>Spermophilus</i>	ROMV													
<i>mexicanus</i>	821	F	341.0	Terrestrial	48.61	10.17	3.30	6.71	3.32	5.59	6.70	15.02	21.17	22.01
<i>Spermophilus</i>	ROMV													
<i>richardsonii</i>	8298	M	319.0	Terrestrial	47.98	11.38	2.70	6.63	2.81	5.93	6.73	15.35	20.01	22.39
<i>Spermophilus</i>	ROMV													
<i>tridecemlineatus</i>	8295	F	214.0	Terrestrial	43.79	7.69	2.44	5.81	2.69	5.50	6.17	13.42	17.71	18.48
	ROMM													
<i>Marmota monax</i>	18119	F	2027.0	Terrestrial	76.53	17.79	4.90	9.33	3.94	7.35	11.40	21.76	26.82	36.78
	ROMM													
<i>Marmota monax</i>	24773	M	3119.0	Terrestrial	89.25	20.32	5.21	10.32	4.97	5.57	12.60	26.23	32.11	45.40
	ROMM													
<i>Marmota monax</i>	27980	F	3544.0	Terrestrial	84.72	20.58	5.59	10.32	5.07	7.15	11.50	25.78	30.63	42.04

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM													
<i>Marmota monax</i>	22066	F	4026.0	Terrestrial	87.46	19.25	5.07	10.46	4.95	9.20	11.66	24.76	31.49	43.48
	ROMM													
<i>Marmota monax</i>	12573	F	3430.0	Terrestrial	81.83	17.78	4.95	8.76	4.32	8.87	11.00	22.33	29.94	39.53
	ROMM													
<i>Marmota monax</i>	92037	F	6250.0	Terrestrial	101.41	23.12	5.31	10.87	5.42	9.17	13.15	30.41	34.33	48.28
	ROMM													
<i>Marmota monax</i>	18308	F	2701.0	Terrestrial	81.02	19.52	5.59	7.41	4.71	6.99	9.91	21.61	31.02	40.55
	ROMM													
<i>Marmota monax</i>	41468	F	2765.0	Terrestrial	85.60	22.11	5.97	8.09	5.24	7.27	11.81	23.99	31.63	42.61
	ROMM													
<i>Marmota monax</i>	25593	F	1361.0	Terrestrial	84.74	19.69	5.27	8.37	4.60	8.54	11.70	23.93	29.21	41.94

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM													
<i>Marmota monax</i>	18309	F	2555.0	Terrestrial	77.05	17.61	5.23	8.56	4.23	6.58	10.23	21.03	30.01	38.26
	ROMM													
<i>Marmota monax</i>	18196	F	2312.0	Terrestrial	79.44	18.06	4.92	7.44	4.12	7.16	10.56	22.66	28.42	39.68
	ROMM													
<i>Marmota monax</i>	14662	F	2566.0	Terrestrial	83.12	18.34	5.04	7.91	3.81	7.53	11.78	22.25	29.81	40.36
	ROMM													
<i>Marmota monax</i>	11730	M	2495.0	Terrestrial	75.19	20.79	5.43	9.11	3.89	8.21	11.39	22.15	29.12	39.66
	ROMM													
<i>Marmota monax</i>	18114	M	1838.0	Terrestrial	80.62	18.37	4.76	8.07	4.41	7.78	10.45	23.00	30.77	39.12
	ROMM													
<i>Marmota monax</i>	18106	M	1138.0	Terrestrial	75.41	19.69	5.37	7.96	3.88	7.63	10.91	20.56	30.69	37.04

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM													
<i>Marmota monax</i>	18105	F	1625.0	Terrestrial	81.68	18.21	4.90	8.49	4.31	6.74	10.84	21.19	30.92	39.9
	ROMM													
<i>Marmota monax</i>	20945	F	3062.0	Terrestrial	90.58	21.49	5.32	9.67	5.03	8.10	11.65	26.11	32.85	43.69
	ROMM													
<i>Marmota monax</i>	20978	F	2495.0	Terrestrial	82.92	19.4	5.30	9.10	4.59	7.39	11.29	22.52	31.27	40.36
	ROMM													
<i>Marmota monax</i>	20950	M	2268.0	Terrestrial	90.08	21.87	5.38	9.00	4.91	7.23	11.51	25.31	32.20	43.28
	ROMM													
<i>Marmota monax</i>	20904	F	1920.0	Terrestrial	85.04	19.75	5.64	10.10	4.94	6.35	10.78	24.44	30.57	42.64
	ROMM													
<i>Marmota monax</i>	31272	M	3147.0	Terrestrial	88.32	19.82	5.59	9.33	5.33	8.03	11.42	25.38	31.36	43.14

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM													
<i>Marmota monax</i>	16953	F	3083.0	Terrestrial	87.48	20.66	5.58	9.41	5.11	7.87	11.15	26.28	31.97	43.55
	ROMM													
<i>Marmota monax</i>	19549	F	1600.0	Terrestrial	78.96	20.03	5.19	9.69	4.17	8.03	12.03	22.92	31.09	40.20
	ROMM													
<i>Marmota monax</i>	23991	F	1186.0	Terrestrial	71.69	18.72	5.05	8.82	3.70	6.47	11.78	21.49	29.89	37.39
	ROMM													
<i>Marmota monax</i>	22217	M	1800.0	Terrestrial	78.66	18.95	4.99	9.22	3.98	7.29	11.60	22.48	30.80	39.47
	ROMM													
<i>Marmota monax</i>	22280	M	2980.0	Terrestrial	81.10	18.23	4.80	9.50	4.47	8.52	11.28	23.97	30.74	39.54
	ROMV													
<i>Marmota monax</i>	3554	M	1410.0	Terrestrial	77.47	20.48	5.30	10.35	4.52	6.98	10.96	21.29	30.38	39.33

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMV													
<i>Marmota monax</i>	7093	M	2035.0	Terrestrial	78.06	22.21	5.09	9.93	4.62	6.75	10.57	22.35	29.17	42.44
<i>Cynomys</i>	ROMM													
<i>ludovicianus</i>	79163	F	919.3	Terrestrial	60.21	16.38	3.97	7.32	3.27	7.52	8.89	17.71	25.36	29.33
<i>Cynomys</i>	AMNH													
<i>ludovicianus</i>	137325	F	787.0	Terrestrial	62.62	15.67	5.28	8.63	3.95	7.32	8.95	19.33	24.19	28.75
<i>Cynomys</i>	AMNH													
<i>ludovicianus</i>	137327	F	865.0	Terrestrial	62.78	16.16	6.00	8.64	3.47	6.50	8.42	19.4	23.82	30.35
<i>Cynomys</i>	AMNH													
<i>gunnisoni</i>	131868	F	779.0	Terrestrial	57.45	15.13	5.48	7.37	3.28	6.82	7.94	17.68	23.25	27.27
<i>Cynomys</i>	AMNH													
<i>gunnisoni</i>	131869	M	1016.0	Terrestrial	59.41	15.03	4.13	8.06	3.24	5.84	8.08	18.96	24.26	28.14

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
<i>Cynomys</i>	AMNH													
<i>gunnisoni</i>	131872	F	839.0	Terrestrial	59.30	14.15	4.47	8.19	3.80	5.98	8.26	18.52	24.02	26.72
	ROMM													
<i>Sciurus Aestuans</i>	100262	M	150.0	Arboreal	43.29	6.82	2.26	5.32	2.14	5.80	6.61	15.60	20.60	18.00
	ROMM													
<i>Sciurus Aestuans</i>	100236	M	130.0	Arboreal	43.94	6.96	2.14	5.63	2.16	6.31	7.20	16.53	20.41	18.08
<i>Sciurus</i>	ROMM													
<i>carolinensis</i>	22586	M	672.0	Arboreal	61.88	10.68	2.92	7.25	3.26	7.30	8.99	18.20	25.23	25.58
<i>Sciurus</i>	ROMM													
<i>carolinensis</i>	33960	M	521.0	Arboreal	61.42	11.26	3.07	7.13	3.10	7.26	8.59	19.00	26.32	25.98
<i>Sciurus</i>	ROMM													
<i>carolinensis</i>	22586	M	672.0	Arboreal	61.92	10.63	2.88	7.32	3.49	7.27	8.95	18.17	25.58	25.62

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
<i>Sciurus</i>	ROMV													
<i>carolinensis</i>	7096	M	590.0	Arboreal	61.59	11.66	2.90	7.57	2.89	7.05	8.54	19.39	26.38	25.83
	ROMM													
<i>Sciurus deppei</i>	37666	F	117.0	Arboreal	44.90	8.35	2.19	5.69	1.77	7.07	7.36	17.31	21.67	18.23
	ROMM													
<i>Sciurus deppei</i>	37665	F	181.0	Arboreal	47.93	8.90	2.52	5.89	2.24	5.83	7.30	16.82	21.83	19.53
	ROMM													
<i>Sciurus deppei</i>	37664	M	138.0	Arboreal	44.48	8.51	2.42	5.46	2.44	5.72	7.15	16.8	21.33	18.57
	ROMM													
<i>Sciurus deppei</i>	35106	M	227.0	Arboreal	49.73	8.70	2.41	5.39	2.64	5.97	7.03	16.26	22.92	20.07
	ROMM													
<i>Sciurus deppei</i>	35086	M	208.0	Arboreal	50.65	8.66	2.33	5.78	2.24	5.99	7.54	16.77	22.94	20.45

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM													
<i>Sciurus deppei</i>	35079	F	248.0	Arboreal	49.62	8.32	2.41	5.75	2.35	5.81	7.51	16.60	23.38	20.26
	ROMM													
<i>Sciurus niger</i>	19517	M	593.0	Arboreal	65.69	11.50	3.60	7.87	2.93	7.05	11.11	18.65	26.54	28.28
	ROMM													
<i>Sciurus niger</i>	19518	F	637.0	Arboreal	65.21	10.79	3.67	7.23	3.07	7.62	9.32	18.63	26.15	26.69
	ROMM													
<i>Sciurus niger</i>	20378	F	825.0	Arboreal	64.16	11.60	3.61	7.77	3.05	8.80	9.59	21.44	27.11	27.28
	ROMV													
<i>Sciurus niger</i>	6166	F	1109.0	Arboreal	72.43	12.22	3.60	8.71	3.85	7.88	9.93	19.66	28.56	31.19
	ROMV													
<i>Sciurus niger</i>	4055	M	823.0	Arboreal	63.91	11.90	3.55	7.80	3.16	6.92	9.22	19.43	27.22	27.80

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMV													
<i>Sciurus niger</i>	6168	F	890.0	Arboreal	74.17	13.22	3.73	8.58	3.75	7.83	9.88	19.97	30.00	31.86
<i>Sciurus</i>	ROMM													
<i>yucatanensis</i>	33304	F	399.1	Arboreal	54.62	10.27	2.90	6.78	2.70	6.43	8.58	19.29	25.31	22.15
<i>Sciurus</i>	ROMM													
<i>yucatanensis</i>	33299	M	364.4	Arboreal	53.89	10.39	2.92	6.29	2.77	6.06	7.91	17.19	24.32	22.63
<i>Sciurus</i>	ROMM													
<i>yucatanensis</i>	33607	M	455.2	Arboreal	58.04	10.25	3.19	6.82	2.54	6.25	8.94	19.57	26.13	22.55
<i>Sciurus</i>	ROMM													
<i>yucatanensis</i>	34860	F	416.6	Arboreal	54.72	10.76	2.92	7.01	2.59	6.83	8.17	17.24	25.79	22.45
<i>Tamiasciurus</i>	ROMM													
<i>hudsonicus</i>	90501	F	153.7	Arboreal	45.53	7.58	2.26	4.53	2.23	6.08	6.79	15.30	19.36	18.46

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	AMNH													
<i>Tamiasciurus sp.</i>	258324	F	188.0	Arboreal	44.29	7.91	2.34	5.57	2.31	5.97	7.15	16.30	20.95	18.23
	AMNH													
<i>Tamiasciurus sp.</i>	258325	F	160.0	Arboreal	44.88	7.09	2.27	5.97	2.29	6.01	7.72	15.76	20.60	17.49
	AMNH													
<i>Tamiasciurus sp.</i>	258327	M	184.0	Arboreal	46.33	7.26	2.45	6.83	2.85	5.58	7.59	15.11	20.31	18.00
	AMNH													
<i>Tamiasciurus sp.</i>	258328	M	181.0	Arboreal	45.78	7.37	2.49	6.03	2.99	5.96	7.06	15.17	20.16	18.03
	AMNH													
<i>Tamiasciurus sp.</i>	258329	F	192.0	Arboreal	44.87	7.70	2.28	5.95	2.35	5.96	7.37	16.62	19.96	18.31
	AMNH													
<i>Tamiasciurus sp.</i>	258335	M	205.0	Arboreal	44.84	7.61	2.26	6.07	2.57	6.17	6.63	16.70	20.52	17.82

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
<i>Tamiasciurus</i>	AMNH													
<i>hudsonicus</i>	258292	F	117.20	Arboreal	41.56	7.23	2.55	6.38	2.65	5.90	7.30	15.60	19.24	16.53
<i>Tamiasciurus</i>	AMNH													
<i>hudsonicus</i>	258295	F	218.0	Arboreal	44.16	7.24	2.14	5.79	2.51	5.73	6.80	15.90	20.18	17.61
<i>Tamiasciurus</i>	AMNH													
<i>hudsonicus</i>	166841	M	167.0	Arboreal	44.01	7.21	2.20	6.25	2.52	5.71	7.31	16.29	20.17	17.77
<i>Tamiasciurus</i>	AMNH													
<i>hudsonicus</i>	166843	F	182.0	Arboreal	45.26	7.28	2.23	5.98	2.65	6.07	7.03	17.11	20.03	18.04
<i>Tamiasciurus</i>	AMNH													
<i>hudsonicus</i>	166845	F	167.0	Arboreal	44.55	7.14	2.61	6.12	2.41	6.25	7.23	14.55	20.45	18.00
<i>Tamiasciurus</i>	AMNH													
<i>hudsonicus</i>	166847	M	185.0	Arboreal	44.64	7.02	2.29	5.64	2.70	5.33	6.55	16.45	20.82	17.77

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
<i>Tamiasciurus</i>	AMNH													
<i>hudsonicus</i>	166849	M	170.0	Arboreal	44.51	7.30	2.21	5.49	2.64	5.88	6.55	16.26	20.52	17.82
<i>Funisciurus</i>	ROMM													
<i>pyrropus</i>	100573	F	190.0	Arboreal	47.85	8.42	2.41	6.45	2.39	7.00	7.23	15.73	20.94	20.09
<i>Funisciurus</i>	AMNH													
<i>pyrropus</i>	239339	F	250.0	Arboreal	49.91	9.14	2.67	6.11	2.78	6.46	6.82	17.09	22.08	21.72
<i>Funisciurus</i>	AMNH													
<i>pyrropus</i>	239340	F	190.0	Arboreal	48.22	8.62	2.59	6.32	2.88	5.80	6.69	15.71	21.05	19.91
	ROMM													
<i>Glaucomys volans</i>	86791	F	71.2	Glider	35.11	7.08	2.05	4.67	1.55	5.25	5.66	12.39	16.62	14.05
	ROMM													
<i>Glaucomys volans</i>	106316	F	56.0	Glider	33.53	6.37	1.86	4.16	1.76	4.51	5.22	11.59	16.29	14.10

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM													
<i>Glaucomys volans</i>	94285	M	58.0	Glider	34.69	6.30	1.76	4.50	1.84	4.45	5.11	12.68	16.44	14.44
	ROMM													
<i>Glaucomys volans</i>	34225	M	80.0	Glider	36.36	7.03	2.04	4.44	1.42	4.85	5.56	12.7	17.75	14.98
	ROMM													
<i>Glaucomys volans</i>	90715	M	45.6	Glider	33.39	6.06	1.79	4.42	1.98	4.89	4.78	12.69	16.60	13.62
	ROMM													
<i>Glaucomys volans</i>	92110	M	68.7	Glider	34.78	6.56	1.92	5.01	1.35	4.91	5.79	12.22	16.73	13.97
	ROMM													
<i>Glaucomys volans</i>	92105	M	70.0	Glider	34.95	6.55	1.83	4.51	1.81	4.86	5.30	12.11	16.82	14.02
	ROMM													
<i>Glaucomys volans</i>	92109	F	87.4	Glider	35.30	6.35	1.94	4.68	2.04	5.08	5.42	11.84	16.92	14.05

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	ROMM													
<i>Glaucomys volans</i>	86788	F	49.1	Glider	34.62	6.20	1.84	4.88	1.81	5.35	5.44	12.38	15.99	13.80
	ROMM													
<i>Glaucomys volans</i>	86790	M	65.3	Glider	34.73	6.20	1.90	4.71	1.88	5.35	5.31	11.63	16.49	13.95
	AMNH													
<i>Glaucomys volans</i>	242817	M	63.9	Glider	33.10	5.93	1.82	4.74	2.06	4.96	5.11	11.54	15.54	13.33
	AMNH													
<i>Glaucomys volans</i>	242818	F	64.1	Glider	33.71	6.19	2.00	4.61	2.18	4.99	5.67	12.26	16.13	13.29
	AMNH													
<i>Glaucomys volans</i>	242814	F	65.9	Glider	33.82	6.65	1.86	5.08	1.98	5.10	5.67	11.72	16.49	13.47
	AMNH													
<i>Glaucomys volans</i>	242824	F	73.7	Glider	34.45	6.74	1.88	4.83	2.74	5.48	5.34	13.22	16.13	14.01

TABLE S2. (Continued)

Genus	Catalogue no.	sex	Body mass (g)	Locomotor habits	Cranial dimensions (mm)									
					SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	AMNH													
<i>Glaucomys volans</i>	242823	F	62.2	Glider	33.59	6.02	1.89	4.85	2.00	4.93	5.43	11.70	15.70	13.18
	AMNH													
<i>Glaucomys volans</i>	242820	M	65.0	Glider	33.44	6.14	1.86	4.63	1.82	4.83	5.20	12.25	16.24	13.52
	AMNH													
<i>Glaucomys volans</i>	242819	M	55.4	Glider	33.35	6.24	1.86	4.39	1.45	4.94	5.50	12.39	16.18	13.62
	AMNH													
<i>Glaucomys volans</i>	242821	F	70.0	Glider	34.37	6.17	1.92	5.16	1.90	4.73	5.21	11.72	16.4	13.64
	AMNH													
<i>Glaucomys volans</i>	242811	M	63.5	Glider	33.50	6.40	1.72	5.10	1.74	5.01	5.23	11.79	15.66	13.58
	AMNH													
<i>Glaucomys volans</i>	240304	F	44.0	Glider	33.19	6.56	1.75	4.93	1.80	4.97	5.37	12.50	15.79	13.21

TABLE S2. (Continued)

Genus	Catalogue	sex	Body	Locomotor	Cranial dimensions (mm)									
	no.		mass (g)	habits	SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
	AMNH													
<i>Glaucomys volans</i>	217929	F	49.7	Glider	32.83	6.60	1.75	4.54	2.00	5.14	5.31	12.19	16.16	13.22
	AMNH													
<i>Glaucomys volans</i>	240305	F	57.0	Glider	33.87	6.49	1.73	4.91	1.69	5.47	5.61	12.23	16.35	13.80
	AMNH													
<i>Glaucomys volans</i>	240306	M	48.50	Glider	33.38	6.67	1.78	4.77	1.81	5.18	5.28	12.80	16.17	13.93

TABLE S3. List of the fossil specimens used in the different analyses with associated catalogue number and cranial dimensions (mm; abbreviations in the text). **Abbreviations:** **ROMV**, Royal Ontario Museum Vertebrate Paleontology; **AMNH**, American Museum of Natural History; **NA**, not available.

Genus	Catalogue no.	Cranial dimensions (mm)									
		SL	CTL	CTW	COL	COW	FMH	FMW	CH	CW	PAL-I
<i>Paramys copei</i>	AMNH 4756	NA	15.05	3.89	9.81	4.43	8.08	10.98	17.81	23.55	NA
<i>Paramys delicatus</i>	AMNH 1206	88.60	19.47	5.47	11.58	5.10	9.27	12.08	23.15	27.97	39.53
<i>Reithroparamys</i>											
<i>delicatissimus</i>	AMNH 12561	64.99	13.47	3.84	7.95	2.87	8.09	10.01	16.16	22.75	NA
<i>Rapamys atramontis</i>	AMNH 128706	72.34	14.77	4.03	7.47	3.58	6.70	9.45	18.02	23.10	31.31
<i>Ischyromys typus</i>	ROMV1007	72.82	17.37	4.08	8.59	3.46	6.63	10.16	17.30	26.40	35.18