Table S1: Average durations of small and large extinct mammals.

Average durations are calculated for genera and species that are found no later than 0.5 Ma in our datasets and are not known to be alive today within our geographic region of focus. Localities are the number of localities represented in the data subsets. N = taxon sample size, Dur (mean) and Dur (med) are mean and median durations respectively (M.y.) . KS = p values from 2-tailed Kolmogorov-Smirnov tests determining if durations of small and large mammals arise from the same underlying distribution. MW = p values from 2-tailed Mann-Whitney U tests determining if the duration distributions of small and large mammals have equal medians. P-values < 0.05 are in bold.

Genera		**Large**			**Small**				
Data subs	**Localities**	N	Dur (mean)	Dur (med)	N	Dur (mean)	Dur (med)	KS	MW
All	1102	308	3,94	2,90	246	5,34	4,04	**0,007**	**0,011**
5_occ	522	298	3,81	2,90	225	5,54	4,20	**0,002**	**0,001**
5_taxa	1076	156	5,20	5,15	122	7,06	6,25	**0,002**	**0,002**
10_occ_10	227	110	5,15	4,25	87	6,94	6,55	**0,005**	**0,005**
Species									
All	1106	887	2,17	1,50	868	2,40	1,50	0,872	0,670
5_occ	515	845	2,14	1,50	789	2,42	1,50	0,677	0,462
5_taxa	1015	247	3,26	2,70	247	3,71	2,90	0,587	0,406
10_occ_10	149	124	3,26	3,05	122	3,60	2,40	0,606	0,986

Table S2: Per capita rates of origination and extinction for large and small mammal species and genera

Mean per capita rates of origination, p and extinction, q in per millions years (darker cells are medians) for data subsets. Bins are in M.y. and MW are p-values for paired, 2 tailed Mann-Whitney U tests and with those which are significant at $p < 0.05$ marked in bold. N = number of time bins for which comparisons were possible. Because boundary crossers are used, the rates cannot be calculated for time bins at the "edges" of the time series.

Genera

			p					q				
Bins	**Data subs**	**N**	**Large**		**Small**		**MW**	**Large**		**Small**		**MW**
1	*All*	18	0,40	0,18	0,25	0,14	**0,01**	0,30	0,17	0,15	0,12	0,10
	5_occ	17	0,23	0,18	0,13	0,14	**0,00**	0,35	0,18	0,15	0,11	0,06
	5_taxa	18	0,35	0,12	0,27	0,14	0,09	0,23	0,12	0,13	0,09	0,10
	10_occ_10	17	0,17	0,12	0,16	0,13	0,08	0,34	0,12	0,13	0,07	**0,05**
1,5	*All*	12	0,23	0,22	0,21	0,14	0,14	0,25	0,16	0,15	0,10	0,07
	5_occ	12	0,23	0,24	0,21	0,14	0,20	0,25	0,16	0,14	0,09	0,08
	5_taxa	12	0,19	0,16	0,18	0,12	0,45	0,21	0,13	0,12	0,08	0,08
	10_occ_10	11	0,18	0,14	0,20	0,10	0,19	0,19	0,11	0,12	0,06	0,07
2	*All*	9	0,41	0,21	0,26	0,16	**0,01**	0,28	0,24	0,15	0,14	**0,01**
	5_occ	8	0,24	0,20	0,14	0,15	**0,03**	0,28	0,25	0,15	0,13	**0,02**
	5_taxa	9	0,36	0,15	0,23	0,14	0,08	0,25	0,20	0,13	0,10	**0,01**
	10_occ_10	8	0,20	0,16	0,14	0,14	0,20	0,22	0,17	0,14	0,09	**0,05**

Species

			p					q				
Bins	**Data subs**	**N**	**Large**		**Small**		**MW**	**Large**		**Small**		**MW**
1	*All*	18	0,61	0,43	0,49	0,33	**0,05**	0,55	0,36	0,40	0,38	0,10
	5_occ	17	0,48	0,44	0,38	0,32	0,23	0,63	0,34	0,41	0,35	0,35
	5_taxa	17	0,49	0,33	0,40	0,28	0,23	0,49	0,37	0,29	0,22	0,35
	10_occ_10	14	0,34	0,31	0,34	0,21	0,23	0,40	0,28	0,45	0,25	0,35
1,5	*All*	11	0,44	0,26	0,46	0,33	0,20	0,54	0,22	0,40	0,25	**0,05**
	5_occ	11	0,46	0,43	0,48	0,37	0,20	0,55	0,43	0,40	0,29	**0,05**
	5_taxa	11	0,38	0,30	0,38	0,29	0,20	0,47	0,37	0,32	0,26	**0,05**
	10_occ_10	9	0,37	0,31	0,36	0,31	0,20	0,42	0,31	0,47	0,27	**0,05**
2	*All*	9	0,62	0,37	0,50	0,26	0,20	0,57	0,33	0,40	0,19	**0,05**
	5_occ	8	0,52	0,47	0,42	0,36	0,20	0,63	0,47	0,43	0,33	**0,05**
	5_taxa	9	0,51	0,40	0,42	0,31	0,20	0,48	0,35	0,31	0,24	**0,05**
	10_occ_10	5	0,24	0,29	0,19	0,20	0,20	0,37	0,28	0,26	0,29	**0,05**

Table S3. Best models from model selection

Top 3 models from each binning scheme (Bins in M.y.) and various data subsets. QAIC values are corrected with the stated average c-hat from Test 2 and 3 in each case. Weights are model weights which sum to one for all 9 models (see SI Methods for details) although only the top 3 are shown.

Bins	Data subsets											
	1 *All*			*5_occ*			*5_taxa*			*10_occ_10_taxa*		
	Model	**QAIC**	**Weights**	**Model**	**QAIC**	**Weights**	**Model**	**QAIC**	**Weights**	**Model**	**QAIC**	**Weights**
	Φ{gr+t}pr{t	1432,45	0,611	Φ{gr+t}pr{g	1479,751	0,776	Φ{gr+t}pr{g	1285,151	0,809	Φ{gr+t}pr{t	947,4754	0,680
	Φ{gr+t}pr{g	1433,36	0,387	Φ{gr+t}pr{t	1482,243	0,223	Φ{gr+t}pr{t	1288,075	0,188	Φ{gr+t}pr{g	949,0183	0,314
	Φ{t}pr{t}	1444,43	0,002	Φ{t}pr{t}	1495,128	0,000	Φ{t}pr{t}	1297,128	0,002	Φ{t}pr{t}	957,6332	0,004
	c-hat	3,12		c-hat	2,88		c-hat	2,41		c-hat	2,40	
1,5	Φ{gr+t}pr{t	1308,577	0,507	Φ{gr+t}pr{g	1489,934	0,525	Φ{gr+t}pr{g	955,8409	0,649	Φ{gr+t}pr{t	747,3297	0,495
	Φ{gr+t}pr{g	1308,673	0,484	Φ{gr+t}pr{t	1491,066	0,298	Φ{gr+t}pr{t	957,259	0,319	Φ{gr+t}pr{g	748,3553	0,297
	Φ{t}pr{t}	1317,218	0,007	Φ{gr*t}pr{t}	1492,584	0,140	Φ{t}pr{t}	962,2637	0,026	Φ{t}pr{t}	749,1989	0,195
	c-hat	2,73		c-hat	2,30		c-hat	2,46		c-hat	2,42	
2	Φ{gr*t}pr{t}	1591,699	0,378	Φ{gr*t}pr{g	1656,516	0,491	Φ{gr+t}pr{g	605,7544	0,574	Φ{t}pr{t}	394,4703	0,815
	Φ{gr+t}pr{g	1592,183	0,297	Φ{gr*t}pr{t}	1656,825	0,421	Φ{gr+t}pr{t	606,6635	0,364	Φ{gr+t}pr{t	398,6791	0,099
	Φ{gr*t}pr{g	1593,373	0,164	Φ{gr+t}pr{g	1660,467	0,068	Φ{t}pr{t}	610,8268	0,045	Φ{gr+t}pr{g	399,1409	0,079
	c-hat	1,73		c-hat	1,58		c-hat	3,14		c-hat	3,45	

Table S4. List of NOW genera for which SLOH behavior was estimable.

Genera for which SLOH behavior was estimable, their mean body masses, and type of SLOH behavior present/absent. The last column indicates

	Mass (g)	Hibernate	Torpor	Dormancy	Aestivation	Fossorial	Burrow	Tunnel	Chambers	Tree Holes	Caves	Alternative
Acinonyx	5,35E+04	0	0	0	0	0	0	0	0	0	0	
Alcelaphus	1,67E+05	0	0	0	0	0	0	0	0	0	0	
Alces	5,13E+05	0	0	0	0	0	0	0	0	0	0	
Allactaga	1,81E+02	1	1	0	1	0	1	0	0	0	0	
Anourosore	2,00E+01	0	0	0	0	1	0	0	0	0	0	
Aonyx	1,68E+04	0	0	0	0	0	1	0	0	0	0	
Apodemus	3,13E+01	0	0	0	0	0	1	1	0	0	0	
Arvicola	1,60E+02	0	0	0	0	0	1	0	0	0	0	
Atelerix	4,68E+02	1	1	0	1	0	0	0	0	0	0	
Atlantoxeru	6,23E+02	0	0	0	0	0	0	0	0	0	0	Burrower
Axis	6,51E+04	0	0	0	0	0	0	0	0	0	0	
Bison	6,75E+05	0	0	0	0	0	0	0	0	0	0	
Blarinella	1,25E+01	0	0	0	0	0	0	0	0	0	0	Burrower
Bos	8,30E+05	0	0	0	0	0	0	0	0	0	0	
Bubalus	4,25E+05	0	0	0	0	0	0	0	0	0	0	
Calomyscu	2,25E+01	0	0	0	0	0	1	0	0	0	0	
Camelus	4,95E+05	0	0	0	0	0	0	0	0	0	0	
Canis	1,94E+04	0	0	0	0	0	1	0	0	0	0	
Capra	8,23E+04	0	0	0	0	0	0	0	0	0	0	
Capreolus	3,25E+04	0	0	0	0	0	0	0	0	0	0	
Castor	1,85E+04	0	0	0	0	0	0	0	1	0	0	
Ceratotheri	2,50E+06	0	0	0	0	0	0	0	0	0	0	
Cervus	1,12E+05	0	0	0	0	0	0	0	0	0	0	
Clethrionon	2,75E+01	0	0	0	0	0	0	0	0	0	0	
Condylura	6,25E+01	0	0	0	0	1	1	1	0	0	0	
Cricetulus	8,57E+01	0	0	0	0	0	0	0	0	0	0	Burrower
Cricetus	5,10E+02	1	0	0	0	0	1	1	0	0	0	
Crocidura	1,26E+01	0	0	0	0	0	0	1	0	0	0	
Crocuta	6,30E+04	0	0	0	0	0	1	0	0	0	0	
Cuon	1,55E+04	0	0	0	0	0	0	0	0	0	0	
Dama	7,00E+04	0	0	0	0	0	0	0	0	0	0	
Desmana	3,83E+02	0	0	0	0	0	0	0	0	0	0	
Dicerorhinu	1,40E+06	0	0	0	0	0	0	0	0	0	0	
Diceros	1,10E+06	0	0	0	0	0	0	0	0	0	0	
Dicrostony	6,76E+01	0	0	0	0	0	1	0	0	0	0	
Dinaromys	5,60E+01	0	0	0	0	0	0	0	0	0	0	
Dryomys	2,60E+01	1	1	0	0	0	0	0	0	1	0	
Elephas	4,06E+06	0	0	0	0	0	0	0	0	0	0	
Eliomys	1,03E+02	1	0	0	0	0	1	0	0	0	0	

Ellobius	7,43E+01	0	0	0	0	1	0	0	0	0	0	
Eolagurus	2,60E+01	0	0	0	0	0	0	0	0	0	0	Burrower
Eozapus	NA	0	0	0	0	0	0	0	0	0	0	
Episoriculu	5,90E+00	0	0	0	0	0	0	0	0	0	0	
Equus	2,96E+05	0	0	0	0	0	0	0	0	0	0	
Erinaceus	7,50E+02	1	0	0	0	0	1	0	0	0	0	
Felis	4,78E+03	0	0	0	0	0	1	0	0	0	0	
Galemys	5,75E+01	0	0	0	0	0	1	0	0	0	1	
Gazella	4,56E+04	0	0	0	0	0	0	0	0	0	0	
Gerbillus	3,66E+01	0	0	0	0	0	1	1	0	0	0	
Giraffa	1,24E+06	0	0	0	0	0	0	0	0	0	0	
Glirulus	NA	0	0	0	0	0	0	0	0	0	0	
Glis	1,25E+02	1	0	0	0	0	1	1	0	1	0	
Hemiechinu	2,60E+02	1	1	0	0	0	1	0	0	0	0	
Hemitragus	7,50E+04	0	0	0	0	0	0	0	0	0	0	
Herpestes	2,17E+03	0	0	0	0	0	1	0	0	1	0	
Hexaprotoc	2,35E+05	0	0	0	0	0	0	0	0	0	0	
Hippopotan	2,75E+06	0	0	0	0	0	0	0	0	0	0	
Homo	NA	0	0	0	0	0	0	0	0	0	0	
Hyaena	4,14E+04	0	0	0	0	0	0	0	0	0	0	
Hylopetes	1,66E+02	0	0	0	0	0	0	0	0	0	0	
Hystrix	1,12E+04	0	0	0	0	0	1	1	1	0	0	
Kobus	1,54E+05	0	0	0	0	0	0	0	0	0	0	
Lagurus	3,00E+01	0	0	0	0	0	1	0	0	0	0	
Lemmus	7,60E+01	0	0	0	0	0	1	1	0	0	0	
Lepus	3,98E+03	0	0	0	0	0	1	1	0	0	0	
Lutra	8,50E+03	0	0	0	0	0	0	1	0	0	0	
Lynx	1,17E+04	0	0	0	0	0	1	0	0	0	1	
Macaca	8,48E+03	0	0	0	0	0	0	0	0	0	0	
Marmota	5,25E+03	1	0	1	0	0	1	1	1	0	0	
Martes	1,74E+03	0	0	0	0	0	1	0	0	1	1	
Meles	1,30E+04	0	0	0	0	0	1	1	1	0	0	
Mellivora	1,00E+04	0	0	0	0	0	0	0	0	0	0	
Meriones	7,72E+01	1	0	0	0	0	1	1	1	0	0	
Mesocricet	1,28E+02	0	1	0	0	0	1	0	0	0	0	
Micromys	6,00E+00	0	0	0	0	0	1	0	0	0	0	
Microtus	4,82E+01	0	0	0	0	1	1	1	0	0	0	
Muntiacus	2,10E+04	0	0	0	0	0	0	0	0	0	0	
Mus	1,47E+01	0	0	0	0	0	1	1	1	0	0	
Muscardinu	2,75E+01	1	0	0	0	0	1	0	0	1	0	
Mustela	5,86E+02	0	0	0	0	0	1	1	0	0	1	
Myomimus	NA	0	0	0	0	0	0	0	0	0	0	

Myosorex	1,33E+01	0	0	0	0	0	0	0	0	0	0	Burrower
Nannospala	1,60E+02	0	0	0	0	1	0	0	0	0	0	
Neomys	1,50E+01	0	0	0	0	0	1	1	0	0	0	
Neurotrichu	1,00E+01	0	0	0	0	0	0	1	1	0	0	
Nyctereutes	5,00E+03	1	0	0	0	0	1	0	0	0	0	
Ochotona	2,62E+02	0	0	0	0	0	1	1	0	0	0	
Orycteropu	7,00E+04	0	0	0	0	0	1	0	0	0	0	
Oryctolagu	1,80E+03	0	0	0	0	0	1	0	0	0	0	
Oryx	1,55E+05	0	0	0	0	0	0	0	0	0	0	
Ovibos	3,05E+05	0	0	0	0	0	0	0	0	0	0	
Ovis	1,13E+05	0	0	0	0	0	0	0	0	0	0	
Panthera	1,39E+05	0	0	0	0	0	0	0	0	0	0	
Parascalop	6,25E+01	0	0	0	0	1	0	1	0	0	0	
Pelomys	1,08E+02	0	0	0	0	0	0	0	0	0	0	
Phoca	1,15E+05	0	0	0	0	0	0	0	0	0	0	
Prolagus	NA	0	0	0	0	0	0	0	0	0	0	
Puma	5,16E+04	0	0	0	0	0	0	0	0	0	0	
Rangifer	1,89E+05	0	0	0	0	0	0	0	0	0	0	
Rattus	1,76E+02	0	0	0	0	0	1	0	1	0	0	
Ratufa	2,25E+03	0	0	0	0	0	0	0	0	1	0	
Rhagamys	NA	0	0	0	0	0	0	0	0	0	0	
Rupicapra	3,70E+04	0	0	0	0	0	0	0	0	0	0	
Scapanulus	7,50E+01	0	0	0	0	1	0	0	0	0	0	
Scaptonyx	3,00E+01	0	0	0	0	1	0	0	0	0	0	
Sciurotami	4,54E+02	0	0	0	0	0	0	0	0	0	0	
Sciurus	6,00E+02	0	0	0	0	0	0	0	0	1	0	
Semnopith	1,45E+04	0	0	0	0	0	0	0	0	0	0	
Sicista	1,00E+01	0	0	0	0	0	0	0	0	0	0	Burrower
Sorex	1,00E+01	0	0	0	0	0	1	1	0	0	0	
Soriculus	9,95E+00	0	0	0	0	0	0	0	0	0	0	
Spalax	3,93E+02	0	0	0	0	1	0	0	0	0	0	
Spermophil	5,43E+02	1	1	1	1	0	1	1	1	0	0	
Suncus	1,45E+01	0	1	0	0	0	0	0	0	0	0	
Sus	1,19E+05	0	0	0	0	0	0	0	0	0	0	
Synaptomy	3,55E+01	0	0	0	0	0	1	0	0	0	0	
Talpa	9,22E+01	0	0	0	0	1	1	1	1	0	0	
Tamias	7,48E+01	1	1	0	0	0	1	1	1	1	1	
Tapirus	2,50E+05	0	0	0	0	0	0	0	0	0	0	
Thallomys	1,03E+02	0	0	0	0	0	0	0	0	0	0	
Urotrichus	1,70E+01	0	0	0	0	0	0	0	0	0	0	Burrower
Ursus	2,43E+05	1	1	0	0	0	0	0	0	1	1	
Viverra	8,00E+03	0	0	0	0	0	1	0	0	0	0	

Vormela	5,43E+02	0	0	0	0	0	0	0	0	0	0
Vulpes	3,55E+03	0	0	0	0	0	1	1	1	0	1