

Table S1. Regressions equations used to estimate life history parameters for extinct species. In all cases, log mass was used as the independent variable. Where possible, equations were calculated at the family level and equations with an R<sup>2</sup> value of at least 0.5 were used. If data were insufficient or R<sup>2</sup> values were too low, equations at the order or class level with the highest R<sup>2</sup> values were used.

Order	Family	Life History Trait	Intercept	Slope	R <sup>2</sup>	Level
Artiodactyla	Antilocapridae	Gestation (mo)	-2.883	2.101	0.71	Class
		Log Newborn mass (g)	-1.140	0.950	0.99	Class
		Weaning (mo)	-2.651	2.101	0.33	Class
		Log Weaning mass (g)	-0.311	0.931	0.97	Class
		Age at first reproduction	-17.532	12.209	0.46	Class
		Maximum life span (mo)	-115.46	96.186	0.59	Class
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	2.926	-0.414	0.27	Class
Artiodactyla	Bovidae	Gestation (mo)	-2.641	2.039	0.48	Family
		Log Newborn mass (g)	0.066	0.747	0.86	Family
		Weaning (mo)	-7.728	2.660	0.56	Family
		Log Weaning mass (g)	0.001	0.915	0.98	Family
		Age at first reproduction	-17.532	12.209	0.46	Class
		Maximum life span (mo)	-210.880	90.978	0.59	Family
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	3.022	-0.396	0.37	Family
Artiodactyla	Cameliidae	Gestation (mo)	2.288	1.820	0.76	Family
		Log Newborn mass (g)	0.455	0.712	0.97	Family
		Weaning (mo)	-8.471	2.835	0.44	Order
		Log Weaning mass (g)	0.090	0.887	0.89	Order
		Age at first reproduction	-100.430	24.898	0.82	Family
		Maximum life span (mo)	-297.080	113.310	0.50	Order
		Litter size	4.873	-0.698	0.30	Class

		Litters/year	2.982	-0.394	0.34	Order
Artiodactyla	Cervidae	Gestation (mo)	-2.883	2.101	0.71	Class
		Log Newborn mass (g)	-0.894	0.925	0.89	Family
		Weaning (mo)	-8.471	2.835	0.44	Order
		Log Weaning mass (g)	-0.528	0.925	0.94	Family
		Age at first reproduction	-51.574	14.658	0.63	Family
		Maximum life span (mo)	-297.08	113.310	0.50	Order
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	2.440	-0.296	0.54	Family
Artiodactyla	Tayassuidae	Gestation (mo)	2.883	2.101	0.71	Class
		Log Newborn mass (g)	-0.351	0.818	0.77	Order
		Weaning (mo)	-8.471	2.835	0.44	Order
		Log Weaning mass (g)	0.090	0.887	0.89	Order
		Age at first reproduction	-17.532	12.209	0.46	Class
		Maximum life span (mo)	-297.080	113.310	0.50	Order
		Litter size	4.873	0.698	0.30	Class
		Litters/year	2.982	-0.394	0.34	Order
Carnivora	Canidae	Gestation (mo)	-6.117	2.505	0.56	Order
		Log Newborn mass (g)	-1.010	0.723	0.87	Family
		Weaning (mo)	-2.651	2.101	0.33	Class
		Log Weaning mass (g)	-0.569	0.945	0.92	Family
		Age at first reproduction	-30.633	14.222	0.54	Order
		Maximum life span (mo)	-115.46	96.186	0.59	Class
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	2.926	-0.414	0.27	Class
Carnivora	Felidae	Gestation (mo)	-6.117	2.505	0.56	Order
		Log Newborn mass (g)	-0.378	0.661	0.91	Family
		Weaning (mo)	-4.568	1.907	0.53	Family
		Log Weaning mass (g)	0.526	0.668	0.68	Family
		Age at first reproduction	-33.151	13.470	0.72	Family

		Maximum life span (mo)	-115.46	96.186	0.59	Class
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	2.926	-0.414	0.27	Class
Carnivora	Mustelidae	Gestation (mo)	-6.117	2.505	0.56	Order
		Log Newborn mass (g)	-1.483	0.918	0.82	Family
		Weaning (mo)	-0.838	0.959	0.46	Family
		Log Weaning mass (g)	-0.536	1.024	0.92	Family
		Age at first reproduction	-30.633	14.222	0.54	Order
		Maximum life span (mo)	-115.46	96.186	0.59	Class
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	1.525	-0.123	0.06	Family
Carnivora	Ursidae	Gestation (mo)	-6.117	2.505	0.56	Order
		Log Newborn mass (g)	0.882	0.322	0.45	Family
		Weaning (mo)	-16.958	4.744	0.33	Family
		Log Weaning mass (g)	0.161	0.795	1.00	Family
		Age at first reproduction	-30.633	14.222	0.54	Order
		Maximum life span (mo)	-375.650	162.710	0.81	Family
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	2.306	-0.356	0.83	Family
Lagomorpha	Leporidae	Gestation (mo)	-0.952	0.683	0.64	Family
		Log Newborn mass (g)				Pantheria
		Weaning (mo)	-1.786	0.870	0.31	Family
		Log Weaning mass (g)	-1.947	1.390	0.59	Family
		Age at first reproduction				Pantheria
		Maximum life span (mo)	-115.46	96.186	0.59	Class
		Litter size				Pantheria
		Litters/year				Pantheria
Perissodactyla	Equidae	Gestation (mo)	-2.883	2.101	0.708	Class
		Log Newborn mass (g)	0.382	0.693	0.47	Order
		Weaning (mo)	-27.816	7.023	0.46	Order

		Log Weaning mass (g)	-0.311	0.931	0.97	Class
		Age at first reproduction	-584.200	113.340	0.85	Family
		Maximum life span (mo)	-115.46	96.186	0.59	Class
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	4.454	-0.710	0.57	Family
Proboscidea	Elephantidae	Gestation (mo)	-2.883	2.101	0.71	Class
		Log Newborn mass (g)	-1.140	0.950	0.99	Class
		Weaning (mo)	-2.651	2.101	0.33	Class
		Log Weaning mass (g)	-0.311	0.931	0.97	Class
		Age at first reproduction	-17.532	12.209	0.46	Class
		Maximum life span (mo)	-115.46	96.186	0.59	Class
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	2.926	-0.414	0.27	Class
Proboscidea	Mammutidae	Gestation (mo)	-2.883	2.101	0.71	Class
		Log Newborn mass (g)	-1.140	0.950	0.99	Class
		Weaning (mo)	-2.651	2.101	0.33	Class
		Log Weaning mass (g)	-0.311	0.931	0.97	Class
		Age at first reproduction	-17.532	12.209	0.46	Class
		Maximum life span (mo)	-115.46	96.186	0.59	Class
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	2.926	-0.414	0.27	Class
Rodentia	Castoridae	Gestation (mo)	-2.883	2.101	0.71	Class
		Log Newborn mass (g)	-0.888	0.813	0.86	Order
		Weaning (mo)	0.098	0.493	0.36	Order
		Log Weaning mass (g)	-0.138	0.818	0.90	Order
		Age at first reproduction	-6.239	6.198	0.41	Order
		Maximum life span (mo)	-18.161	47.289	0.37	Order
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	2.926	-0.414	0.27	Class
Rodentia	Muridae	Gestation (mo)	-2.883	2.101	0.71	Class

		Log Newborn mass (g)	-0.537	0.615	0.74	Family
		Weaning (mo)	0.098	0.493	0.36	Order
		Log Weaning mass (g)	0.039	0.705	0.77	Family
		Age at first reproduction	-6.239	6.198	0.41	Order
		Maximum life span (mo)	-18.161	47.289	0.37	Order
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	2.926	-0.414	0.27	Class
Pilosa	Dasypodidae	Gestation (mo)	-2.883	2.101	0.71	Class
		Log Newborn mass (g)	-1.140	0.950	0.99	Class
		Weaning (mo)	-2.651	2.101	0.33	Class
		Log Weaning mass (g)	-0.311	0.931	0.97	Class
		Age at first reproduction	-17.532	12.209	0.46	Class
		Maximum life span (mo)	-115.46	96.186	0.59	Class
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	2.926	-0.414	0.27	Class
Cingulata	Megalonychidae	Gestation (mo)	-2.883	2.101	0.71	Class
		Log Newborn mass (g)	-1.140	0.950	0.99	Class
		Weaning (mo)	-2.651	2.101	0.33	Class
		Log Weaning mass (g)	-0.311	0.931	0.97	Class
		Age at first reproduction	-17.532	12.209	0.46	Class
		Maximum life span (mo)	-115.46	96.186	0.59	Class
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	2.926	-0.414	0.27	Class
Cingulata	Megatheriidae	Gestation (mo)	-2.883	2.101	0.71	Class
		Log Newborn mass (g)	-1.140	0.950	0.99	Class
		Weaning (mo)	-2.651	2.101	0.33	Class
		Log Weaning mass (g)	-0.311	0.931	0.97	Class
		Age at first reproduction	-17.532	12.209	0.46	Class
		Maximum life span (mo)	-115.46	96.186	0.59	Class
		Litter size	4.873	-0.698	0.30	Class

		Litters/year	2.926	-0.414	0.27	Class
Cingulata	Myodontidae	Gestation (mo)	-2.883	2.101	0.71	Class
		Log Newborn mass (g)	-1.140	0.950	0.99	Class
		Weaning (mo)	-2.651	2.101	0.33	Class
		Log Weaning mass (g)	-0.311	0.931	0.97	Class
		Age at first reproduction	-17.532	12.209	0.46	Class
		Maximum life span (mo)	-115.46	96.186	0.59	Class
		Litter size	4.873	-0.698	0.30	Class
		Litters/year	2.926	-0.414	0.27	Class