

Raia Supplementary Data 2—Species-level data.

Species name	Spec_ID	FA	LA	# occurrence	Order	Family	Subfamily
Pontoceros ambiguus	Pamb	1171438	1002173	2	Artiodactyla	Bovidae	Bovinae
Gazella aegae	Gaeg	1739963	1739963	2	Artiodactyla	Bovidae	Antilopinae
Gazella borbonica	Gbor	2700000	1384020	19	Artiodactyla	Bovidae	Antilopinae
Gazella bouvrinae	Gbou	1739963	1152711	2	Artiodactyla	Bovidae	Antilopinae
Gazella postmitilini	Gpos	2700000	2700000	2	Artiodactyla	Bovidae	Antilopinae
Gazella subgutturosa	Gsub	47800	5000	2	Artiodactyla	Bovidae	Antilopinae
Gazellospira torticornis	Gtor	2700000	992355.4	19	Artiodactyla	Bovidae	Antilopinae
Parastrepsiceros koufosi	Pkou	1152711	1152711	2	Artiodactyla	Bovidae	Antilopinae
Parastrepsiceros sokolovi	Psok	2700000	2700000	2	Artiodactyla	Bovidae	Antilopinae
Saiga tatarica	Stat	364000	5000	46	Artiodactyla	Bovidae	Antilopinae
Alephis boodon	Aboo	1950000	1950000	2	Artiodactyla	Bovidae	Bovinae
Bison menneri	Bmen	205214.5	205214.5	2	Artiodactyla	Bovidae	Bovinae
Bison priscus	Bprc	364000	0.16405	154	Artiodactyla	Bovidae	Bovinae
Bison schoetensacki	Bsch	918069.7	76053.04	19	Artiodactyla	Bovidae	Bovinae
Bos primigenius	Bpri	380000	5000	163	Artiodactyla	Bovidae	Bovinae
Bubalus murrens	Bmur	73810.3	73810.3	2	Artiodactyla	Bovidae	Bovinae
Dmanisibos georgicus	Dgeo	1780000	1780000	2	Artiodactyla	Bovidae	Bovinae
Eobison tamanensis	Etam	1950000	663651.2	4	Artiodactyla	Bovidae	Bovinae
Eosyncerus ivericus	Eive	2700000	2700000	2	Artiodactyla	Bovidae	Bovinae
Hemibos galerianus	Hgal	141602.2	141602.2	2	Artiodactyla	Bovidae	Bovinae
Leptobos elatus	Lela	2319212	1384020	5	Artiodactyla	Bovidae	Bovinae
Leptobos etruscus	Letr	1545996	975494.1	18	Artiodactyla	Bovidae	Bovinae
Leptobos furtivus	Lfur	1950000	1179074	9	Artiodactyla	Bovidae	Bovinae
Leptobos stenometopon	Lste	3821736	1837380	3	Artiodactyla	Bovidae	Bovinae
Leptobos vallisarni	Lval	1156116	371891	9	Artiodactyla	Bovidae	Bovinae
Parabos athanasiui	Path	3556073	3342605	4	Artiodactyla	Bovidae	Bovinae
Capra caucasica	Ccau	364000	5000	16	Artiodactyla	Bovidae	Caprinae
Capra ibex	Cibe	170000	0.16405	136	Artiodactyla	Bovidae	Caprinae
Capra pyrenaica	Cpyr	157500	21499	15	Artiodactyla	Bovidae	Caprinae
Caprovis savini	Csav	1777856	1777856	2	Artiodactyla	Bovidae	Caprinae
Hemitragus albus	Halb	983000	589232.9	2	Artiodactyla	Bovidae	Caprinae
Hemitragus bonali	Hbon	380000	73912.25	10	Artiodactyla	Bovidae	Caprinae
Hemitragus cedrensis	Hced	84208.47	72688.93	7	Artiodactyla	Bovidae	Caprinae
Hemitragus orientalis	Hori	1780000	1416478	2	Artiodactyla	Bovidae	Caprinae
Ovis ammon	Oamm	241000	0.16405	5	Artiodactyla	Bovidae	Caprinae
Protoryx heinrichi	Phei	2700000	2700000	2	Artiodactyla	Bovidae	Caprinae

Tribe	branch 1	branch 2	b1 origin note	branch length
Tragelaphini	18.3	1.002173	HFV Bovini/Tragelaphini split	17.3
Antilopini	5.7	1.739963	HFV gazella split	4
Antilopini	5.7	1.38402	HFV gazella split	4.3
Antilopini	5.7	1.152711	HFV gazella split	4.5
Antilopini	5.7	2.7	HFV gazella split	3
Antilopini	5.7	0	HFV gazella split	5.7
Antilopini	18	0.992355	HFV saiga split	17
Antilopini	3.4	2.6	NOW, HFV saiga split	0.8
Antilopini	3.4	2.6	NOW, HFV saiga split	0.8
Antilopini	18	0	HFV saiga split	18
Bovini	16.9	1.95	HFV Bovini split	15
Bovini	3.4	0.205215	HFV Bos/Bubalus split	3.2
Bovini	3.4	0	HFV Bison split	3.4
Bovini	3.4	0.076053	NOW oldest Bison	3.3
Bovini	5.8	0.005	HFV Bos/Bison split	5.8
Bovini	11.8	0	HFV Bos/Syncerus split	11.8
Bovini	5.8	1.78	HFV Bos/Bison split	4
Bovini	3.4	0.663651	HFV Bison split	2.7
Bovini	11.8	2.7	HFV Bos/Syncerus split	9.1
Bovini	11.8	0.141602	HFV Bos/Syncerus split	11.7
Bovini	3.4	1.38402	HFV Bison split	2
Bovini	3.4	0.975494	HFV Bison split	2.4
Bovini	3.4	1.179074	HFV Bison split	2.2
Bovini	3.4	1.83738	HFV Bison split	1.6
Bovini	3.4	1.7	HFV Bison split	1.7
Bovini	16.9	3.342605	HFV Bovini split	13.6
Caprini	5.1	0	HFV split of Capra/Hemitragus	5.1
Caprini	5.1	0	HFV split of Capra/Hemitragus	5.1
Caprini	5.1	0	HFV split of Capra/Hemitragus	5.1
?	17.8	1.777856	HFV split of Caprini	16
Caprini	1.8	0.589233	based on oldest Hemitragus	1.2
Caprini	1.8	0.073912	based on oldest Hemitragus	1.7
Caprini	1.8	0.072689	based on oldest Hemitragus	1.7
Caprini	1.8	1.416478	based on oldest Hemitragus	0.4
Caprini	6.8	0	HFV split of Ovis	6.8
	17.8	2.7	HFV split of Caprini	15.1

Rupicapra rupicapra	Rrup	170000	5000	122	Artiodactyla	Bovidae	Caprinae
Procamptoceras brivatense	Pbri	2700000	1179074	5	Artiodactyla	Bovidae	Caprinae
Gallogoral meneghinii	Gmen	1950000	1180236	11	Artiodactyla	Bovidae	Caprinae
Megalovis latifrons	Mlat	1805781	1147563	4	Artiodactyla	Bovidae	Caprinae
Megalovis balcanicus	Mbal	930160.1	930160.1	2	Artiodactyla	Bovidae	Caprinae
Ovibos moschatus	Omos	243500	8700	19	Artiodactyla	Bovidae	Caprinae
Ovibos pallantis	Opal	22050	22050	2	Artiodactyla	Bovidae	Caprinae
Pliotragus ardeus	Pard	2939829	1211797	10	Artiodactyla	Bovidae	Caprinae
Praeovibos priscus	Ppri	430406.1	74931.67	6	Artiodactyla	Bovidae	Caprinae
Soergelia minor	Smin	983000	430406.1	2	Artiodactyla	Bovidae	Caprinae
Euthyceros tessalicus	Etes	1739963	1739963	2	Artiodactyla	Bovidae	Caprinae
Camelus knoblochi	Ckno	364000	74320.02	2	Artiodactyla	Camelidae	Camelinae
Paracamelus alexejevi	Pale	3400000	1950000	3	Artiodactyla	Camelidae	Camelinae
Paracamelus alutensis	Palu	1950000	1950000	2	Artiodactyla	Camelidae	Camelinae
Paracamelus bessarabiensis	Pbes	1661742	1661742	2	Artiodactyla	Camelidae	Camelinae
Pseudalces mirandus	Pmir	3405708	3405708	2	Artiodactyla	Cervidae	Cervinae
Axis farnetensis	Afar	1134453	141602.2	10	Artiodactyla	Cervidae	Cervinae
Cervus elaphus	Cela	430406.1	0.16405	438	Artiodactyla	Cervidae	Cervinae
Cervus perrieri	Cper	3534563	1014905	12	Artiodactyla	Cervidae	Cervinae
Croizetoceros ramosus	Cram	3169608	1014905	24	Artiodactyla	Cervidae	Cervinae
Dama clactoniana	Dcla	241000	69426.76	17	Artiodactyla	Cervidae	Cervinae
Dama dama	Ddam	246500	25695	62	Artiodactyla	Cervidae	Cervinae
Axis lyra	Alyr	3159720	1398230	5	Artiodactyla	Cervidae	Cervinae
Axis nestii	Anes	1826768	1014905	18	Artiodactyla	Cervidae	Cervinae
Rusa rhenana	Rrhe	3400000	918069.7	28	Artiodactyla	Cervidae	Cervinae
Eucladoceros ctenoides	Ecte	2700000	1152711	26	Artiodactyla	Cervidae	Cervinae
Eucladoceros dicranios	Edic	1433105	904225.9	15	Artiodactyla	Cervidae	Cervinae
Eucladoceros giulii	Egiu	983000	662122	2	Artiodactyla	Cervidae	Cervinae
Arvernoceros ardei	Aard	2319212	1873804	2	Artiodactyla	Cervidae	Cervinae
Megaloceros giganteus	Mgig	364000	12000	144	Artiodactyla	Cervidae	Cervinae
Megaloceros savini	Msav	662122	98786.28	7	Artiodactyla	Cervidae	Cervinae
Praemegaceros dawkinsi	Pdaw	99601.82	99601.82	2	Artiodactyla	Cervidae	Cervinae
Praemegaceros obscurus	Pobs	1200000	589232.9	8	Artiodactyla	Cervidae	Cervinae
Praemegaceros pliotarandoides	Ppli	1950000	1171438	2	Artiodactyla	Cervidae	Cervinae
Praemegaceros solhilacus	Psol	109184.4	91650.29	2	Artiodactyla	Cervidae	Cervinae
Praemegaceros verticornis	Pver	1100000	98786.28	14	Artiodactyla	Cervidae	Cervinae
Paracervulus australis	Paus	1950000	1950000	2	Artiodactyla	Cervidae	Muntiacinae
Eostyloceros pidoplitschkoi	Epid	1950000	1950000	2	Artiodactyla	Cervidae	Muntiacinae

Rupicaprini	14.5	0	HFV split of Caprini	14.5
Rupicaprini	14.5	1.179074	HFV split of Caprini	13.3
Nemorhedini	17.8	1.180236	HFV split of Caprinae	16.6
Ovibovini	3	1.147563	NOW oldest Megalovis	1.9
Ovibovini	3	0.93016	NOW oldest Megalovis	2.1
Ovibovini	1.8	0	NOW oldest Ovibos	1.8
Ovibovini	1.8	0.02205	NOW oldest Ovibos	1.8
Rupicaprini	14.5	1.211797	HFV split from Nemorhedini	13.3
Ovibovini	10.3	0.074932	HFV split from Nemorhedini	10.2
Ovibovini	10.3	0.430406	HFV split from Nemorhedini	9.9
	17.8	1.739963	HFV split of Caprinae	16.1
Camelini	4.75	0.27432	split from Pbes	4.5
Camelini	4.75	1.95	split from Pbes	2.8
Camelini	4.75	1.95	split from Pbes	2.8
Camelini	4.75	1.661742	NOW	3.1
	14.6	3.405708	HFV split Odocoileini/alceini+Capreolini	11.2
Cervini	6.2	1.134453	Oldest known Axis	5.1
Cervini	4.7	0	split from C. perrieri	4.7
Cervini	4.7	1.014905	NOW	3.7
Cervini	9.9	2.014905	Split Axis/Cervus	7.9
Cervini	0.7	0.069427		0.6
Cervini	0.7	0	split from Dcla	0.7
Cervini	6.2	1.39823	Oldest known Axis	4.8
Cervini	6.2	1.014905	Oldest known Axis	5.2
Cervini	5.6	0.91807	HFV split Rusa/Cervus	4.7
Cervini	2.7	1.152711		1.5
Cervini	2.7	1.5	FA of other E. ctenoides	1.2
Cervini	2.7	0.662122	FA of other E. ctenoides	2
Megacerini	3	1.873804	NOW	1.1
Megacerini	0.662122	0.012	split from Msav	0.7
Megacerini	0.662122	0.398786		0.3
Megacerini	1.2	0.499602	split from Pobs	0.7
Megacerini	1.2	0.589233		0.6
Megacerini	1.95	1.171438		0.8
Megacerini	1.95	0.983	split from Pplio	1
Megacerini	1.95	0.398786	split from Pplio	1.6
Muntiacini	4.75	1.95		2.8
Muntiacini	4.75	1.95	spit from Paracervulus	2.8

Alces alces	Aalc	243500	5000	58	Artiodactyla	Cervidae	Odocoileinae
Cervalces carnolorum	Ccar	1304107	662122	4	Artiodactyla	Cervidae	Odocoileinae
Cervalces gallicus	Cgal	1433105	990805.9	4	Artiodactyla	Cervidae	Odocoileinae
Cervalces latifrons	Clat	658961.8	99601.82	17	Artiodactyla	Cervidae	Odocoileinae
Capreolus capreolus	Ccap	430406.1	5000	214	Artiodactyla	Cervidae	Odocoileinae
Capreolus suessenbornensis	Csue	430406.1	76154.99	6	Artiodactyla	Cervidae	Odocoileinae
Procapreolus moldavicus	Pmol	3104773	1950000	3	Artiodactyla	Cervidae	Odocoileinae
Rangifer tarandus	Rtar	271500	0.16405	278	Artiodactyla	Cervidae	Odocoileinae
Mitilanotherium inexpectatum	Mine	1147563	1147563	2	Artiodactyla	Giraffidae	Giraffini
Mitilanotherium martinii	Mmar	1739963	1002173	2	Artiodactyla	Giraffidae	Giraffini
Hippopotamus amphibius	Hamp	430406.1	69426.76	33	Artiodactyla	Hippopotamidae	Hippopotaminae
Hippopotamus antiquus	Hant	1100000	84106.52	29	Artiodactyla	Hippopotamidae	Hippopotaminae
Propotamochoerus provincialis	Ppro	3405708	2700000	4	Artiodactyla	Suidae	Suinae
Sus arvernensis	Sarv	3821736	2319212	8	Artiodactyla	Suidae	Suinae
Sus scrofa	Sscr	430406.1	5000	230	Artiodactyla	Suidae	Suinae
Sus strozii	Sstr	1950000	904225.9	27	Artiodactyla	Suidae	Suinae
Alopex lagopus	Alag	120000	5000	91	Carnivora	Canidae	Caninae
Canis arnensis	Carn	1152711	81048.24	21	Carnivora	Canidae	Caninae
Canis etruscus	Cetr	1845525	378721.1	24	Carnivora	Canidae	Caninae
Canis lupus	Clup	364000	0.16405	347	Carnivora	Canidae	Caninae
Canis mosbachensis	Cmos	589232.9	430406.1	3	Carnivora	Canidae	Caninae
Canis senezensis	Csen	1416478	1416478	2	Carnivora	Canidae	Caninae
Cuon alpinus	Calp	364000	0.16405	15	Carnivora	Canidae	Caninae
Cuon priscus	Cpri	241000	74931.67	6	Carnivora	Canidae	Caninae
Eucyon odessanus	Eode	3400000	1950000	4	Carnivora	Canidae	Caninae
Lycaon falconeri	Lfal	1486992	930160.1	7	Carnivora	Canidae	Caninae
Lycaon lycaonoides	Llyc	178913.3	178913.3	2	Carnivora	Canidae	Caninae
Nyctereutes megamastoides	Nmeg	2700000	1416478	15	Carnivora	Canidae	Caninae
Vulpes alopecoides	Valo	2319212	1014905	12	Carnivora	Canidae	Caninae
Vulpes angustidens	Vang	283506.6	106228.1	4	Carnivora	Canidae	Caninae
Vulpes corsac	Vcor	122500	0.16405	5	Carnivora	Canidae	Caninae
Vulpes praecorsac	Vpra	2779168	2779168	2	Carnivora	Canidae	Caninae
Vulpes praeglacialis	Vprg	983000	589232.9	2	Carnivora	Canidae	Caninae
Vulpes vulpes	Vvul	364000	0.16405	256	Carnivora	Canidae	Caninae
Acinonyx pardinensis	Apar	3159720	106228.1	12	Carnivora	Felidae	Acynonichinae
Lynx issiodorensis	Liss	3405708	123966.1	23	Carnivora	Felidae	Felinae
Lynx lynx	Llyn	364000	0.16405	46	Carnivora	Felidae	Felinae
Lynx pardinus	Lpar	706467.1	24820	26	Carnivora	Felidae	Felinae

Alceini	0.2435	0		0.2
Alceini	2.7	0.662122	NOW	2
Alceini	2.7	0.990806	NOW	1.7
Alceini	2.7	0.099602	NOW	2.6
Capreolini	4.7	0		4.7
Capreolini	4.7	0.176155	NOW	4.5
Capreolini	10.35	1.95	NOW, oldest Procapreolus	8.4
Odocoileini	14.6	0	HFV split Odocoileini/alceini+Capreolini	14.6
	2.7	1.147563	NOW	1.6
	2.7	1.002173	NOW	1.7
	3.1	0	NOW	3.1
	1.1	0.084107		1
Potamochoerini	11.9	2.7	NOW	9.2
Suini	4.75	2.319212	NOW	2.4
Suini	4.75	0	split from S.arvernensis	4.8
Suini	4.75	0.904226	NOW	3.8
Vulpini	2	0		2
Canini	2.5	0.081048	split coyote/wolf in Bininda-Edmonds et al.	2.4
Canini	1.845525	0.378721		1.5
Canini	0.589233	0	oldest C. mosbachensis in Raia et al. 2009	0.6
Canini	0.589233	0.430406	oldest C. mosbachensis in Raia et al. 2009	0.2
Canini	2.5	2.35	split coyote/wolf in Bininda-Edmonds et al.	0.2
Canini	0.474	0	NOW, age of oldest Cuon	0.5
Canini	0.474	0.074932	NOW	0.4
Canini	7.6	1.95	split Canis/Cuon-Speothos in Bininda-Edmons	5.7
Canini	1.87	0.93016		0.9
Canini	1.87	0.178913	NOW, age of oldest L. falconeri	1.7
Canini	9.3	1.416478	split of N. procyonides in Bininda-Edmons et a	7.9
Vulpini	3	1.014905	NOW	2
Vulpini	1	0.106228	age of V. praeglacialis	0.9
Vulpini	1	0	age of V. praeglacialis	1
Vulpini	3	2.779168	age of V. alopecoides	0.2
Vulpini	0.983	0.589233	age of V. praeglacialis	0.4
Vulpini	1	0	age of V. praeglacialis	1
	16.2	1.01	split or Acynonix from Bininda-Edmonds et al.	15.2
	4.75	2	NOW	2.8
	0.364	0		0.4
	0.706467	0		0.7

Puma pardoides	Ppds	1950000	1486992	2	Carnivora	Felidae	Felinae
Homotherium crenatidens	Hcre	3159720	264035.5	29	Carnivora	Felidae	Machairodontinae
Homotherium davitashvili	Hdav	2700000	2700000	2	Carnivora	Felidae	Machairodontinae
Homotherium latidens	Hlat	1014905	76053.04	11	Carnivora	Felidae	Machairodontinae
Megantereon cultridens	Mcul	2319212	1014905	14	Carnivora	Felidae	Machairodontinae
Megantereon whitei	Mwhi	1093381	930160.1	5	Carnivora	Felidae	Machairodontinae
Panthera gombaszoegensis	Pgom	1780000	116728.2	14	Carnivora	Felidae	Pantherinae
Panthera leo	Pleo	364000	0.16405	165	Carnivora	Felidae	Pantherinae
Panthera pardus	Ppar	364000	5000	79	Carnivora	Felidae	Pantherinae
Agriotherium insigne	Ains	2700000	2700000	2	Carnivora	Ursidae	Ursavinae
Chasmaportetes lunensis	Clun	3159720	1151947	11	Carnivora	Hyaenidae	Hyaeninae
Crocota crocuta	Ccro	378721.1	9568	224	Carnivora	Hyaenidae	Hyaeninae
Hyena prisca	Hpri	123966.1	73912.25	7	Carnivora	Hyaenidae	Hyaeninae
Pachycrocota brevirostris	Pbre	1183641	178913.3	20	Carnivora	Hyaenidae	Hyaeninae
Pliocrocota perrieri	Pper	3169608	1152711	21	Carnivora	Hyaenidae	Hyaeninae
Ursus arctos	Uarc	1100000	0.16405	171	Carnivora	Ursidae	Ursinae
Ursus deningeri	Uden	430406.1	71465.62	31	Carnivora	Ursidae	Ursinae
Ursus etruscus	Uetr	2939829	264035.5	26	Carnivora	Ursidae	Ursinae
Ursus minimus	Umin	3821736	1805781	12	Carnivora	Ursidae	Ursinae
Ursus spelaeus	Uspe	246500	5000	188	Carnivora	Ursidae	Ursinae
Ursus thibetanus	Uthi	430406.1	84208.47	10	Carnivora	Ursidae	Ursinae
Equus altidens	Ealt	1200000	99601.82	16	Perissodactyla	Equidae	
Equus ferus	Efer	430406.1	0.16405	333	Perissodactyla	Equidae	
Equus hemionus	Ehem	161583	0.16405	8	Perissodactyla	Equidae	
Equus hydruntinus	Ehyd	364000	5000	91	Perissodactyla	Equidae	
Equus livenzovensis	Eliv	3400000	1950000	3	Perissodactyla	Equidae	
Equus major	Emaj	3400000	204806.8	13	Perissodactyla	Equidae	
Equus senezensis	Esen	1156116	1060667	3	Perissodactyla	Equidae	
Equus stenonis	Este	2700000	992355.4	41	Perissodactyla	Equidae	
Equus suessenbornensis	Esue	930160.1	99907.65	9	Perissodactyla	Equidae	
Hipparion longipes	Hlon	3085404	3085404	2	Perissodactyla	Equidae	
Hipparion malustenense	Hmal	3556073	3400000	2	Perissodactyla	Equidae	
Plesiohipparion rocinantis	Proc	2700000	1661742	4	Perissodactyla	Equidae	
Coelodonta antiquitatis	Cant	271500	0.16405	142	Perissodactyla	Rhinocerotidae	Rhinocerotinae
Elasmotherium sibiricum	Esib	364000	364000	2	Perissodactyla	Rhinocerotidae	Rhinocerotinae
Stephanorhinus etruscus	Setr	2700000	131306	65	Perissodactyla	Rhinocerotidae	Rhinocerotinae
Stephanorhinus hemitoechus	Shem	380000	21442	69	Perissodactyla	Rhinocerotidae	Rhinocerotinae
Stephanorhinus hundsheimensis	Shun	1100000	47800	26	Perissodactyla	Rhinocerotidae	Rhinocerotinae

	16.2	1.486992	NOW	14.7
Machairodontini	6.2	0.264036	NOW age of the oldest Homotherium	5.9
Machairodontini	6.2	2.7	NOW	3.5
Machairodontini	6.2	0.076053		6.1
Smilodontini	4.3	1.514905		2.8
Smilodontini	4.3	0.93016	NOW	3.4
	3.75	0.716728	NOW	3
	3.1	0	NOW	3.1
	3.1	0	NOW	3.1
	21.8	2.7	split of the giant panda from other ursids in Bir	19.1
	11	1.951947	no data, based on the split Crocuta/Hyaena at	9
	3.1	0	NOW	3.1
	10	0.073912		9.9
	3.1	0.478913		2.6
	4.6	1.152711	NOW	3.4
	1.1	0		1.1
	0.430406	0.271466		0.2
	5.7	0.264036		5.4
	3.821736	1.805781		2
	0.43	0.005	NOW, age of oldest U. deningeri	0.4
	3.8	0	NOW, age of oldest U. thibetanus	3.8
	11.3	0.399602	Cao et al. 2000 horse/donkey split	10.9
	11.3	0	Cao et al. 2000 horse/donkey split	11.3
	11.3	0	Cao et al. 2000 horse/donkey split	11.3
	11.3	0.005	Cao et al. 2000 horse/donkey split	11.3
	11.3	1.95	Cao et al. 2000 horse/donkey split	9.4
	11.3	0.204807	Cao et al. 2000 horse/donkey split	11.1
	11.3	1.060667	Cao et al. 2000 horse/donkey split	10.2
	11.3	0.992355	Cao et al. 2000 horse/donkey split	10.3
	11.3	0.399908	Cao et al. 2000 horse/donkey split	10.9
	13.2	3.085404	NOW oldest Hipparion	10.1
	13.2	3.4		9.8
	13.2	1.661742		11.5
Rhinocerotini	3.821736	1.64E-07	NOW, Oldest known Dihoplus	3.8
Rhinocerotini	5	0.364	NOW, oldest age of Elasmotherinae	4.6
Rhinocerotini	3.55	1.131306	NOW, Oldest known Stephanorhinus	2.4
Rhinocerotini	3.55	0.021442	NOW, Oldest known Stephanorhinus	3.5
Rhinocerotini	3.55	0.8478	NOW, Oldest known Stephanorhinus	2.7

Stephanorhinus jeanvireti	Djea	3821736	1837380	19	Perissodactyla	Rhinocerotidae	Rhinocerotinae
Stephanorhinus kirchbergensis	Skir	430406.1	32461	49	Perissodactyla	Rhinocerotidae	Rhinocerotinae
Stephanorhinus leptorhinus	Slep	3556073	3400000	2	Perissodactyla	Rhinocerotidae	Rhinocerotinae
Tapirus arvernensis	Tarv	3821736	2069850	16	Perissodactyla	Tapiridae	
Elephas antiquus	Eant	380000	18388	76	Proboscidea	Elephantidae	Elephantinae
Mammuthus meridionalis	Mmer	2069850	204806.8	64	Proboscidea	Elephantidae	Elephantinae
Elephas planifrons	Epla	1845525	1845525	2	Proboscidea	Elephantidae	Elephantinae
Mammuthus primigenius	Mpri	271500	0.16405	185	Proboscidea	Elephantidae	Elephantinae
Mammuthus rumanus	Mrum	2700000	2700000	2	Proboscidea	Elephantidae	Elephantinae
Mammuthus trogontherii	Mtro	658961.8	73912.25	26	Proboscidea	Elephantidae	Elephantinae
Anancus arvernensis	Aarv	3821736	1583175	42	Proboscidea	Elephantidae	Gomphotheriidae
Mammut borsoni	Mbor	3821736	1950000	22	Proboscidea	Mammutidae	Mammutinae

FA = first appearance taken either from the fossil record (see column L), or from Raia et al. 2009. The age refer to numerically dated fossil sites and LA = last appearance in Raia et al. (2009).

branch 1 = Age of the beginning of the branch, in Ma

branch 2 = Terminal age of the branch, in Ma

occurrence, total number of occurrences in the presence/absence matrix presented in Raia et al. (2009)

b1 origin note = source for branch 1

Literature sources for b1:

Bininda-Edmonds et al.

Bininda-Emonds, O. R. P., J. L. Gittleman, and A. Purvis. 1999. Building large by combining phylogenetic information : a complete phylogeny of the ivora (Mammalia). *Biological Reviews* 74: 143–175.

Cao et al. 2000

Cao Y., M. Fujiwara, M. Nikaido, N. Okada, and M. Hasegawa. 2000. Interordinal relationships and timescale of eutherian evolution as inferred from mitochondrial data. *Gene* 259: 149–158.

HFV

Hernández Fernández, M. and E. S. Vrba. 2005. A complete estimate of phylogenetic relationships in Ruminantia: a dated species-level supertree of ruminants. *Biological Reviews* 80: 269-302.

Rhinocerotini	3.821736	1.83738		2
Rhinocerotini	3.55	0.032461	NOW, Oldest known Stephanorhinus	3.5
Rhinocerotini	3.55	3.4	NOW, Oldest known Stephanorhinus	0.2
	50.3	3.06985	paleodb Tapirus/rhinos split	47.2
Elephantini	14.8	0.118388	Mammuthus/Loxodonta-Elephas split from Thc	14.7
Elephantini	4.25	2	oldest Mammuthus reported in Thomas et al 2	2.3
Elephantini	4.25	2.845525	oldest Mammuthus reported in Thomas et al 2	1.4
Elephantini	4.25	1.64E-07	oldest Mammuthus reported in Thomas et al 2	4.2
Elephantini	4.25	2.7	oldest Mammuthus reported in Thomas et al 2	1.6
Elephantini	4.25	0.273912	oldest Mammuthus reported in Thomas et al 2	4
	23.1	3	paleodb oldest Gomphoterium	20.1
	25.55	1.95	paleodb oldest Mammutida	23.6

l is expressed in years

- NOW Fortelius, M. (coordinator) [2009]. Neogene of the Old World Database of Fossil mammals (NOW). University of Helsinki. <http://www.helsinki.fi/science/now/>
- paleodb Alroy, J. (coordinator).[2009]. The Paleobiology Database. [http://paleodb.org/cgi-
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- Thomas et al 2000 Thomas, M. G., E. Hagelberg, H. B. Jones, Z. Yang, and A. M. Lister. 2000. Molecular and morphological evidence on the phylogeny of the Elephantidae. *Proceedings of the Royal Society London B* 267: 2493-2500.
- Salesa et al. 2006 Salesa, M. J., M. Anton, S. Peigne, and J. Morales. 2006. Evidence of a false tooth in a fossil carnivore clarifies the evolution of pandas. *Proceedings of the National Academy of Science, USA* 103: 379–382.

