

MAthesis

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Time bins (stratigraphic stages)

Table 1: Smaller time bins with age range, epoch name, mean age and corresponding sample sizes (on individual, species and genus level)

bin	EpochBins	Stages	MeanBins	nIndividuals	nSpecies	nGenera
(0,0.0117]	Modern	Modern	0.00585	253	65	18
(0.0117,0.126]	Upper Pleistocene	Upper Pleistocene	0.06885	49	18	8
(0.126,0.781]	Middle Pleistocene	Middle Pleistocene	0.45350	53	13	7
(0.781,1.81]	Lower Pleistocene	Lower Pleistocene	1.29350	57	27	12
(1.81,2.59]	Gelasian	Lower Pleistocene	2.19700	31	14	8
(2.59,3.6]	Piacencian	Upper Pliocene	3.09400	21	14	9
(3.6,5.33]	Zanclean	Lower Pliocene	4.46600	26	14	8
(5.33,7.25]	Messinian	Upper Miocene	6.28900	10	7	4
(7.25,11.6]	Tortonian	Upper Miocene	9.42700	45	20	9
(11.6,13.8]	Serravallian	Middle Miocene	12.71400	27	8	6
(13.8,16]	Langhian	Middle Miocene	14.89500	14	10	7
(16,23]	Burdigalian/Aquitania	Lower Miocene	19.50000	30	14	9

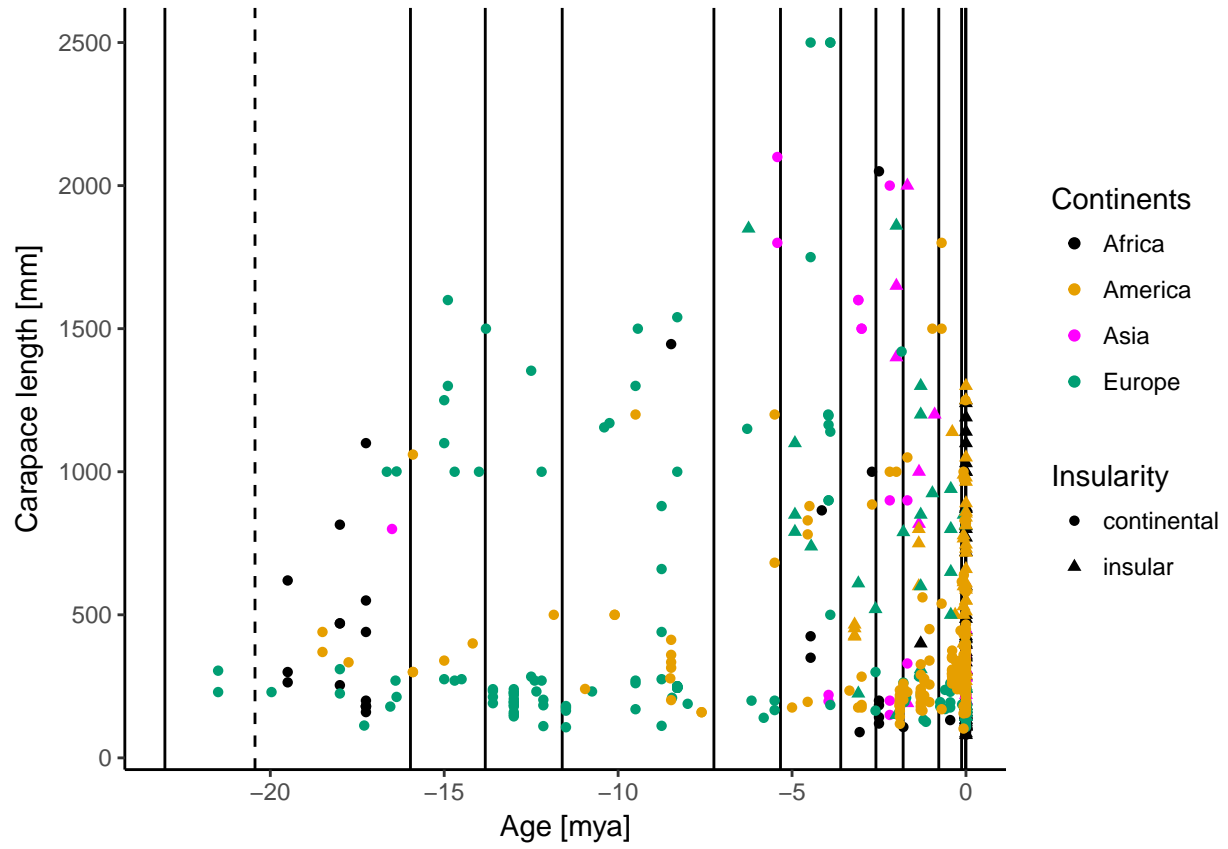


Figure 1: Scatterplot of carapace length over time, indicating insular (triangle) and continental (circles) and colour indicating continents. Lines indicate stratigraphic stages which were used as time bins, the dashed line is the border between the two stages of the Lower Miocene, which were considered as one time bin.

Maps

fossil occurrences of testudinidae

[1] 193

	Locality	Country
1	Kabyle 2 km N, Yambol Region	Bulgaria
2	El Harhoura 2 (Temara)	Morocco
3	El Harhoura 2 (Temara)	Morocco
4	Guenfouda Cave (Ghar Zebouj, ??????), Jerada Province	Morocco
5	Brown Sand Wedge Local Fauna, Roosevelt County, New Mexico	USA
6	Blackwater Loc. No. 1, Roosevelt County, New Mexico	USA
7	Robledo Cave, west side of the Robledo Mountains, Doña Ana County, New Mexico	USA
8	Domebo Local Fauna, Caddo County, Oklahoma	USA
9	Salt Creek, 4.7 mi S and 5.7 mi. W Orla, Reeves County, Texas	USA
10	Schulze Cave Fauna, Edwards County, Texas	USA
11	U-Bar Cave Late Wisconsin, Hidalgo County, New Mexico	USA
12	Friesenhahn Cave, Bexar County, Texas	USA
13	Gorham's cave IIIb, Gibraltar Peninsula	England
14	Gruta do Caldeirão, Tomar	Portugal
15	Gruta do Escoural, Évora	Portugal
16	Sims Bayou Local Fauna, Harris County, Texas	USA
17	Shelter Cave (LACM 1010, UTEP 30), Doña Ana County, New Mexico	USA
18	Rancho La Brea, California	USA
19	Sabertooth Camel Maze, Dry Cave (UTEP 5), Eddy County, New Mexico	USA
20	Sabertooth Camel Maze, Dry Cave (UTEP 5), Eddy County, New Mexico	USA
21	Gruta Nova da Columbeira, Bombarral	Portugal
22	Clear Creek Local Fauna, Denton County, Texas	USA
23	Lewisville Site, Denton County, Texas	USA
24	Moore Pit, Dallas County, Texas	USA
25	Gruta da Figueira Brava, Arrábida	Portugal

	Locality	Country
26	U-Bar Cave Mid Wiskonsin, Hidalgo County, New Mexico	USA
27	Gorham's cave IV, Gibraltar Peninsula	England
28	Room of the Vanishing Floor, Dry Cave (UTEP 26, 27), Eddy County, New Mexico	USA
29	Pendejo Cave, Rough Canyon on Fort Bliss land, 21 km east of Orogrande, Otero County, New Mexico	USA
30	Megenity Peccary Cave, Crawford County, Indiana	USA
31	Easley Ranch Local Fauna, Foard County, Texas	USA
32	Easley Ranch Local Fauna, Foard County, Texas	USA
33	Vero Beach, Indian River County, Florida	USA
34	Vero Beach, Indian River County, Florida	USA
35	Ingleside Local Fauna, San Patricio County, Texas	USA
36	Ingleside Local Fauna, San Patricio County, Texas	USA
37	Zebbug and Gahr Dalam Cave deposits	Malta
38	Šandalja near Pula	Croatia
39	Bate Cave, Rethymnon	Greece
40	Süttő Upper Pleistocene strata, Gerecse Mountains	Hungary
41	Sternatia, Lecce	Italy
42	Torre del Pagliaccetto, Rome	Italy
43	Crevene Stijena Cave, Petrovica	Serbia
44	Crevene Stijena Cave, Petrovica	Serbia
45	Crevene Stijena Cave, Petrovica	Serbia
46	Cueva del Boquete de Zafarraya, Sierra de Alhama, Málaga	Spain
47	Cueva Horá (Darro, Granada)	Spain
48	Hortus Cave, Valflaunès, Hérault	France
49	Arredondo IIA, Alachua County, Florida	USA
50	Orange Lake 2 miles south, Marion County, Florida	USA
51	Reddick IA+B, Marion County, Florida	USA
52	Reddick IA+B, Marion County, Florida	USA
53	Sabertooth Cave, Lecanto 2A, Citrus County, Florida	USA
54	Arredondo IIA, Alachua County, Florida	USA
55	Melbourne, Brevard County, Florida	USA
56	Cueva del Camino Sector Central, Pinilla del Valle, Madrid	Spain

	Locality	Country
57	Cueva del Camino Secteur Nord, Pinilla del Valle, Madrid	Spain
58	Hopwood Farm Site, near Fillmore, Montgomery County, Illinois	USA
59	Peace Creek, Florida	USA
60	El Harhoura 1 (Temara)	Morocco
61	Cova del Rinoceront, eastern Garraf Massif, Can 'Aymerich quarry, Castelldefels	Spain
62	Libertador San Martín north bank Ensenada stream, 15 km E Diamante, Entre Rios Province	Argentina
63	Mealhada, Coimbra	Portugal
64	Vanguard Cave, Gibraltar Peninsula	England
65	San Vito Lo Capo K22, Sicily	Italy
66	Pecos River near Melena and Acme, 10-15 km NE Roswell, Chaves County, New Mexico	USA
67	Slaughter Canyon Cave, Eddy County, New Mexico	USA
68	Sima del Elefante TE18+TE19, Sierra de Atapuerca, Burgos	Spain
69	Dry Cave Fauna, Eddy County, New Mexico	USA
70	Dry Cave Fauna, Eddy County, New Mexico	USA
71	Cragin Quarry Local Fauna, Meade County, Kansas	USA
72	Butler Spring XI Ranch (KU Locality 7), Meade County, Kansas	USA
73	Butler Spring XI Ranch (UM-K2-62), Meade County, Kansas	USA
74	Butler Spring XI Ranch (UM-K3-59), Meade County, Kansas	USA
75	Butler Spring XI Ranch (UM-K3-59), Meade County, Kansas	USA
76	Nye Sink Local Fauna, Beaver County, Oklahoma	USA
77	Qesem Cave ~12 km east of Tel Aviv, western slopes Samaria hills	Israel
78	Lunel-Viel, Mas des Caves (Hérault)	France
79	Caprine, Rome	Italy
80	Palombara Marcellina, Rome	Italy
81	Tarquina, Rome	Italy
82	Angus Local Fauna (UNSM No-101), Nuckolls County, Nebraska	USA
83	Berends Local Biota, Beaver County, Oklahoma	USA
84	Kanopolis Local Fauna, Ellsworth County, Kansas	USA
85	Stazione Ferroviaria, Comiso (RG), Sicily	Italy
86	Contrada Annunziata, Ragusa (RG), Sicily	Italy
87	Contrada Castellazzo, Vittoria (RG), Sicily	Italy

	Locality	Country
88	Marjan	Croatia
89	Spinagallo Cave, Siracusa, Sicily	Italy
90	Abime de la Fage, Correze	France
91	Caverna de Gràcia, Güell park, Barcelona	Spain
92	Caverna de Gràcia, Güell park, Barcelona	Spain
93	Caverna de Gràcia, Güell park, Barcelona	Spain
94	Riparo di Visogliano (TS)	Italy
95	Kénitra, Guilloux quarry, near Rabat	Morocco
96	Cova de Gràcia, Park Güell, Barcelona	Spain
97	Raebia, Atambua area, Timor	Indonesia
98	Alcamo travertini (TP)	Italy
99	Grotta Marasà (PA)	Italy
100	Saint-Estève-Janson, l'Escale Cave (Bouches du Rhône)	France
101	Arkalon Local Fauna, Seward County, Kansas	USA
102	Arkalon Local Fauna, Seward County, Kansas	USA
103	Valdemino Cave, 20-24 (Borgio Verezzi, Liguria)	Italy
104	Gilliland local fauna, Burnett Ranch, 7 miles W of Vera, Knox County, Texas	USA
105	Soave, Zoppega 2 cave, Verona	Italy
106	Valle de Fontchevade, Charente	France
107	Monsummano	Italy
108	Loreto di Venosa, Potenza	Italy
109	Rock-Cavities, Gibraltar Peninsula	England
110	Wolo Sege, Flores	Indonesia
111	Cedazo local fauna, Aguascalientes, Mexico	Mexico
112	Cueva de la Victoria-1 (CV-1), Carthagène, Murcia	Spain
113	Cava Dell'Erba Apricena, Foggia	Italy
114	Cava Pirro Apricena, Foggia	Italy
115	Sima del Elefante TE14, Sierra de Atapuerca, Burgos	Spain
116	Sima del Elefante TE11, Sierra de Atapuerca, Burgos	Spain
117	Sima del Elefante TE12, Sierra de Atapuerca, Burgos	Spain
118	Sima del Elefante TE13, Sierra de Atapuerca, Burgos	Spain

	Locality	Country
119	Sima del Elefante TE9, Sierra de Atapuerca, Burgos	Spain
120	Leisey Shell Pit 1A, Hillsborough County, Florida	USA
121	Leisey Shell Pit 1A, Hillsborough County, Florida	USA
122	Leisey Shell Pit 2, Hillsborough County, Florida	USA
123	Leisey Shell Pit 1A, Hillsborough County, Florida	USA
124	Leisey Shell Pit 2, Hillsborough County, Florida	USA
125	Leisey Shell Pit 3, Hillsborough County, Florida	USA
126	Leisey Shell Pit 3A, Hillsborough County, Florida	USA
127	Casimba de Jatibonica, Santa Clara Province	Cuba
128	Tangi Talo, Dhozo Dhalu, Flores	Indonesia
129	Barranco León 5 (BL-5=Capa D), Dépression de Guadix-Baza, Grenade	Spain
130	Chapepote spring at Banos de Ciego Montero, Santa Clara Province	Cuba
131	Hato Nuevo, Matanzas Province	Cuba
132	Mesilla Basin Fauna C, Doña Ana County, New Mexico	USA
133	Mesilla Basin Fauna C, Doña Ana County, New Mexico	USA
134	Sierra de Quibas, Abanilla, Murcia	Spain
135	Gervasio 5 (FG)	Italy
136	El Paso, eastern side of the Franklin Mountains and along the Rio Grande, El Paso County, Texas	USA
137	Tijeras Arroyo, Bernalillo County, New Mexico	USA
138	Pirro Nord (Cava dell’Erba, Cava Pirro); Apricena, Apulia Italy	Italy
139	La Union, Doña Ana County, New Mexico	USA
140	La Union, Doña Ana County, New Mexico	USA
141	Pearson Mesa near Virden, Hidalgo County, New Mexico	USA
142	Lakonia	Greece
143	Dmanisi	Georgia
144	Figline, Upper Valdarno	Italy
145	Il Tasso, S. Giovanni (AR), Upper Valdarno	Italy
146	Le Mignaie, Upper Valdarno	Italy
147	Le Ville, Upper Valdarno	Italy
148	L’Inferno, Upper Valdarno	Italy
149	Montecarlo, Upper Valdarno	Italy

	Locality	Country
150	Kisláng, Fejer	Hungary
151	Montoussé 5, Hautes Pyrenees	France
152	Monte Tuttavista VII mustelide, Sardinia	Italy
153	White Rock local fauna, Republic County, Kansas	USA
154	Lesbos Island, F-Site	Greece
155	Big Springs Gravel Pit (UNSM Ap-103), Antelope County, Nebraska	USA
156	Caballo Local Fauna, Palomas Basin, Sierra County, New Mexico	USA
157	Caballo Local Fauna, Palomas Basin, Sierra County, New Mexico	USA
158	Capo Mannu near San Vero Milis, base of D4 dune, Sardinia	Italy
159	Kelatchay (Dushak)	Turkmenistan
160	Varshets 6 km NNE, Michajlovrad Province	Bulgaria
161	MacAsphalt Shell Pit, Sarasota County, Florida	USA
162	St. Petersburg Times Site, Pinellas County, Florida	USA
163	Ahl al Oughlam (near Casablanca)	Morocco
164	Ahl al Oughlam (near Casablanca)	Morocco
165	Ahl al Oughlam (near Casablanca)	Morocco
166	Cova de Ca Na Reia, Eivissa, Ibiza	Spain
167	Es Pujol d'es Fum, Formentera	Spain
168	Kryshanovka 1	Ukraine
169	Milia, Grevena, W Macedonia	Greece
170	Milia, Grevena, W Macedonia	Greece
171	North Cita Canyon (Middle Stratum), Randall County, Texas	USA
172	Novaya Etulia 2	Moldova
173	Palomas Creek Fauna, Palomas Basin, Sierra County, New Mexico	USA
174	Tha Chang area, Chaloem Pra Kiat district, Nakhon Ratchasima Province	Thailand
175	Sand Draw local fauna, Brown County, Nebraska	USA
176	Sawrock Canyon local fauna, Seward County, Kansas	USA
177	Sand Draw local fauna, Brown County, Nebraska	USA
178	Sand Draw local fauna, Brown County, Nebraska	USA
179	UCMP V6327, La Porteria, Kettleman Hills, Kings County, California	USA
180	Cuchillo Negro Creek Local Fauna, Engle Basin, Sierra County, New Mexico	USA

	Locality	Country
181	Elephant Butte Lake Fauna, Engle Basin, Sierra County, New Mexico	USA
182	Las Higueruelas, Alcolea de Calatrava, Ciudad Real	Spain
183	Las Higueruelas, Alcolea de Calatrava, Ciudad Real	Spain
184	Las Tunas, Baja California Sur	Mexico
185	Laetoli	Tanzania
186	Laetoli	Tanzania
187	Dikika (DIK-1)	Ethiopia
188	Cita Canyon, UCMP V-3721, Harrell Ranch, Randall County, Texas	USA
189	Cita Canyon, UCMP V-3721, Harrell Ranch, Randall County, Texas	USA
190	Liventsovka horizon 5, near Rostov-on-Don	Russia
191	Serrat-d'en-Vacquer near Perpignan, Pyrénées-Orientales	France
192	Megalo Emvolon 1 (MEV), 20 km SW Thessaloniki	Greece
193	Megalo Emvolon 1 (MEV), 20 km SW Thessaloniki	Greece
194	W??e 1	Poland
195	W??e 1	Poland
196	W??e 1	Poland
197	Perpignan et sa région, Pyrénées-Orientales	France
198	Perpignan et sa région, Pyrénées-Orientales	France
199	Serrat-d'en-Vacquer near Perpignan, Pyrénées-Orientales	France
200	Musaid right bank of Big Salcha River, Vulkaneshty Region	Moldova
201	Novo-Savitzkaya	Moldova
202	Ptolemais 6A = Notio 1 (NO 1)	Greece
203	Ptolemais 6B = Notio 1	Greece
204	Ptolemais 6C = Notio 1 (NO 1)	Greece
205	Epanomi (EPN I), western Chalkidiki Peninsula, Thessaloniki area	Greece
206	Epanomi (EPN II), western Chalkidiki Peninsula, Thessaloniki area	Greece
207	Altan-Teli main fossiliferous bed (Dzereg valley)	Mongolia
208	Nea Kallikratia, western Chalkidiki Peninsula, Thessaloniki area	Greece
209	Nea Michaniona, western Chalkidiki Peninsula, Thessaloniki area	Greece
210	Farola Monte Hermoso, 12 km SW Pehuen Có Beach, Buenos Aires Province	Argentina
211	Çalta	Turkey

	Locality	Country
212	El Arquillo 3 (ARQ3)	Spain
213	Kanapoi	Kenya
214	Kanapoi	Kenya
215	Kanapoi	Kenya
216	Aramis, ARA-VP-6/500, Middle Awash Valley	Ethiopia
217	Cala Es Pous near Ciutadella, Minorca	Spain
218	Punta Nati near Ciutadella, Minorca	Spain
219	Jambol, Tenovo or General Insovo sandstone quarries	Bulgaria
220	Montpellier, Hérault	France
221	Novopetrovka	Ukraine
222	Lee Creek Mine, Yorktown Sample, Beaufort County, North Carolina	USA
223	Rexroad local fauna (Fox Canyon locality 3), Meade County, Kansas	USA
224	Rexroad local fauna (Fox Canyon locality 3), Meade County, Kansas	USA
225	Tchelopetchene 1 (sand facies)	Bulgaria
226	Nikolskoe	Moldova
227	Yepómera, Chihuahua	Mexico
228	Santee, Knox County, Nebraska	USA
229	Devil's Nest Airstrip, Knox County, Nebraska	USA
230	Devil's Nest Airstrip, Knox County, Nebraska	USA
231	Santee, Knox County, Nebraska	USA
232	Devil's Nest Airstrip, Knox County, Nebraska	USA
233	Kuchurgan	Ukraine
234	Kuchurgan	Ukraine
235	Osztramos 1C	Hungary
236	Polenzo section along Tanaro River, Verduno, Piedmont Italy	Italy
237	UCMP V71137, Turlock Lake 10, Stanislaus County, California	USA
238	UCMP V81248, Turlock Lake 11, Stanislaus County, California	USA
239	Allatini, eastern part of Thessaloniki, western Chalkidiki peninsula	Greece
240	Pylea, eastern part of Thessaloniki, western Chalkidiki peninsula	Greece
241	As Sahabi	Libya
242	UCMP V65711, Turlock Lake General, Stanislaus County, California	USA

	Locality	Country
243	UCMP V6878, Turlock Lake, Stanislaus County, California	USA
244	UCMP V71138, Dallas-Warner Reservoir 1, Stanislaus County, California	USA
245	UCMP V90007, Turlock Lake 13, Stanislaus County, California	USA
246	UCMP V90008, Turlock Lake 14, Stanislaus County, California	USA
247	Withlacoochee River Site 4A, Marion County, Florida	USA
248	Chiquimil, Catamarca	Argentina
249	Brisghella Cava Monticino	Italy
250	Polgárdi 2	Hungary
251	Venta del Moro (Cabriel Basin)	Spain
252	Torrente Melacce, Cinigiano (GR)	Italy
253	Gretoni, Stazione Monte Amiata (SI)	Italy
254	Shkodova Gora	Ukraine
255	Santa-Vittoria d'Alba	Italy
256	Stanianzi	Bulgaria
257	Samos 1	Greece
258	Tudorovo	Moldova
259	Kuyalnik	Ukraine
260	Lukeino	Kenya
261	Autovía A-30, Murcia	Spain
262	Casa Castillo near Jumilla, Murcia	Spain
263	Megalo Rema near Paleomilos	Greece
264	Lothagam 1	Kenya
265	Lothagam 2	Kenya
266	Barranco del Cigarrón (B-Cg1), S El Palmar, Murcia	Spain
267	Hamra	United Arab Emirates
268	Jebel Dhannah	United Arab Emirates
269	Kihal	United Arab Emirates
270	Shuwaihat	United Arab Emirates
271	Azmaka quarry 2.5 km NNE Chirpan	Bulgaria
272	Toros-Menalla, Djurab desert (TM 266)	Chad
273	Chimishlia	Moldova

	Locality	Country
274	Taraklia	Moldova
275	Tardosbánya 3	Hungary
276	Morskaya 2 locality of the Sea of Azov region	Russia
277	Novoelizavetovka	Ukraine
278	Fosso della Fittaia 2013, Baccinello-Cinigiano Basin, Tuscany	Italy
279	Chobruchi	Moldova
280	Cliffs in the Paraná eastern riverside near Paraná, Entre Ríos	Argentina
281	Montagne du Lubéron à Cucuron, Vaucluse et Alpes-de-Haute-Provence	France
282	Montagne du Lubéron à Cucuron, Vaucluse et Alpes-de-Haute-Provence	France
283	Kalimantsi 2-4	Bulgaria
284	Kalimantsi 2-4	Bulgaria
285	Buis Ranch Local Fauna, Beaver County, Oklahoma	USA
286	Salinas Grandes de Hidalgo, Atreucó, La Pampa	Argentina
287	Bajo Giuliani, La Pampa	Argentina
288	Quehué, La Pampa	Argentina
289	Belka	Ukraine
290	Rooilepel D. laini level	Namibia
291	Aubignas 1+2, Ardèche	France
292	Yurievka	Ukraine
293	Novoukrainka 1 (= Budenovka)	Ukraine
294	Grebeniki 1	Ukraine
295	Csákvár, Esterházy Cave, Fejér Province	Hungary
296	Prottes	Austria
297	Prottes	Austria
298	Prottes	Austria
299	Crevillente 2	Spain
300	Crevillente 2	Spain
301	Prottes	Austria
302	Crevillente 2	Spain
303	Dorn-Dürkheim, Giloth Quarry, about 25 km S Mainz	Germany
304	Altan-Teli Oshi horizon (Dzereg valley)	Mongolia

	Locality	Country
305	Kainary	Moldova
306	San Nicolas, UCMP locality V4536	Colombia
307	Cava Monticino, near Brisigella, Emilia-Romana	Italy
308	Ambérieu-en-Bugey, Ain	France
309	Saint-Bauzile, Ardèche	France
310	Dove Spring Fauna, Mojave Desert, Kern County, California	USA
311	Dove Spring Fauna, Mojave Desert, Kern County, California	USA
312	Kohfidisch	Austria
313	Kohfidisch	Austria
314	Kohfidisch	Austria
315	El Hatillo, 1.5 km north of, Falcón State	Venezuela
316	Montredon, Aude	France
317	Udabno	Georgia
318	Krivoj Rog	Ukraine
319	Love Bone Bed along State Road 241 near Archer, Alachua County, Florida	USA
320	Patos (= Acre 6, LACM Locality 4611), Assisbrasil County, Acre	Brazil
321	UCMP V-3952, Ingram Creek site 8, Stanislaus County, California	USA
322	Kamenica nad Hronom	Slovakia
323	Poc?e?ti right side Ikel River valley	Moldova
324	Cerro de los Batallones, Madrid	Spain
325	Cerro de los Batallones, Madrid	Spain
326	Varnitza	Moldova
327	Borský Svätý Jur	Slovakia
328	Bushor 1	Moldova
329	Kalfa	Moldova
330	Lapushna	Moldova
331	Götzendorf	Austria
332	Jebel Semama	Tunisia
333	Sabadell	Spain
334	Saint-Fons, Rhône	France
335	WaKeeney Local Fauna (UM-K6-59 on the Lowell Hillman Ranch), Trego County, Kansas	USA

	Locality	Country
336	WaKeeney Local Fauna (UM-K6-59 on the Lowell Hillman Ranch), Trego County, Kansas	USA
337	Ricardo Fauna, Mojave Desert, Kern County, California	USA
338	Ricardo Fauna, Mojave Desert, Kern County, California	USA
339	Rudabanya (grey green marl 5C)	Hungary
340	Rudabánya, Borsod-Abaúj-Zemplén Province (all)	Hungary
341	El Lugarejo (Arévalo), Ávila, Castilla	Spain
342	Autovía A6, Arévola, Ávila	Spain
343	Tataru?-Brusturi	Romania
344	Arevalillo River (Arévola), Ávila	Spain
345	Arévalo, Ávila, Castilla	Spain
346	Höwenegg	Germany
347	Höwenegg	Germany
348	Autovía Orbital de Barcelona B-40 (B40OV/S4K), Vallés-Penedés basin, Cataluña	Spain
349	Autovía Orbital de Barcelona B-40 (B40OV/S4K), Vallés-Penedés basin, Cataluña	Spain
350	Can Filuà, Santa Perpétua, Vallès Occidental, Barcelona	Spain
351	Can Gavarra, Polinyà, Vallès Occidental, Barcelona	Spain
352	Can Vinyalets, Barcelona	Spain
353	Djebel Krechem el Artsouma	Tunisia
354	Vösendorf-Brunn, near Wien	Austria
355	Hostalets de Piérola, Barcelone province, Cataluña, Vallés-Penedés basin	Spain
356	Valles de Fuentidueña, Segovia Province	Spain
357	Valles de Fuentidueña, Segovia Province	Spain
358	Valles de Fuentidueña, Segovia Province	Spain
359	Benavente, Zamora	Spain
360	Estació Depuradora d´Aigües Residuals Sabadell Riu-Ripoll, Cataluña, Vallés-Penedés basin	Spain
361	Hostalets de Piérola Superior, Barcelone province, Cataluña, Vallés-Penedés basin	Spain
362	Küçükçekmece	Turkey
363	Ecoparc de Can Mata (els Hostalets de Pierola), Vallés-Penedés basin, Cataluña	Spain
364	Holzmannsdorfberg bei St. Marein	Austria
365	McGehee Farm near Newberry, Alachua County, Florida	USA
366	Karingarab D. wardi level	Namibia

	Locality	Country
367	Rooilepel D. wardi level	Namibia
368	Hammerschmiede 3	Germany
369	Atzelsdorf, 35 km NE Vienna, Lower Austria	Austria
370	Hammerschmiede 1	Germany
371	Petersbuch 14	Germany
372	Sant Quirze de Terrassa/de Galliners (del Vallès), Barcelona	Spain
373	Wessington Springs local fauna, Jerauld County, South Dakota	USA
374	Gritsev (Khmelnitsk area, Shepetovski district)	Ukraine
375	Hammerschmiede 5 (HAM 5)	Germany
376	Nombrevilla 2. NOM 2	Spain
377	Iron Canyon Fauna, Mojave Desert, Kern County, California	USA
378	Can Mata (els Hostalets de Pierola), Vallés-Penedés basin, Cataluña	Spain
379	North of Gypsum Plate Pan D. wardi level	Namibia
380	Gratkorn, clay pit St. Stefan, Styria	Austria
381	Gratkorn, clay pit St. Stefan, Styria	Austria
382	Toril 3A. TOR 3A, near Daroca, Zaragoza province	Spain
383	Toril 3B. TOR 3B, near Daroca, Zaragoza province	Spain
384	Sofca (125) - F 434	Turkey
385	La Ciesma 1, Aragón	Spain
386	La Ciesma 1, Aragón	Spain
387	El Buste, Aragón	Spain
388	Cerro del Otero, Palencia	Spain
389	Fuensaldaña, Valladolid	Spain
390	Illescas, Toledo	Spain
391	Illescas, Toledo	Spain
392	La Cistérniga, Valladolid	Spain
393	Bois de Fabregues, Aups, Var	France
394	La-Grive-Saint-Alban (M+L7), Isère	France
395	Abocador de Can Mata (els Hostalets de Pierola)(ACM/BDA), Vallés-Penedés basin, Cataluña	Spain
396	Coca cemetery, Segovia	Spain
397	Oehningen, oberer Bruch, Schienerberg N Oehningen-Wangen	Germany

	Locality	Country
398	Valentine Railway Quarry A, UNSM Cr 12, Cherry County, Nebraska	USA
399	Valentine Railway Quarry B, UNSM Cr 13, Cherry County, Nebraska	USA
400	Fort Niobrara, UCMP V-3218, Cherry County, Nebraska	USA
401	Steinheim a. Albuch	Germany
402	Hohenhöwen, Engen, Hegau, southwestern Germany	Germany
403	Steinheim a. Albuch	Germany
404	Myers Farm, Webster County, Nebraska	USA
405	Myers Farm, Webster County, Nebraska	USA
406	DISC Cluster Sites, conglomerate, Fort Polk, Louisiana	USA
407	Coca-Villeguillo, Segovia	Spain
408	Uitikon-Schlieren, quarry on road, near Zürich	Switzerland
409	Veltheim-Winterthur	Switzerland
410	Sansan, Gers (lake)	France
411	Petersbuch 31 - oben	Germany
412	Mynsualmas	Kazakhstan
413	Chañe, Segovia	Spain
414	Somosaguas Sur, Madrid Basin	Spain
415	Belomechetskaya	Russia
416	Puente de la Princesa, Madrid	Spain
417	Villalcón, Palencia	Spain
418	Goldberg near Pflaumloch, Nördlinger Ries (without number)	Germany
419	Kirrberg b. Balzhausen - Tongrube	Germany
420	Kirrberg b. Balzhausen - Tongrube	Germany
421	Ursberg (nördliche Sandgrube)	Germany
422	Bohlinger Schlucht 6	Germany
423	Wien-Kalksburg	Austria
424	Egelhoff Ranch Local Fauna, Keya Paha County, Nebraska	USA
425	La Barranca, Zaragoza	Spain
426	Stätzling	Germany
427	Bonlanden, Illertal	Germany
428	Bonlanden, Illertal	Germany

	Locality	Country
429	Unterzell 1a	Germany
430	Norden Bridge Local Fauna, Brown County, Nebraska	USA
431	Norden Bridge Local Fauna, Brown County, Nebraska	USA
432	Laimering 3	Germany
433	Ziemetshausen 1e	Germany
434	Tarazona de Aragón	Spain
435	Tarazona de Aragón	Spain
436	Hambach 6C	Germany
437	Georgensgmünd, Reznat-Altmühl-Stausee	Germany
438	Edelbeuren-Schlachtberg	Germany
439	Griesbeckerzell 1a	Germany
440	Griesbeckerzell 1a	Germany
441	Tobel Oelhalde Nord 1	Germany
442	Tobel Oelhalde Süd	Germany
443	Tobel Oelhalde Süd	Germany
444	Ziemetshausen 1b	Germany
445	Ziemetshausen 1b	Germany
446	Ziemetshausen 1g	Germany
447	Valdemoros 3B. VA 3B	Spain
448	Derching 1b (unten)	Germany
449	Edelbeuren-Maurerkopf	Germany
450	Edelbeuren-Maurerkopf	Germany
451	Alcalá de Henares, Cerro del Viso (Barranco de los Mártires y Santos de la Humosa), Madrid	Spain
452	Vallecas, Madrid	Spain
453	Burgerbachtobel 1 near Wippertsweiler	Germany
454	Przeworno I	Poland
455	Barajas, Madrid	Spain
456	Barajas, Madrid	Spain
457	Ciudad Universitaria, Madrid	Spain
458	Henares 1, Los Santos de la Humosa, Madrid	Spain
459	Puente de los Franceses, Madrid	Spain

	Locality	Country
460	Puente de los Franceses, Madrid	Spain
461	Vallecas, Madrid	Spain
462	Plum Point, Calvert County, Maryland	USA
463	Hottell Ranch rhino quarries, Banner County, Nebraska	USA
464	Lassé, Maine-et-Loire	France
465	Pontigné-les-Buisseneaux, Maine-et-Loire	France
466	Calle Moratines, Madrid	Spain
467	Calle Paseo de Moret, Madrid	Spain
468	Paracuellos de Jarama, Madrid	Spain
469	Benistobel (Kohltobel)	Germany
470	Burgerbachtobel 1 near Wippertsweiler	Germany
471	Burgerbachtobel 1 near Wippertsweiler	Germany
472	Ettishofener Ach between Inntobel and Berg-Ettishofen	Germany
473	Ettishofener Ach between Inntobel and Berg-Ettishofen	Germany
474	Griesbeckerzell 1b	Germany
475	Hotterloch-Tobel SW Ravensburg	Germany
476	Lattentobel	Germany
477	Ochsenhausen am Heselsberg, Baustelle Remmele	Germany
478	Schmalegger Tobel	Germany
479	Schmalegger Tobel	Germany
480	Ziemetshausen 1d	Germany
481	Ziemetshausen 1f	Germany
482	Grund near Hollabrunn (Collection Schaffer)	Austria
483	Petersbuch 41	Germany
484	Eibiswald	Austria
485	Furth 460m	Germany
486	Eberstetten 2 (unter Weg)	Germany
487	Untereichen-Altenstadt 565m	Germany
488	Untereichen-Altenstadt 565m	Germany
489	Randle Cliff, Calvert County, Maryland	USA
490	Pontlevoy-Thenay, Loir-et-Cher	France

	Locality	Country
491	Pontlevoy-Thenay, Loir-et-Cher	France
492	Biberach-Jordanbad	Germany
493	Heggbach am Buchhaldenberg, Maselheim, near Biberach	Germany
494	Heggbach am Buchhaldenberg, Maselheim, near Biberach	Germany
495	Coldspring Trinity River Local Fauna, San Jacinto County, Texas	USA
496	Chesapeake Beach RR Station, Maryland	USA
497	Oberbernbach a	Germany
498	Oggenhof near Häder	Germany
499	Vieux-Collonges, Saint-Cyr-au-Mont-d'Or, Rhône, France	France
500	Vieux-Collonges, Saint-Cyr-au-Mont-d'Or, Rhône, France	France
501	Moratilla 2. MOR 2	Spain
502	Gisseltshausen 1b	Germany
503	Castelnau d'Arbieu, Gers	France
504	Dénezé-sous-le-Lude, Maine-et-Loire	France
505	Noyant-sous-le-Lude, Maine-et-Loire	France
506	Savigné-sur-Lathan, Indre-et-Loire	France
507	Gisseltshausen 1a	Germany
508	Sainbach (bei Ichenhofen)	Germany
509	Häder	Germany
510	Unterempfenbach 1d	Germany
511	Walda 2 (oben)	Germany
512	Walda 2 (oben)	Germany
513	Altheim-Breitenlauh 2	Germany
514	Eggingen-Schleiche B	Germany
515	Eggingen-Schleiche B	Germany
516	Maßendorf	Germany
517	Maßendorf	Germany
518	Walda 1 (unten)	Germany
519	Walda 1 (unten)	Germany
520	San Roque 3. SR 3	Spain
521	Sandelzhausen	Germany

	Locality	Country
522	Sandelzhausen unterer Geröllmergel (B)	Germany
523	Sandelzhausen	Germany
524	Sandelzhausen oberer Geröllmergel (D2)	Germany
525	Sandelzhausen oberer Geröllmergel (E)	Germany
526	Sandelzhausen unterer Geröllmergel (B)	Germany
527	Sandelzhausen unterer Geröllmergel (C1)	Germany
528	Sandelzhausen unterer Geröllmergel (C2)	Germany
529	Sandelzhausen unterer Geröllmergel (C3/D1)	Germany
530	Monteagudo, Aragón	Spain
531	Puttenhausen 2	Germany
532	Puttenhausen E	Germany
533	Schießen	Germany
534	Schießen	Germany
535	Schönenberg near Jettingen	Germany
536	Schönenberg near Jettingen	Germany
537	Teiritzberg (T1 = 001/D/C), Korneuburg Basin, Lower Austria	Austria
538	Teiritzberg (T1 = 001/D/C), Korneuburg Basin, Lower Austria	Austria
539	Kleinebersdorf, Wolmuth-Sandgrube (010/G/Liegendes), Korneuburg Basin, Lower Austria	Austria
540	Obergänserndorf (OG2), Korneuburg Basin, Lower Austria	Austria
541	Teiritzberg (001/X/C), Korneuburg Basin, Lower Austria	Austria
542	Teiritzberg (001/X/C), Korneuburg Basin, Lower Austria	Austria
543	Weinsteig (107), Korneuburg Basin, Lower Austria	Austria
544	Weinsteig (107/S/B), Korneuburg Basin, Lower Austria	Austria
545	Kirchdorf an der Iller	Germany
546	Langenmosen	Germany
547	Puttenhausen B	Germany
548	Eitensheim	Germany
549	Eitensheim	Germany
550	Randecker Maar	Germany
551	Illerkirchberg 1	Germany
552	Illerkirchberg 1	Germany

	Locality	Country
553	Puttenhausen A	Germany
554	Wackersdorf Westfeld	Germany
555	Contres, Loir-et-Cher	France
556	Günzburg 2/1 Umgehungsstrasse Sande	Germany
557	Günzburg 2/2 Umgehungsstr höhere Bereiche der Sande	Germany
558	Günzburg 2/5 Umgehungs Sande im Süden Aufschluss	Germany
559	Günzburg 2/6 Umgehungs Sande im Norden Aufschluss	Germany
560	La Romieu, Gers	France
561	Forsthart	Germany
562	Arrisdrift	Namibia
563	Arrisdrift	Namibia
564	Aerotrains a Cheville pres d'Artenay (Loiret)	France
565	Baigneaux-en-Beauce (Eure-et-Loir)	France
566	Suèvres aux Imberts, Loir-et-Cher	France
567	Suèvres aux Imberts, Loir-et-Cher	France
568	Erkertshofen 1	Germany
569	Erkertshofen 2	Germany
570	Gerlenhofen	Germany
571	Can Mas near El Papiol, Barcelone province, Catalunya, Vallés-Penedès basin	Spain
572	Ba?a Dolina in Ve?ký Krtíš	Slovakia
573	Reisensburg near Günzburg	Germany
574	Reisensburg near Günzburg	Germany
575	Culebra Reach, Station 1998 + 00, 600 feet W of center line of Panama Canal	Panama
576	Freudenegg 2 Baggersee	Germany
577	Freudenegg 3 Baggersee	Germany
578	Freudenegg 3 Baggersee	Germany
579	Petersbuch 4	Germany
580	Djebel Zelten	Libya
581	Béon 1 (Montréal-du-Gers)	France
582	Béon 1 (Montréal-du-Gers)	France
583	Petersbuch 7	Germany

	Locality	Country
584	Pamunkey River, between King William and New Kent Counties, Virginia	USA
585	Pollack Farm Site near Cheswold, Kent County, Delaware	USA
586	Rauscheröd near Passau, Bavaria	Germany
587	Langenau 1	Germany
588	Langenau 1	Germany
589	Langenau 2	Germany
590	Langenau 2	Germany
591	Hiwegi loc. R 1	Kenya
592	Hiwegi loc. R 106	Kenya
593	Hiwegi loc. R 3	Kenya
594	Hiwegi loc. R 5	Kenya
595	Mfangano	Kenya
596	Nira and Kachuku near Karungu	Kenya
597	Rangoye, Uyoma peninsula lake Victoria	Kenya
598	Eggingen-Mittelhart	Germany
599	Eggingen-Mittelhart	Germany
600	Walangani	Kenya
601	Auchas	Namibia
602	Leithagebirge between Au and Loretto	Austria
603	Marsolan, Gers	France
604	Neuville-aux-Bois, Loiret	France
605	Grimmelfingen	Germany
606	Kiahera loc. R 120	Kenya
607	Thomas Farm Local Fauna, Gilchrist County, Florida	USA
608	Chitenay, Loir-et-Cher	France
609	Mauvieres, Marcilly-sur-Maulne, Indre-et-Loire	France
610	Thomas Farm Local Fauna, Gilchrist County, Florida	USA
611	Torralba de Ribota (Zaragoza)	Spain
612	Baltringen	Germany
613	Baltringen	Germany
614	Chilleurs-aux-Bois, Loiret (Burdigalian)	France

	Locality	Country
615	La Brosse, Maine-et-Loire	France
616	Stubersheim 3	Germany
617	Glastal	Namibia
618	Langental, nothern Sperrgebiet	Namibia
619	Elisabethfeld (= Elisabeth Bay) area, northern Sperrgebiet	Namibia
620	Chubut Valley south side between Gaiman and Dolavon, Patagonia	Argentina
621	Fiskus	Namibia
622	Grillental, northern Sperrgebiet	Namibia
623	Marsland Quadrangle, Box Butte County, Nebraska	USA
624	Eggenburg-Schindergraben, Lower Austria	Austria
625	Auterive, Haute-Garonne	France
626	Grépiac, Haute-Garonne	France
627	Grépiac, Haute-Garonne	France
628	Landes-le-Gaulois, Loir-et-Cher	France
629	Barbotan-les-Thermes (Gers)	France
630	Aresing (shallow lake)	Germany
631	Tréteau, Allier	France
632	Marcoin, Volvic, Puy-de-Dôme	France
633	Saint-Gérard-le-Puy, Allier	France
634	Saint-Gérard-le-Puy, Allier	France
635	Saint-Gérard-le-Puy, Allier	France
636	Wallenried Channel, 10 km N Fribourg	Switzerland
637	Montaigu-le-Blin, La Chacotte, Allier	France
638	Langy, Allier	France
639	Saulcet, Allier	France
640	Pechbonnieu, Haute-Garonne	France
641	Pechbonnieu, Haute-Garonne	France
642	Toledo Bend Dam, Newton County, Texas	USA
643	Paulhiac, Lot-et-Garonne	France
644	Peublang, Sorbier, Allier	France
645	Créchy, Allier	France

	Locality	Country
646	Venelles 35 km N Marseille	France
647	Toulouse Puits Borderouge niveau inférieur, Haute-Garonne	France
648	Hautesvignes, Lot-et-Garonne	France
649	Moissac 2, Tarn-et-Garonne	France
650	Moissac 2, Tarn-et-Garonne	France
651	La Milloque, Haute-fage, Lot-et-Garonne	France
652	Mine des Rois, Dallet et Pont-du-Château, Puy-de-Dôme	France
653	Saint-Thomas, Haute-fage, Lot-et-Garonne	France
654	Dieupentale, Tarn-et-Garonne	France
655	Oberleichtersbach	Germany
656	Oberleichtersbach	Germany
657	Coderet, Bransat, Allier	France
658	Gannat, Allier (shallow lake)	France
659	Prairéal, Vaumas, Allier	France
660	Pech-Desse, Moulliac, Tarn-et-Garonne, Phosphorite du Quercy	France
661	Pech-Desse, Moulliac, Tarn-et-Garonne, Phosphorite du Quercy	France
662	Paali Nala level 1, Balochistan	Pakistan
663	Pech-du-Fraysse, Saint-Projet, Tarn-et-Garonne, Phosporites du Quercy	France
664	Pech-du-Fraysse, Saint-Projet, Tarn-et-Garonne, Phosporites du Quercy	France
665	Pech-du-Fraysse, Saint-Projet, Tarn-et-Garonne, Phosporites du Quercy	France
666	Veauche, Loire	France
667	Paali Nala level C2, Balochistan	Pakistan
668	Aktau Chul'adyr Formation Lower Member	Kazakhstan
669	Marseille, Saint-André, Bouches-du-Rhône	France
670	Marseille, Saint-André, Bouches-du-Rhône	France
671	Le Crozatier, Brons, Cantal	France
672	Le Crozatier, Brons, Cantal	France
673	Le Garouillas, Phosphorites du Quercy	France
674	Rigal-Jouet, Phosphorites du Quercy	France
675	Neschers à La Sauvetat, Puy-de-Dôme	France
676	Saint-Germain-Lembron, Puy-de-Dôme	France

	Locality	Country
677	Vaumas, Allier	France
678	Puylaurens, Tarn	France
679	Pichovet, Vachères, Lubéron, Provence-Alpes-Côte d'Azur	France
680	Espenhain near Leipzig	Germany
681	Talagay (Tayzhuzgen section)	Kazakhstan
682	Saint-Vivien-de-Monségur, Gironde	France
683	Itardies (Caylus, Tarn-et-Garonne)	France
684	Mounayne, Phosphorites du Quercy	France
685	Roqueprune, Mouillac, Tarn-et-Garonne, Phosphorites du Quercy	France
686	Pech-Crabit, Bach, Lot, Phosphorites du Quercy	France
687	Pech-Crabit, Bach, Lot, Phosphorites du Quercy	France
688	North Mesa, Shara Murun region, Inner Mongolia	China
689	Twin Oboes, Shara Murun region, Inner Mongolia	China
690	Ardyn Obo basin, Chinese Postroad	Mongolia
691	Ardyn Obo basin, Chinese Postroad	Mongolia
692	Ardyn Obo basin, Chinese Postroad	Mongolia
693	Promontory Bluff (Sair Usu 150- Kalgan 350 miles)	Mongolia
694	Bournoncle-Saint-Pierre, Auvergne, Haute-Loire	France
695	Los Barros quarry, 4 km SE Àvila	Spain
696	La Plante 2, Concots, Lot, Phosphorite du Quercy	France
697	Mas de Got A, Phosphorites du Quercy	France
698	Mas de Got B, Phosphorites du Quercy	France
699	Quercy (Phosphorites du Quercy)	France
700	Quercy (Phosphorites du Quercy)	France
701	Thaytiniti, Dhofar	Oman
702	Kalgan area	China
703	Gua Teg	Mongolia
704	AMNH quarries A, B, C, Fayyum	Egypt
705	Neumühle near Weinheim/Alzey	Germany
706	Ruch, Gironde	France
707	Sainte-Marthe, Eymet, Dordogne	France

	Locality	Country
708	Ravet-Lupo, Caylus, Lot, Phosphorites du Quercy	France
709	Soumaille, Pardaillan, Lot-et-Garonne	France
710	Aubrelong 1, Phosphorites du Quercy, Lot	France
711	Baby 2, Saint-André-et-Appelles, Gironde	France
712	Saint-Capraise-d'Eymet, Dordogne	France
713	Korablik Kiinkerish	Kazakhstan
714	Ardyn Obo (Ergelyeen Dzo), SE Gobi	Mongolia
715	Escamps, Phosphorites du Quercy	France
716	Lostange, Beduer, Lot	France
717	Lostange, Beduer, Lot	France
718	Rosières, Escamps, Lot, Phosphorites du Quercy	France
719	Sainte-Croix-de-Brignon, Gard	France
720	Sindou D, Phosphorites du Quercy	France
721	Paris Montmartre	France
722	Côja, Cerâmica da Carriça	Portugal
723	La Débruge = Butte de Sainte Radegonde (pres d'Apt, Gargas, Vaucluse)	France
724	La Grave, Bonsac, Gironde	France
725	Langlès, Saint-Martin-de-Villereal, Lot-et-Garonne	France
726	Sainte-Néboule, Béduer, Lot	France
727	Santiago Yolomécatl, Oaxaca	Mexico
728	Santiago Yolomécatl, Oaxaca	Mexico
729	Calf Creek near Eastend, Saskatchewan	Canada
730	Chéry-Chartreuve (Aisne)	France
731	Grisolles, Est du Bassin de Paris, Aisne	France
732	Rocourt-Saint-Martin, Aisne	France
733	Rocourt-Saint-Martin, Aisne	France
734	Myaing UCMP locality V6204	Myanmar
735	Thandaung kyitchaung, UCMP locality V78090	Myanmar
736	Naia, Tondela, Viseu	Portugal
737	Castres, Bassin de l'Agout, Tarn	France
738	Lautrec, Tarn	France

	Locality	Country
739	Robiac, Saint-Mamert, Gard	France
740	Robiac, Saint-Mamert, Gard	France
741	Mazaterón, Soria Province, Castilla y León	Spain
742	Issel, Department Aude	France
743	Le Guépelle, Saint-Witz, Val d'Oise	France
744	Aigues-Vives 2, Hérault	France
745	Jumencourt, Aisne	France
746	La Défense, Hauts-de-Seine	France
747	Swift Current Creek, southern Saskatchewan	Canada
748	Geiseltal near Halle (Mücheln), Sachsen-Anhalt	Germany
749	Bouxwiller, Bas-Rhin	France
750	Stena	Kazakhstan
751	UCMP V98009, Uinta County, Wyoming	USA
752	North Fork, Wapiti Valley north Shoshone River (NF-5 Wapiti III), Park County, Wyoming	USA
753	Cuis (Marne)	France
754	Grauves (Marne)	France
755	Mancy, Marne	France
756	Monthelon, Marne	France
757	Haunsberg near St. Pankraz, Salzburg	Austria
758	Andarak 2, Osh Region	Kyrgyzstan
759	Andarak 1, Osh Region	Kyrgyzstan
760	Khayzhin-Ula 2	Mongolia
761	Saint-Papoul NE Carcassonne, Aude	France
762	North Fork, Wapiti Valley north Shoshone River (NF-16 Wapiti II), Park County, Wyoming	USA
763	North Fork, Wapiti Valley north Shoshone River (NF-17 Wapiti II), Park County, Wyoming	USA
764	North Fork, Wapiti Valley north Shoshone River (NF-3 Wapiti II), Park County, Wyoming	USA
765	North Fork, Wapiti Valley north Shoshone River (NF-8 Wapiti II), Park County, Wyoming	USA
766	UCMP V70251, Patrick Draw S, Sweetwater County, Wyoming	USA
767	UCMP V70251, Patrick Draw S, Sweetwater County, Wyoming	USA
768	UCMP V74024, Turtle Graveyard General, Sweetwater County, Wyoming	USA
769	Tsagan-Khushu (Naran member, layer 2)	Mongolia

	Locality	Country
770	Kaseki-Kabe near Shiramine, Kuwajima, Hakusan City, Ishikawa Prefecture, Honshu	Japan

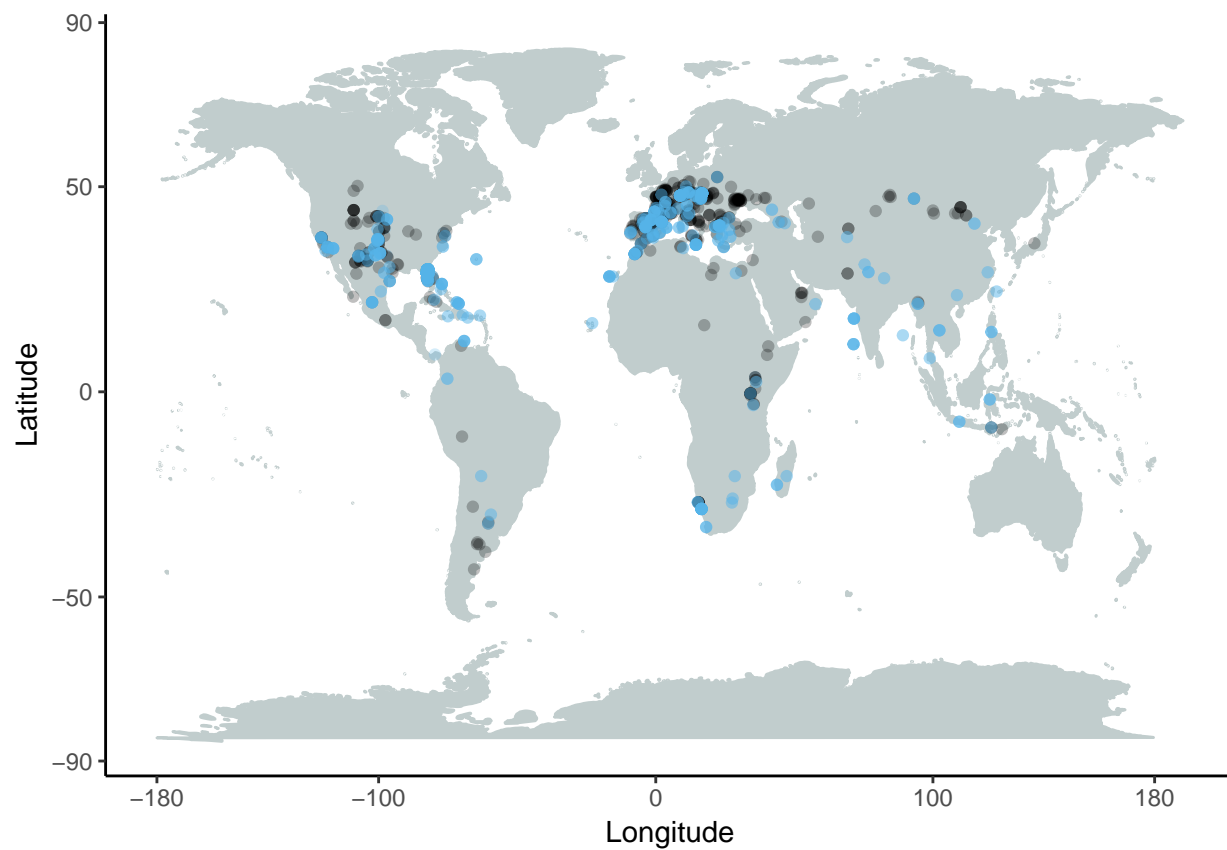


Figure 2: Map displaying all fossil occurrences of testudinids, with color indicating whether relevant literature was available (black if not) and if it was, whether body size data was available or not (yes and no, respectively).

body size of testudinidae

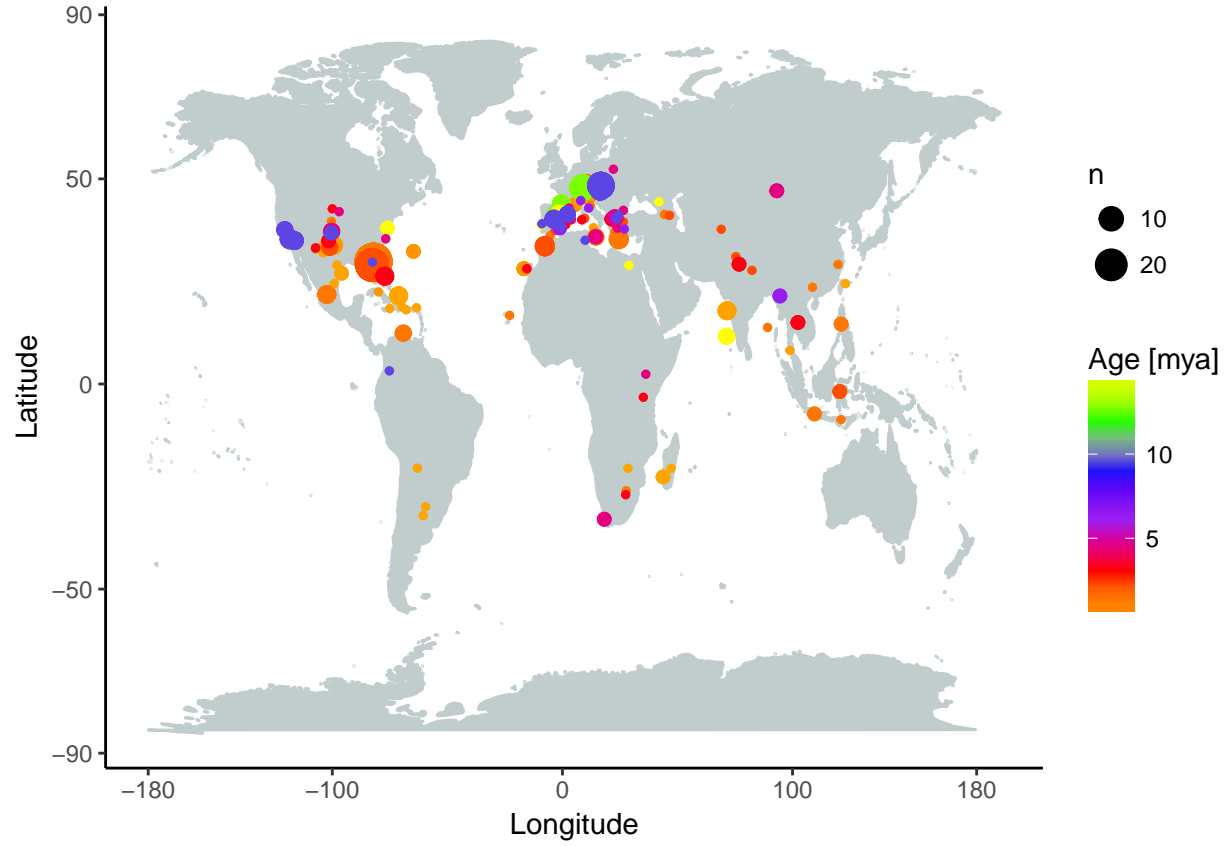


Figure 3: Map displaying all localities for which body size data for testudinids was available in the literature. Size of points denotes sample size, color denotes approximate age.

Table 3: Overview over fossil species per time bin, with sample size and mean CL.

EpochBins	Taxon	n	meanCL
Upper Pleistocene	<i>Centrochelys robusta</i>	1	850.0000
Upper Pleistocene	<i>Chelonoidis denticulata</i>	1	616.0000
Upper Pleistocene	<i>Chelonoidis lutzae</i>	1	830.0000
Upper Pleistocene	<i>Chelonoidis marcanoi</i>	4	672.2500
Upper Pleistocene	<i>Chelonoidis monensis</i>	1	500.0000
Upper Pleistocene	<i>Chelonoidis sombreroensis</i>	1	990.0000
Upper Pleistocene	<i>Chelonoidis</i> sp.	3	666.6667
Upper Pleistocene	<i>Eurotestudo hermanni</i>	1	187.0000

EpochBins	Taxon	n	meanCL
Upper Pleistocene	gen. indet.	1	813.0000
Upper Pleistocene	Geochelone sp.	2	475.0000
Upper Pleistocene	Gopherus agassizi	1	252.0000
Upper Pleistocene	Gopherus polyphemus	20	292.9700
Upper Pleistocene	Gopherus praecedens	1	360.0000
Upper Pleistocene	Hesperotestudo crassiscutata	6	435.1667
Upper Pleistocene	Hesperotestudo incisa	1	232.7600
Upper Pleistocene	Hesperotestudo sp.	2	806.5000
Upper Pleistocene	Hesperotestudo wilsoni	1	226.0000
Upper Pleistocene	Indotestudo elongata	1	270.0000
Middle Pleistocene	Centrochelys burchardi	4	722.5000
Middle Pleistocene	Chelonoidis cubensis	1	1139.0000
Middle Pleistocene	Eurotestudo aff. hermanni	2	187.0000
Middle Pleistocene	Eurotestudo hermanni	2	204.0500
Middle Pleistocene	Geochelone sp.	1	170.0000
Middle Pleistocene	Gopherus agassizi	1	445.0000
Middle Pleistocene	Gopherus laticaudatus	1	375.0000
Middle Pleistocene	Gopherus polyphemus	31	300.4316
Middle Pleistocene	Hesperotestudo bermudae	2	385.0000
Middle Pleistocene	Hesperotestudo equicomes	1	340.0000
Middle Pleistocene	Hesperotestudo sp.	2	1650.0000
Middle Pleistocene	Testudo kenitrensis	1	132.0000
Middle Pleistocene	Testudo lunellensis	4	215.4250
Lower Pleistocene	Centrochelys atlantica	1	400.0000
Lower Pleistocene	Centrochelys robusta	3	883.3333
Lower Pleistocene	Cheirogaster cf. gymnesica	1	789.0000
Lower Pleistocene	Cheirogaster sp.	1	925.0000
Lower Pleistocene	Chelonoidis sp.	3	716.6667
Lower Pleistocene	Eurotestudo globosa	1	263.0000
Lower Pleistocene	Eurotestudo hermanni	2	205.0000
Lower Pleistocene	gen. indet.	1	900.0000

EpochBins	Taxon	n	meanCL
Lower Pleistocene	<i>Geochelone</i> sp.	1	340.0000
Lower Pleistocene	<i>Gopherus berlandieri</i>	2	225.6500
Lower Pleistocene	<i>Gopherus flavomarginatus</i>	1	450.0000
Lower Pleistocene	<i>Gopherus pertenuis</i>	1	1050.0000
Lower Pleistocene	<i>Gopherus polyphemus</i>	3	254.4667
Lower Pleistocene	<i>Gopherus</i> sp.	6	233.9667
Lower Pleistocene	<i>Hesperotestudo crassiscutata</i>	5	285.6000
Lower Pleistocene	<i>Hesperotestudo incisa</i>	7	234.6286
Lower Pleistocene	<i>Hesperotestudo mlynarskii</i>	2	184.2500
Lower Pleistocene	<i>Hesperotestudo</i> sp.	1	1500.0000
Lower Pleistocene	<i>Hesperotestudo turgida</i>	1	230.0000
Lower Pleistocene	<i>Megalochelys sondaari</i>	2	909.0000
Lower Pleistocene	<i>Megalochelys</i> sp.	3	1130.4667
Lower Pleistocene	<i>Psammobates antiquorum</i>	1	107.8000
Lower Pleistocene	<i>Testudo changshanesis</i>	1	330.0000
Lower Pleistocene	<i>Testudo graeca</i>	1	195.0000
Lower Pleistocene	<i>Testudo hermanni</i>	2	176.5500
Lower Pleistocene	<i>Testudo marginata</i>	3	270.0000
Lower Pleistocene	<i>Titanochelon gymnesica</i>	1	1300.0000
Gelasian	<i>Centrochelys marocana</i>	1	2050.0000
Gelasian	<i>Eurotestudo</i> cf. <i>hermanni</i>	1	150.0000
Gelasian	<i>Gopherus</i> sp.	15	185.7467
Gelasian	<i>Hesperotestudo campester</i>	1	1000.0000
Gelasian	<i>Hesperotestudo</i> sp.	1	1000.0000
Gelasian	<i>Manouria punjabiensis</i>	1	900.0000
Gelasian	<i>Megalochelys atlas</i>	3	1683.3333
Gelasian	<i>Testudo</i> aff. <i>kenitrensis</i>	1	142.0000
Gelasian	<i>Testudo oughlamensis</i>	1	120.0000
Gelasian	<i>Testudo ranovi</i>	1	200.0000
Gelasian	<i>Testudo</i> sp.	2	192.0000
Gelasian	<i>Testudo transcaucasia</i>	1	150.0000

EpochBins	Taxon	n	meanCL
Gelasian	Titanochelon aff. schafferi	1	1860.0000
Gelasian	Titanochelon sp.	1	1420.0000
Piacencian	“Aldabrachelys” laetoliensis	1	1000.0000
Piacencian	Aldabrachelys ? sp.	2	1500.0000
Piacencian	Centrochelys vulcanica	1	610.0000
Piacencian	Chelonoidis alburyorum	4	442.7500
Piacencian	Gopherus canyonensis	1	885.5000
Piacencian	Hesperotestudo johnstoni	1	235.0000
Piacencian	Hesperotestudo oelrichi	1	283.8000
Piacencian	Hesperotestudo riggsi	2	180.5000
Piacencian	Hesperotestudo sp.	1	176.0000
Piacencian	Homopus fenestratus	1	90.0000
Piacencian	Megalochelys atlas	2	1600.0000
Piacencian	Testudo brevitesta	2	232.5000
Piacencian	Testudo pecorinii	1	225.0000
Piacencian	Titanochelon sp.	1	520.0000
Zanclean	Caudochelys rexroadensis	2	805.5000
Zanclean	Centrochelys robusta	3	913.3333
Zanclean	Cheirogaster gymnesica	1	739.0000
Zanclean	Ergilemys oskarkuhni	2	209.0000
Zanclean	Geochelone crassa	1	865.0000
Zanclean	Geochelone s. l.	1	1750.0000
Zanclean	Geochelone sp.	2	528.0000
Zanclean	Geochelone stromeri	2	387.5000
Zanclean	Hesperotestudo riggsi	1	195.8000
Zanclean	Testudo cf. graeca	1	185.0000
Zanclean	Testudo sp.	4	1675.0000
Zanclean	Titanochelon bacharidisi	4	1040.0000
Zanclean	Titanochelon perpiniana	1	1140.0000
Zanclean	Titanochelon schafferi	1	2500.0000
Messinian	Hesperotestudo orthopygia	2	941.0000

EpochBins	Taxon	n	meanCL
Messinian	Megalochelys atlas	2	1950.0000
Messinian	Testudo amiatae	1	140.0000
Messinian	Testudo graeca	2	183.5000
Messinian	Testudo sp.	1	200.0000
Messinian	Titanochelon bolivari	1	1150.0000
Messinian	Titanochelon schafferi	1	1850.0000
Tortonian	“Hadrianus sp.”	1	1000.0000
Tortonian	Cheirogaster richardi	1	1155.0000
Tortonian	Cheirogaster sp.	2	1355.0000
Tortonian	gen. indet.	3	660.0000
Tortonian	Geochelone hesterna	1	278.0000
Tortonian	Geochelone sp.	2	973.0000
Tortonian	Gopherus ? sp.	1	500.0000
Tortonian	Gopherus mohavetus	5	324.8000
Tortonian	Hesperotestudo alleni	1	240.9000
Tortonian	Hesperotestudo riggsi	2	159.5000
Tortonian	Hesperotestudo sp.	1	1200.0000
Tortonian	Paleotestudo sp.	3	233.6667
Tortonian	Testudo burgenlandica	2	193.5000
Tortonian	Testudo catalaunica	4	157.0000
Tortonian	Testudo cf. promarginata	5	250.0000
Tortonian	Testudo graeca	1	210.0000
Tortonian	Testudo s. s.	1	189.0000
Tortonian	Testudo sp.	7	243.1571
Tortonian	Titanochelon bolivari	1	1300.0000
Tortonian	Titanochelon cf. bolivari	1	1500.0000
Serravallian	Cheirogaster sp.	2	1250.0000
Serravallian	gen. indet.	1	270.0000
Serravallian	Gopherus ? sp.	1	500.0000
Serravallian	Paleotestudo antiqua	18	203.0556
Serravallian	Paleotestudo cf. sp.	1	270.0000

EpochBins	Taxon	n	meanCL
Serravallian	<i>Testudo catalaunica</i>	1	232.0000
Serravallian	<i>Testudo steinheimensis</i>	2	169.3500
Serravallian	<i>Titanochelon bolivari</i>	1	1353.0000
Langhian	<i>Caudochelys ducateli</i>	1	339.9000
Langhian	<i>Chelonoidis</i> sp.	3	553.3333
Langhian	<i>Ergilemys</i> sp.	1	1000.0000
Langhian	gen. indet.	1	1000.0000
Langhian	<i>Paleotestudo antiqua</i>	1	275.0000
Langhian	<i>Paleotestudo</i> cf. sp.	1	270.0000
Langhian	<i>Testudo kalksburgensis</i>	1	275.0000
Langhian	<i>Testudo</i> sp.	1	400.0000
Langhian	<i>Titanochelon bolivari</i>	2	1175.0000
Langhian	<i>Titanochelon</i> cf. <i>bolivari</i>	2	1450.0000
Burdigalian/Aquitania	<i>Caudochelys williamsi</i>	1	334.0000
Burdigalian/Aquitania	gen. indet.	1	270.0000
Burdigalian/Aquitania	<i>Geochelone</i> sp.	2	900.0000
Burdigalian/Aquitania	<i>Geochelone tedwhitei</i>	2	405.0000
Burdigalian/Aquitania	<i>Impregnochelys pachytectis</i>	1	620.0000
Burdigalian/Aquitania	<i>Mesocherus orangeus</i>	5	180.0000
Burdigalian/Aquitania	<i>Namibchersus</i> aff. <i>namaquensis</i>	3	696.6667
Burdigalian/Aquitania	<i>Namibchersus namaquensis</i>	6	428.8333
Burdigalian/Aquitania	<i>Paleotestudo</i> cf. <i>antiqua</i>	1	113.0000
Burdigalian/Aquitania	<i>Paleotestudo</i> sp.	1	179.3000
Burdigalian/Aquitania	<i>Testudo kalksburgensis</i>	2	227.5000
Burdigalian/Aquitania	<i>Testudo promarginata</i>	3	281.5667
Burdigalian/Aquitania	<i>Testudo rectogularis</i>	1	213.0000
Burdigalian/Aquitania	<i>Titanochelon</i> cf. <i>perpiniana</i>	1	1001.0000

Table 4: General overview over fossil species, with sample size and mean CL

Taxon	n	meanCL
“Aldabrachelys” laetoliensis	1	1000.0000
“Hadrianus sp.”	1	1000.0000
Aldabrachelys ? sp.	2	1500.0000
Caudochelys ducateli	1	339.9000
Caudochelys rexroadensis	2	805.5000
Caudochelys williamsi	1	334.0000
Centrochelys atlantica	1	400.0000
Centrochelys burchardi	4	722.5000
Centrochelys marocana	1	2050.0000
Centrochelys robusta	7	891.4286
Centrochelys vulcanica	1	610.0000
Cheirogaster cf. gymnesica	1	789.0000
Cheirogaster gymnesica	1	739.0000
Cheirogaster richardi	1	1155.0000
Cheirogaster sp.	5	1227.0000
Chelonoidis alburyorum	4	442.7500
Chelonoidis cubensis	1	1139.0000
Chelonoidis denticulata	1	616.0000
Chelonoidis lutzae	1	830.0000
Chelonoidis marcanoi	4	672.2500
Chelonoidis monensis	1	500.0000
Chelonoidis sombrerensis	1	990.0000
Chelonoidis sp.	9	645.5556
Ergilemys oskarkuhni	2	209.0000
Ergilemys sp.	1	1000.0000
Eurotestudo aff. hermanni	2	187.0000
Eurotestudo cf. hermanni	1	150.0000
Eurotestudo globosa	1	263.0000

Taxon	n	meanCL
<i>Eurotestudo hermanni</i>	5	201.0200
gen. indet.	8	654.1250
<i>Geochelone crassa</i>	1	865.0000
<i>Geochelone hesternae</i>	1	278.0000
<i>Geochelone</i> s. l.	1	1750.0000
<i>Geochelone</i> sp.	10	626.2000
<i>Geochelone stromeri</i>	2	387.5000
<i>Geochelone tedwhitei</i>	2	405.0000
<i>Gopherus</i> ? sp.	2	500.0000
<i>Gopherus agassizi</i>	2	348.5000
<i>Gopherus berlandieri</i>	2	225.6500
<i>Gopherus canyonensis</i>	1	885.5000
<i>Gopherus flavomarginatus</i>	1	450.0000
<i>Gopherus laticaudatus</i>	1	375.0000
<i>Gopherus mohavetatus</i>	5	324.8000
<i>Gopherus pertenuis</i>	1	1050.0000
<i>Gopherus polyphemus</i>	54	295.1144
<i>Gopherus praecedens</i>	1	360.0000
<i>Gopherus</i> sp.	21	199.5238
<i>Hesperotestudo alleni</i>	1	240.9000
<i>Hesperotestudo bermudae</i>	2	385.0000
<i>Hesperotestudo campester</i>	1	1000.0000
<i>Hesperotestudo crassiscutata</i>	11	367.1818
<i>Hesperotestudo equicomes</i>	1	340.0000
<i>Hesperotestudo incisa</i>	8	234.3950
<i>Hesperotestudo johnstoni</i>	1	235.0000
<i>Hesperotestudo mlynarskii</i>	2	184.2500
<i>Hesperotestudo oelrichi</i>	1	283.8000
<i>Hesperotestudo orthopygia</i>	2	941.0000
<i>Hesperotestudo riggsi</i>	5	175.1600
<i>Hesperotestudo</i> sp.	8	1098.6250

Taxon	n	meanCL
<i>Hesperotestudo turgida</i>	1	230.0000
<i>Hesperotestudo wilsoni</i>	1	226.0000
<i>Homopus fenestratus</i>	1	90.0000
<i>Impregnochelys pachytectis</i>	1	620.0000
<i>Indotestudo elongata</i>	1	270.0000
<i>Manouria punjabiensis</i>	1	900.0000
<i>Megalochelys atlas</i>	7	1735.7143
<i>Megalochelys sondaari</i>	2	909.0000
<i>Megalochelys</i> sp.	3	1130.4667
<i>Mesocherus orangeus</i>	5	180.0000
<i>Namibchersus</i> aff. <i>namaquensis</i>	3	696.6667
<i>Namibchersus namaquensis</i>	6	428.8333
<i>Paleotestudo antiqua</i>	19	206.8421
<i>Paleotestudo</i> cf. <i>antiqua</i>	1	113.0000
<i>Paleotestudo</i> cf. sp.	2	270.0000
<i>Paleotestudo</i> sp.	4	220.0750
<i>Psammobates antiquorum</i>	1	107.8000
<i>Testudo</i> aff. <i>kenitrensis</i>	1	142.0000
<i>Testudo amiatae</i>	1	140.0000
<i>Testudo brevitesta</i>	2	232.5000
<i>Testudo burgenlandica</i>	2	193.5000
<i>Testudo catalaunica</i>	5	172.0000
<i>Testudo</i> cf. <i>graeca</i>	1	185.0000
<i>Testudo</i> cf. <i>promarginata</i>	5	250.0000
<i>Testudo changshanesis</i>	1	330.0000
<i>Testudo graeca</i>	4	193.0000
<i>Testudo hermanni</i>	2	176.5500
<i>Testudo kalksburgensis</i>	3	243.3333
<i>Testudo kenitrensis</i>	1	132.0000
<i>Testudo lunellensis</i>	4	215.4250
<i>Testudo marginata</i>	3	270.0000

Taxon	n	meanCL
Testudo oughlamensis	1	120.0000
Testudo pecorinii	1	225.0000
Testudo promarginata	3	281.5667
Testudo ranovi	1	200.0000
Testudo rectogularis	1	213.0000
Testudo s. s.	1	189.0000
Testudo sp.	15	625.7400
Testudo steinheimensis	2	169.3500
Testudo transcaucasia	1	150.0000
Titanochelon aff. schafferi	1	1860.0000
Titanochelon bacharidisi	4	1040.0000
Titanochelon bolivari	5	1230.6000
Titanochelon cf. bolivari	3	1466.6667
Titanochelon cf. perpiniana	1	1001.0000
Titanochelon gymnesica	1	1300.0000
Titanochelon perpiniana	1	1140.0000
Titanochelon schafferi	2	2175.0000
Titanochelon sp.	2	970.0000

Table 5: Overview over genera (modern and fossil) per time bin, with sample sizes and mean CL.

EpochBins	Genus	n	meanCL
Modern	Aldabrachelys	12	974.5833
Modern	Astrochelys	14	366.2143
Modern	Centrochelys	3	493.3333
Modern	Chelonoidis	45	531.5178
Modern	Chersina	15	176.2667
Modern	Cylindraspis	5	724.0000
Modern	Geochelone	8	252.1250
Modern	Gopherus	23	302.4839

EpochBins	Genus	n	meanCL
Modern	Hesperotestudo	1	250.0000
Modern	Homopus	7	139.2857
Modern	Indotestudo	16	242.9875
Modern	Kinixys	15	213.0667
Modern	Malacochersus	2	166.5000
Modern	Manouria	9	380.7778
Modern	Psammobates	17	113.4118
Modern	Pyxis	16	124.1875
Modern	Stigmochelys	6	405.3333
Modern	Testudo	39	197.5436
Upper Pleistocene	Centrochelys	1	850.0000
Upper Pleistocene	Chelonoidis	11	693.1818
Upper Pleistocene	Eurotestudo	1	187.0000
Upper Pleistocene	gen.	1	813.0000
Upper Pleistocene	Geochelone	2	475.0000
Upper Pleistocene	Gopherus	22	294.1545
Upper Pleistocene	Hesperotestudo	10	468.2760
Upper Pleistocene	Indotestudo	1	270.0000
Middle Pleistocene	Centrochelys	4	722.5000
Middle Pleistocene	Chelonoidis	1	1139.0000
Middle Pleistocene	Eurotestudo	4	195.5250
Middle Pleistocene	Geochelone	1	170.0000
Middle Pleistocene	Gopherus	33	307.0721
Middle Pleistocene	Hesperotestudo	5	882.0000
Middle Pleistocene	Testudo	5	198.7400
Lower Pleistocene	Centrochelys	4	762.5000
Lower Pleistocene	Cheirogaster	2	857.0000
Lower Pleistocene	Chelonoidis	3	716.6667
Lower Pleistocene	Eurotestudo	4	201.5250
Lower Pleistocene	gen.	1	900.0000
Lower Pleistocene	Geochelone	1	340.0000

EpochBins	Genus	n	meanCL
Lower Pleistocene	Gopherus	13	316.8077
Lower Pleistocene	Hesperotestudo	16	323.0562
Lower Pleistocene	Megalochelys	5	1041.8800
Lower Pleistocene	Psammobates	1	107.8000
Lower Pleistocene	Testudo	6	259.1667
Lower Pleistocene	Titanochelon	1	1300.0000
Gelasian	Centrochelys	1	2050.0000
Gelasian	Eurotestudo	1	150.0000
Gelasian	Gopherus	15	185.7467
Gelasian	Hesperotestudo	2	1000.0000
Gelasian	Manouria	1	900.0000
Gelasian	Megalochelys	3	1683.3333
Gelasian	Testudo	6	166.0000
Gelasian	Titanochelon	2	1640.0000
Piacencian	Aldabrachelys	3	1333.3333
Piacencian	Centrochelys	1	610.0000
Piacencian	Chelonoidis	4	442.7500
Piacencian	Gopherus	1	885.5000
Piacencian	Hesperotestudo	5	211.1600
Piacencian	Homopus	1	90.0000
Piacencian	Megalochelys	2	1600.0000
Piacencian	Testudo	3	230.0000
Piacencian	Titanochelon	1	520.0000
Zanclean	Caudochelys	2	805.5000
Zanclean	Centrochelys	3	913.3333
Zanclean	Cheirogaster	1	739.0000
Zanclean	Ergilemys	2	209.0000
Zanclean	Geochelone	6	741.0000
Zanclean	Hesperotestudo	1	195.8000
Zanclean	Testudo	5	1377.0000
Zanclean	Titanochelon	6	1300.0000

EpochBins	Genus	n	meanCL
Messinian	Hesperotestudo	2	941.0000
Messinian	Megalochelys	2	1950.0000
Messinian	Testudo	4	176.7500
Messinian	Titanochelon	2	1500.0000
Tortonian	“Hadrianus”	1	1000.0000
Tortonian	Cheirogaster	3	1288.3333
Tortonian	gen.	3	660.0000
Tortonian	Geochelone	3	741.3333
Tortonian	Gopherus	6	354.0000
Tortonian	Hesperotestudo	4	439.9750
Tortonian	Paleotestudo	3	233.6667
Tortonian	Testudo	20	218.3050
Tortonian	Titanochelon	2	1400.0000
Serravallian	Cheirogaster	2	1250.0000
Serravallian	gen.	1	270.0000
Serravallian	Gopherus	1	500.0000
Serravallian	Paleotestudo	19	206.5789
Serravallian	Testudo	3	190.2333
Serravallian	Titanochelon	1	1353.0000
Langhian	Caudochelys	1	339.9000
Langhian	Chelonoidis	3	553.3333
Langhian	Ergilemys	1	1000.0000
Langhian	gen.	1	1000.0000
Langhian	Paleotestudo	2	272.5000
Langhian	Testudo	2	337.5000
Langhian	Titanochelon	4	1312.5000
Burdigalian/Aquitania	Caudochelys	1	334.0000
Burdigalian/Aquitania	gen.	1	270.0000
Burdigalian/Aquitania	Geochelone	4	652.5000
Burdigalian/Aquitania	Impregnochelys	1	620.0000
Burdigalian/Aquitania	Mesocherus	5	180.0000

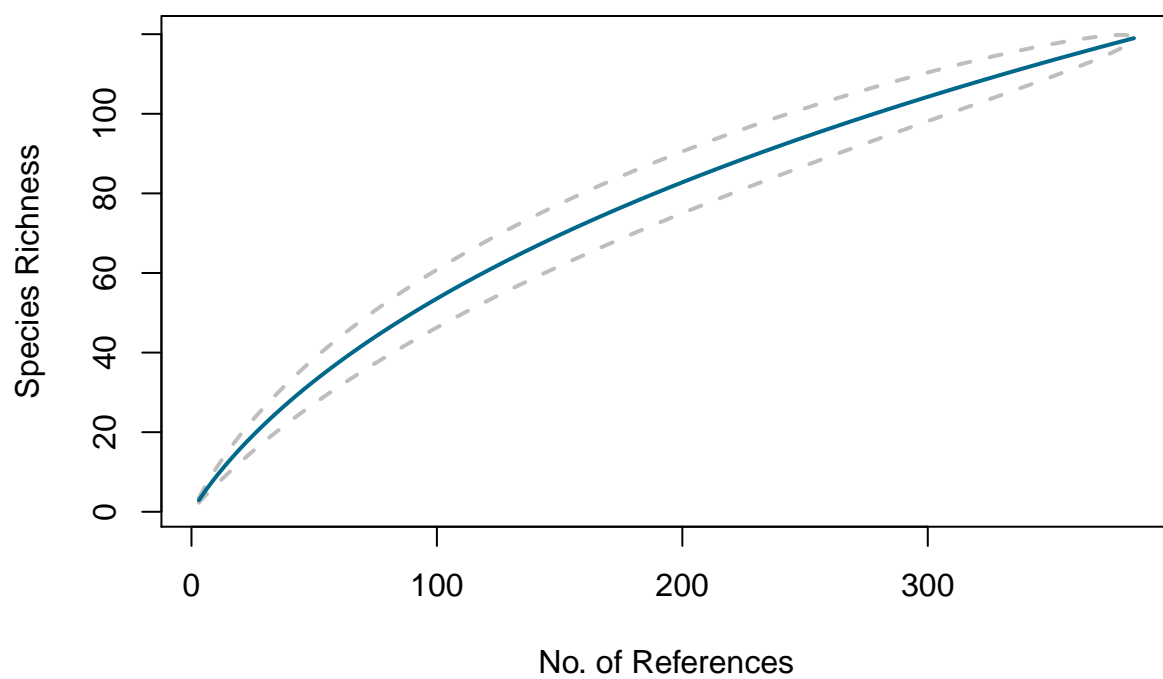
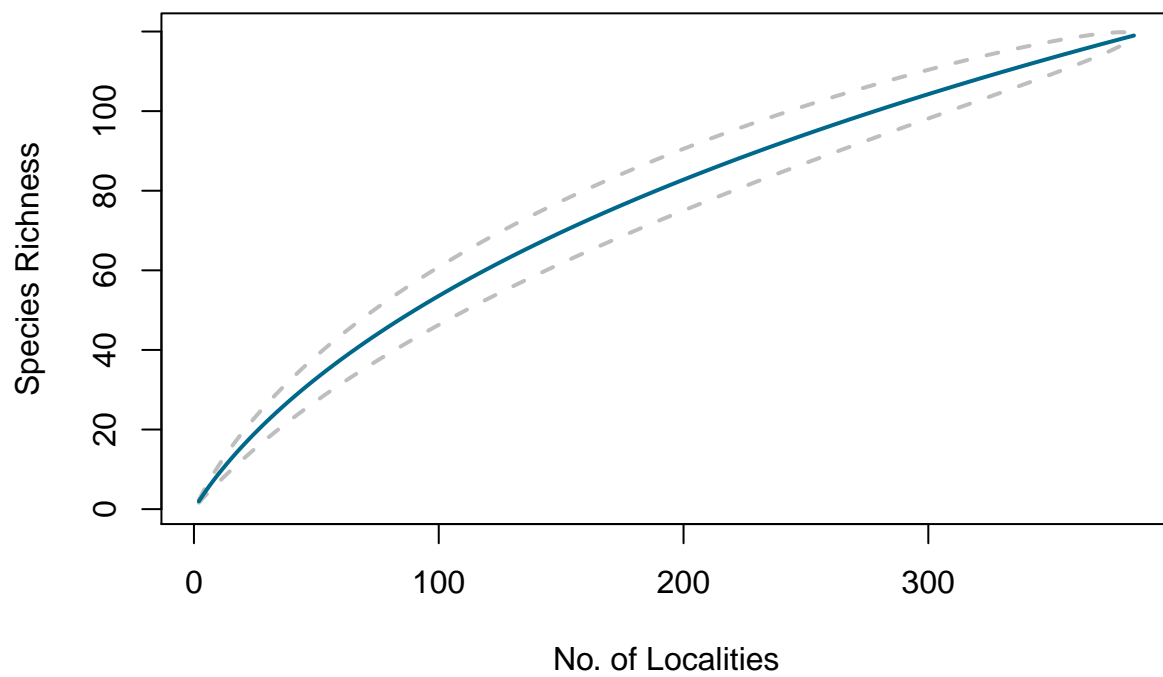
EpochBins	Genus	n	meanCL
Burdigalian/Aquitania	Namibchersus	9	518.1111
Burdigalian/Aquitania	Paleotestudo	2	146.1500
Burdigalian/Aquitania	Testudo	6	252.1167
Burdigalian/Aquitania	Titanochelon	1	1001.0000

Table 6: General overview over genera, with sample sizes and mean CL.

Genus	n	meanCL
“Hadrianus”	1	1000.0000
Aldabrachelys	15	1046.3333
Astrochelys	14	366.2143
Caudochelys	4	571.2250
Centrochelys	17	804.1176
Cheirogaster	8	1102.2500
Chelonoidis	67	571.0940
Chersina	15	176.2667
Cylindraspis	5	724.0000
Ergilemys	3	472.6667
Eurotestudo	10	192.5200
gen.	8	654.1250
Geochelone	25	510.2800
Gopherus	114	298.0361
Hesperotestudo	46	465.3296
Homopus	8	133.1250
Impregnochelys	1	620.0000
Indotestudo	17	244.5765
Kinixys	15	213.0667
Malacochersus	2	166.5000
Manouria	10	432.7000
Megalochelys	12	1446.6167

Genus	n	meanCL
Mesocherus	5	180.0000
Namibchersus	9	518.1111
Paleotestudo	26	210.1269
Psammobates	18	113.1000
Pyxis	16	124.1875
Stigmochelys	6	405.3333
Testudo	99	269.2465
Titanochelon	20	1315.2000

Sampling Accumulation Curves



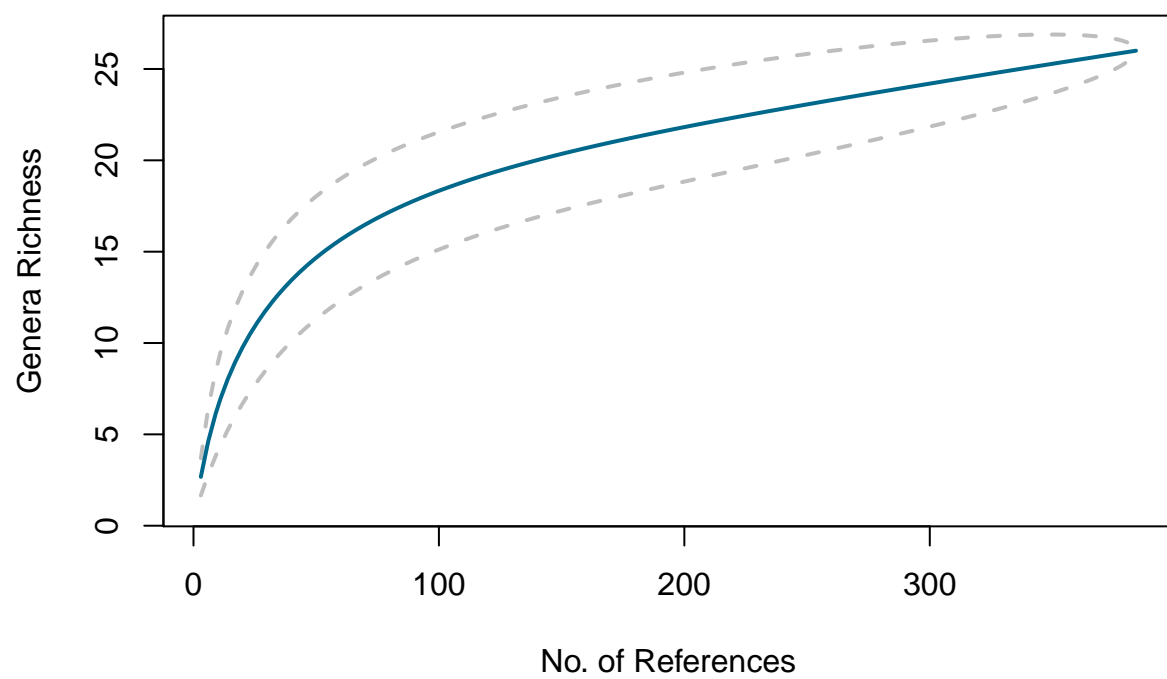


Figure 4: Sampling Accumulation Curve of fossil genera per reference

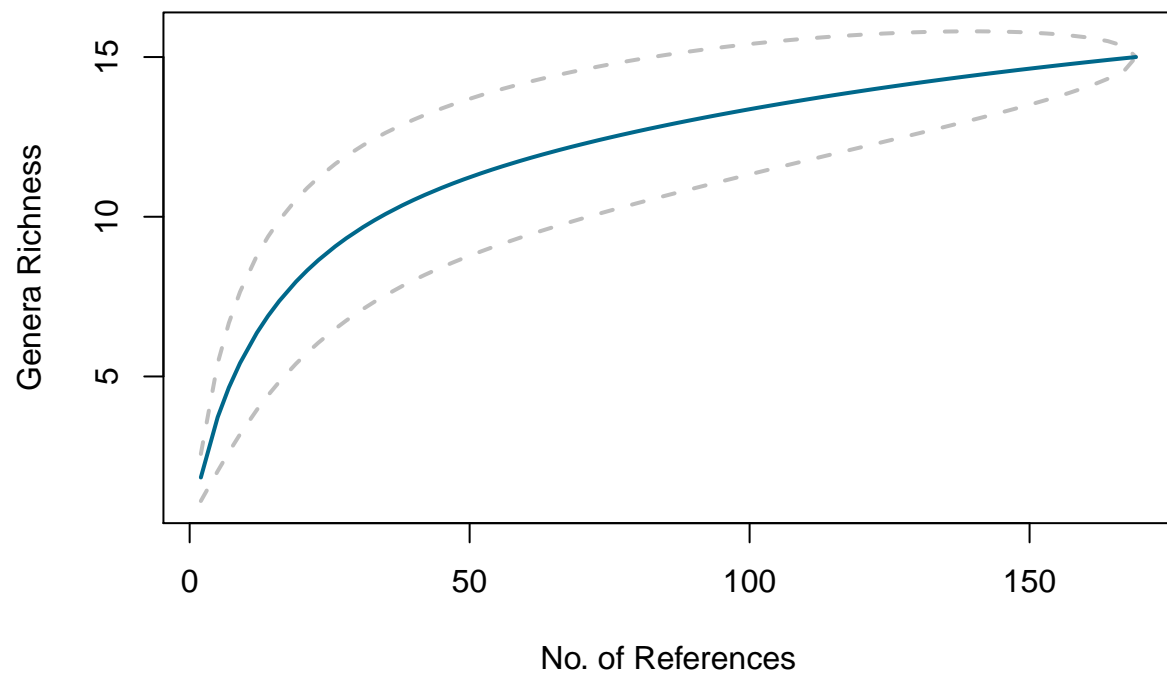


Figure 5: Sampling Accumulation Curve of fossil genera per reference, Eurasia

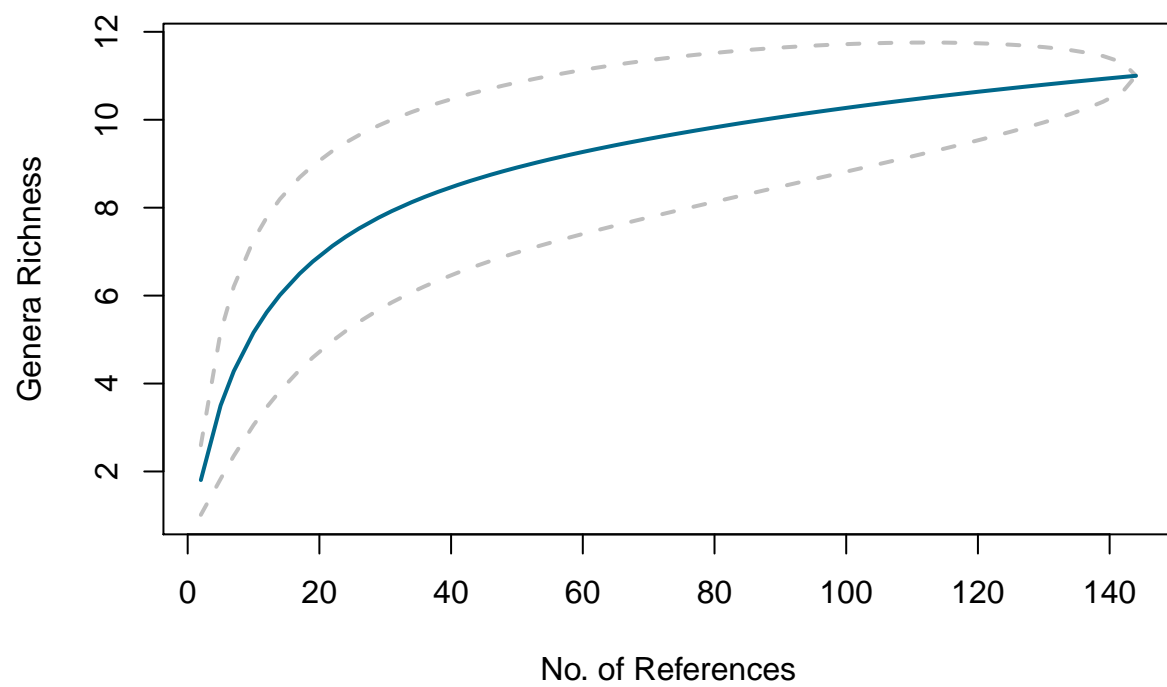


Figure 6: Sampling Accumulation Curve of fossil genera per reference, Europe

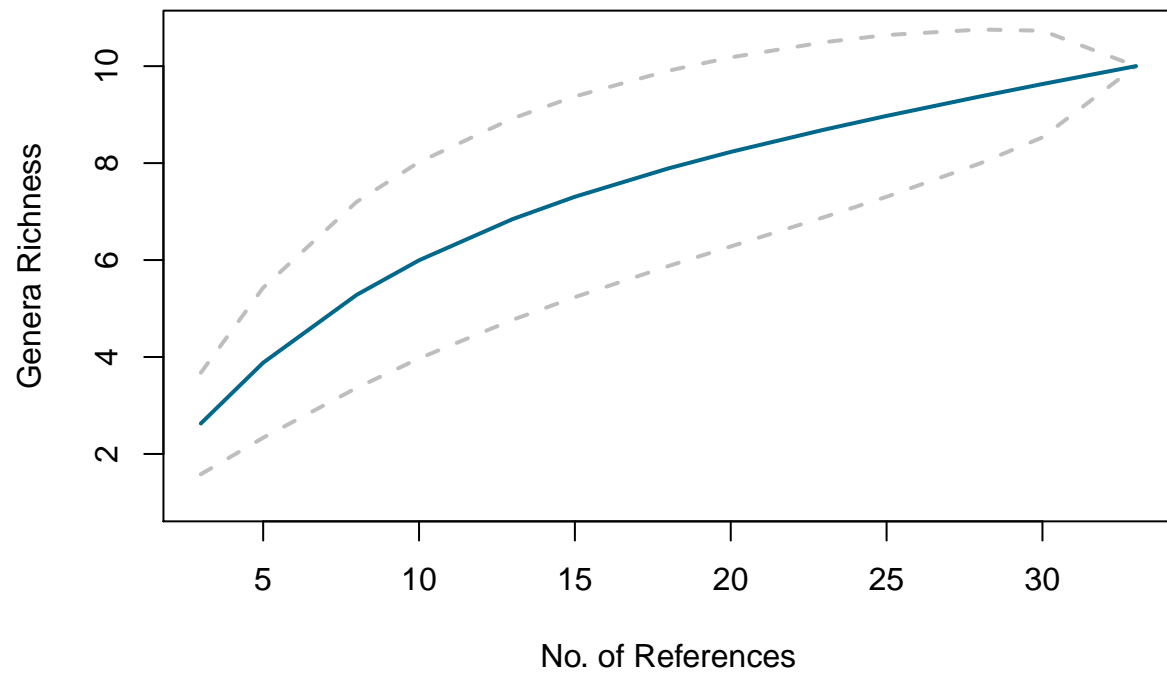


Figure 7: Sampling Accumulation Curve of fossil genera per reference, Africa

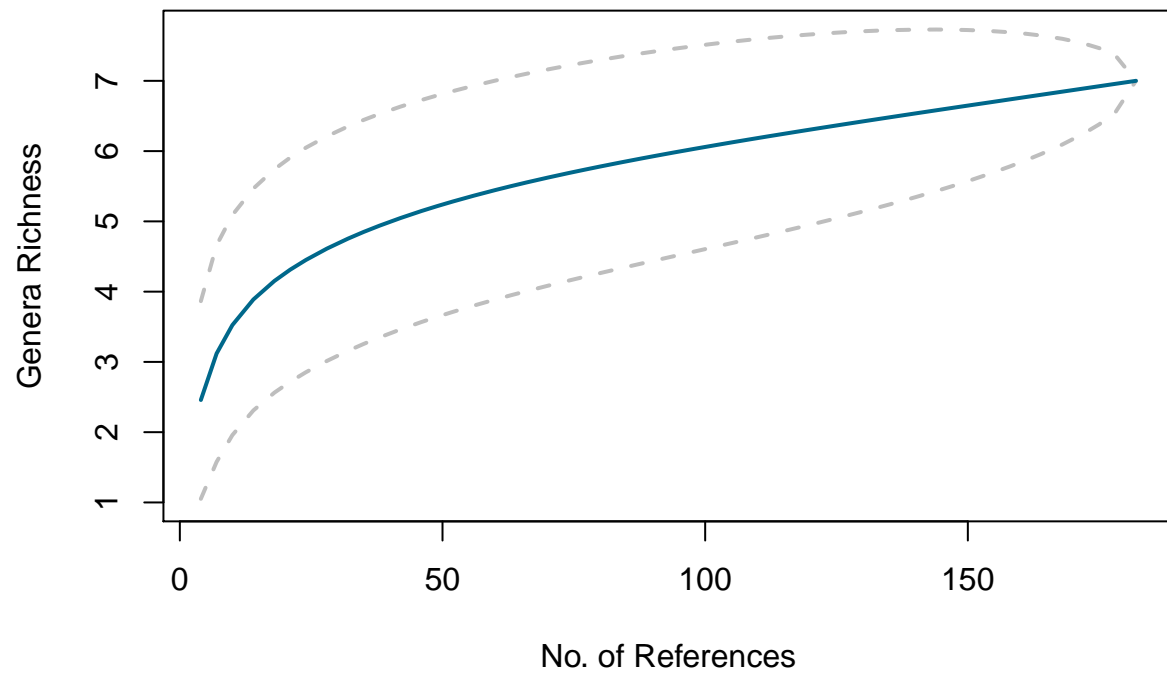


Figure 8: Sampling Accumulation Curve of fossil genera per reference, America

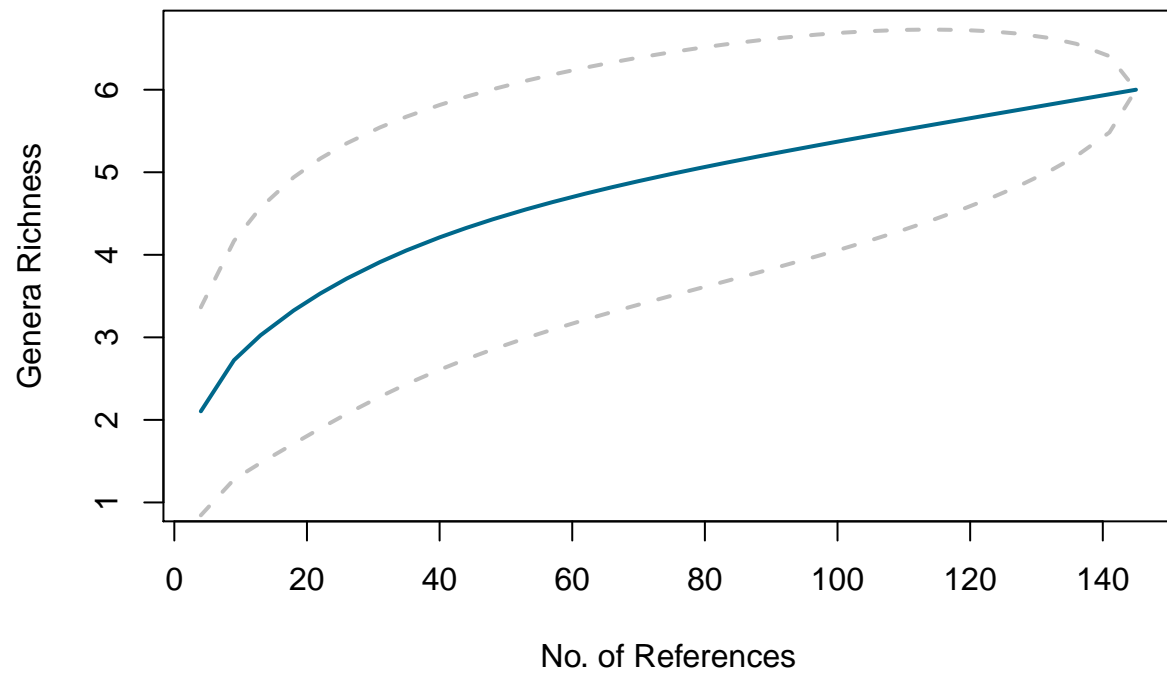


Figure 9: Sampling Accumulation Curve of fossil genera per reference, N-America

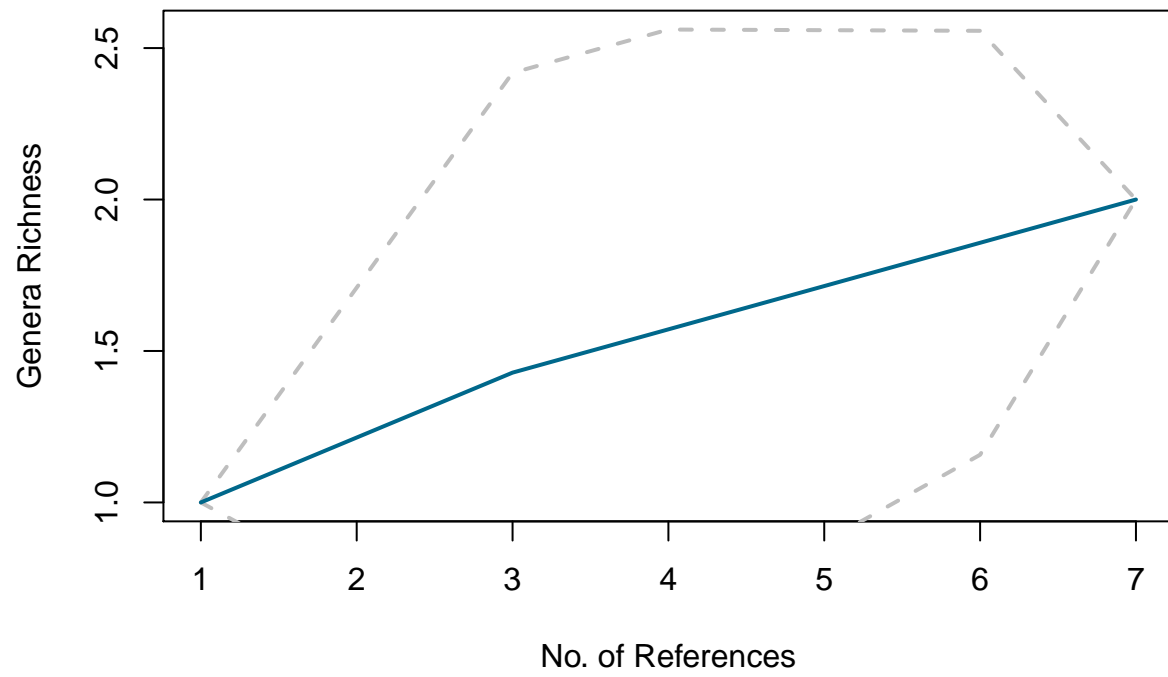


Figure 10: Sampling Accumulation Curve of fossil genera per reference, S-America

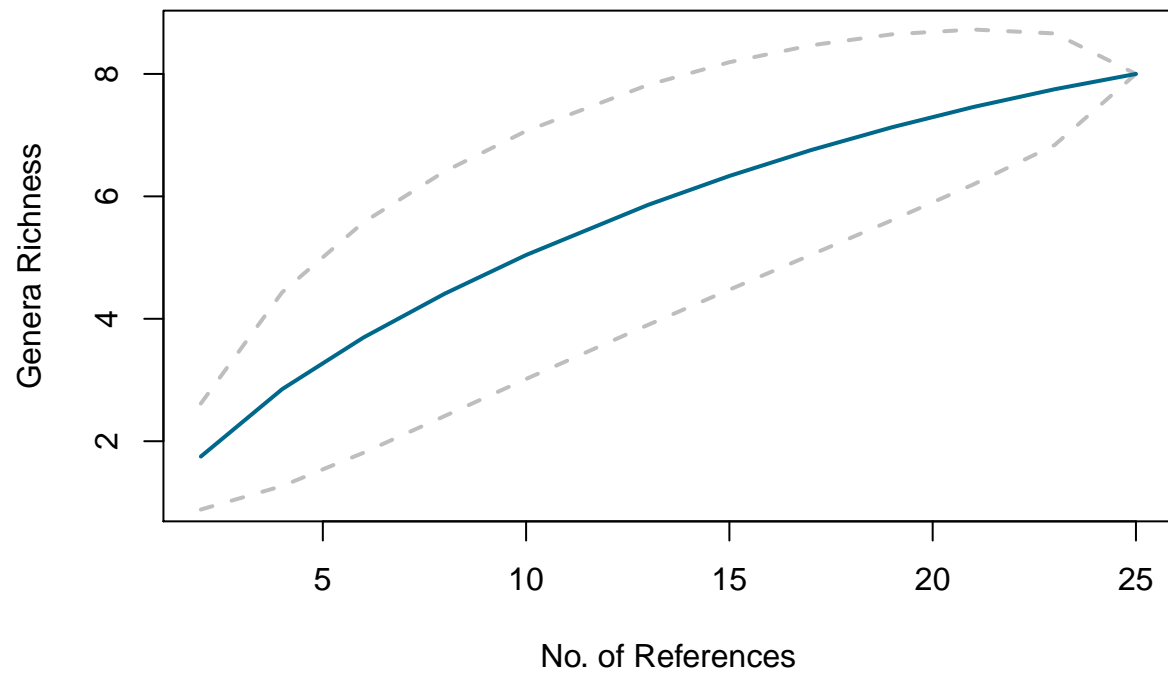
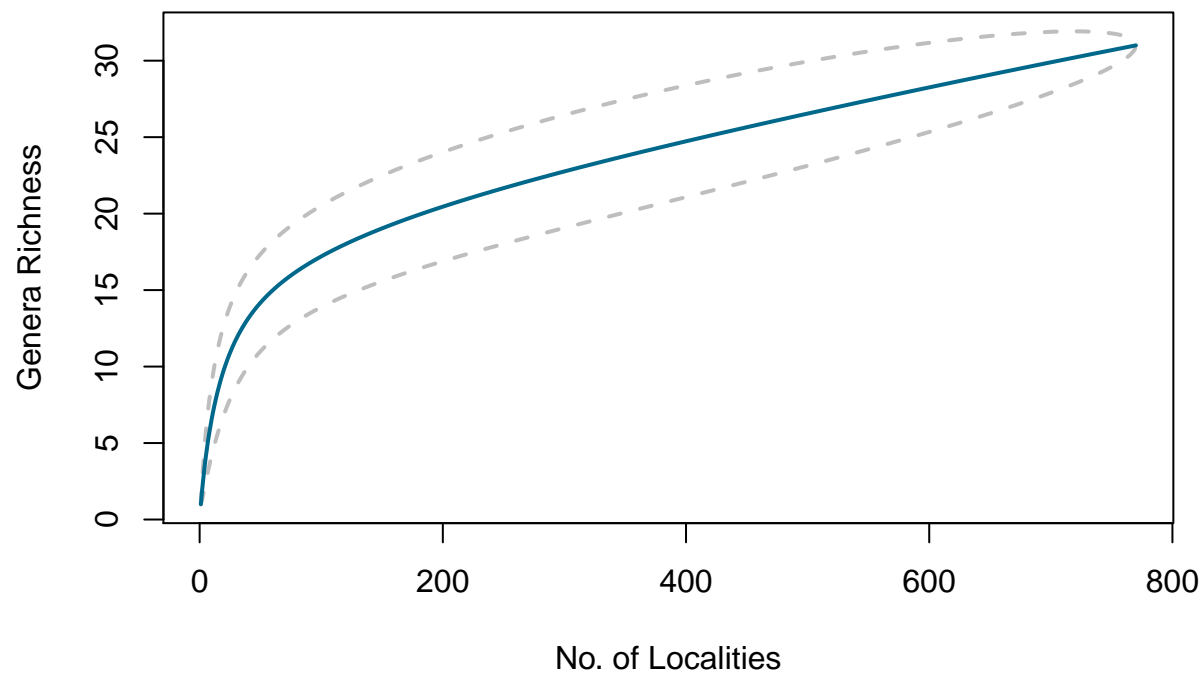


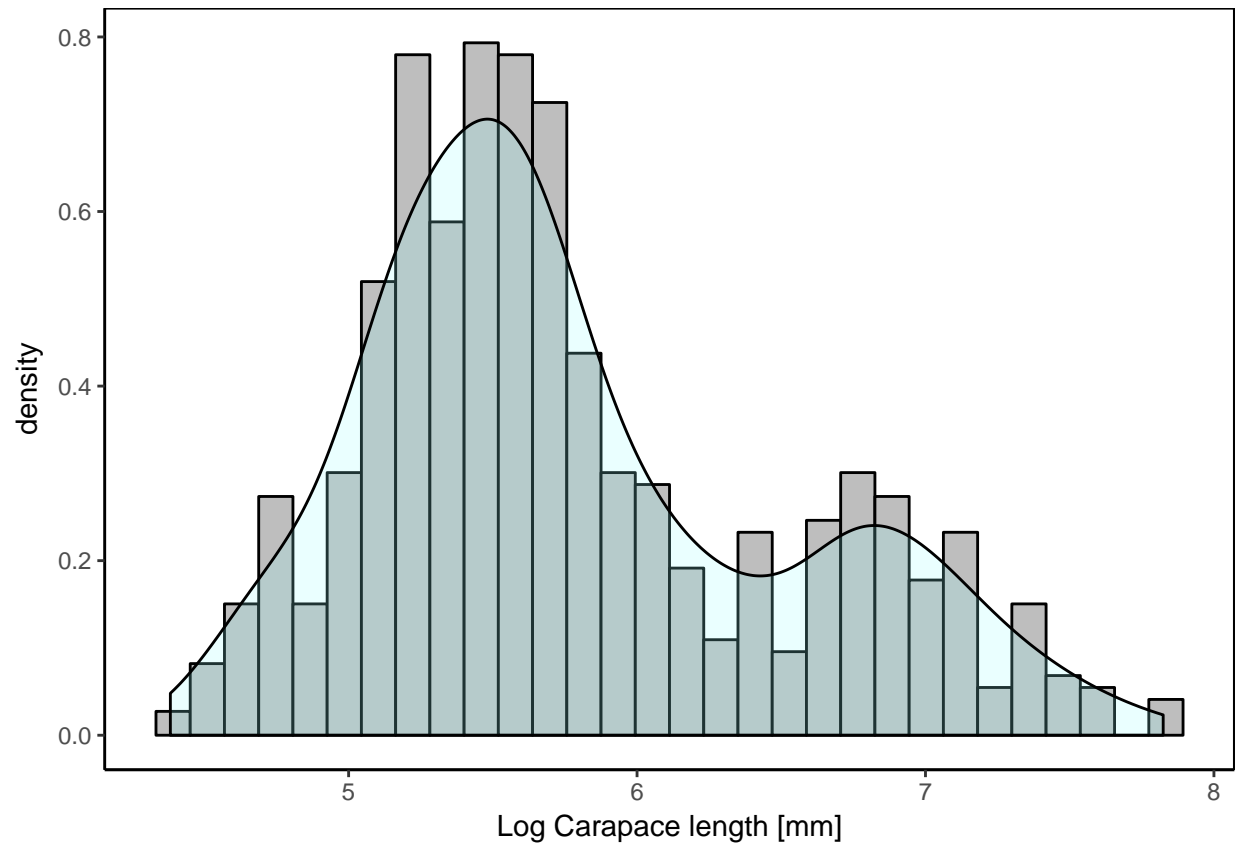
Figure 11: Sampling Accumulation Curve of fossil genera per reference, Asia



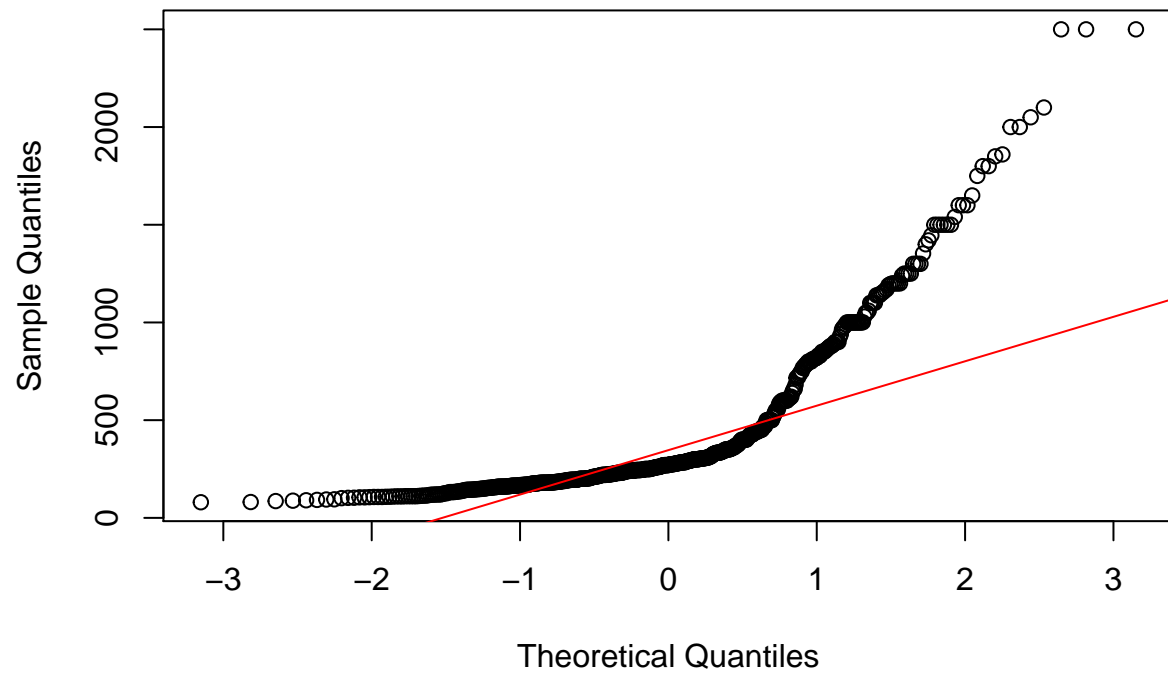
Histograms

all

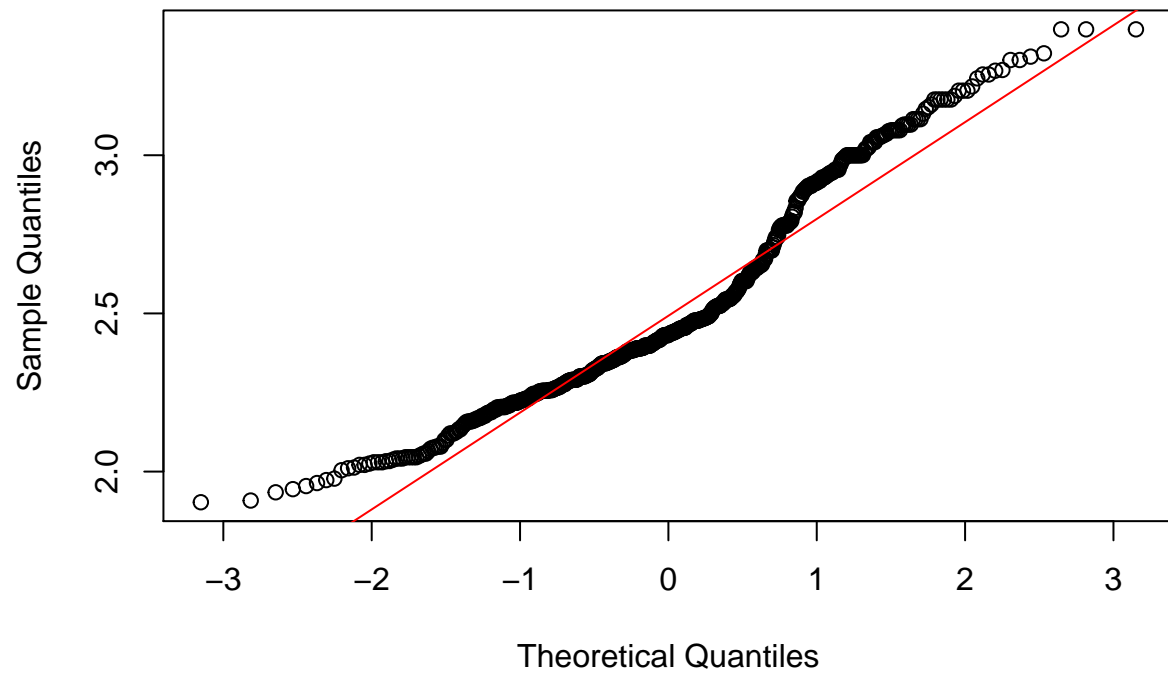
```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```



Normal Q-Q Plot



Normal Q-Q Plot



per time bin

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

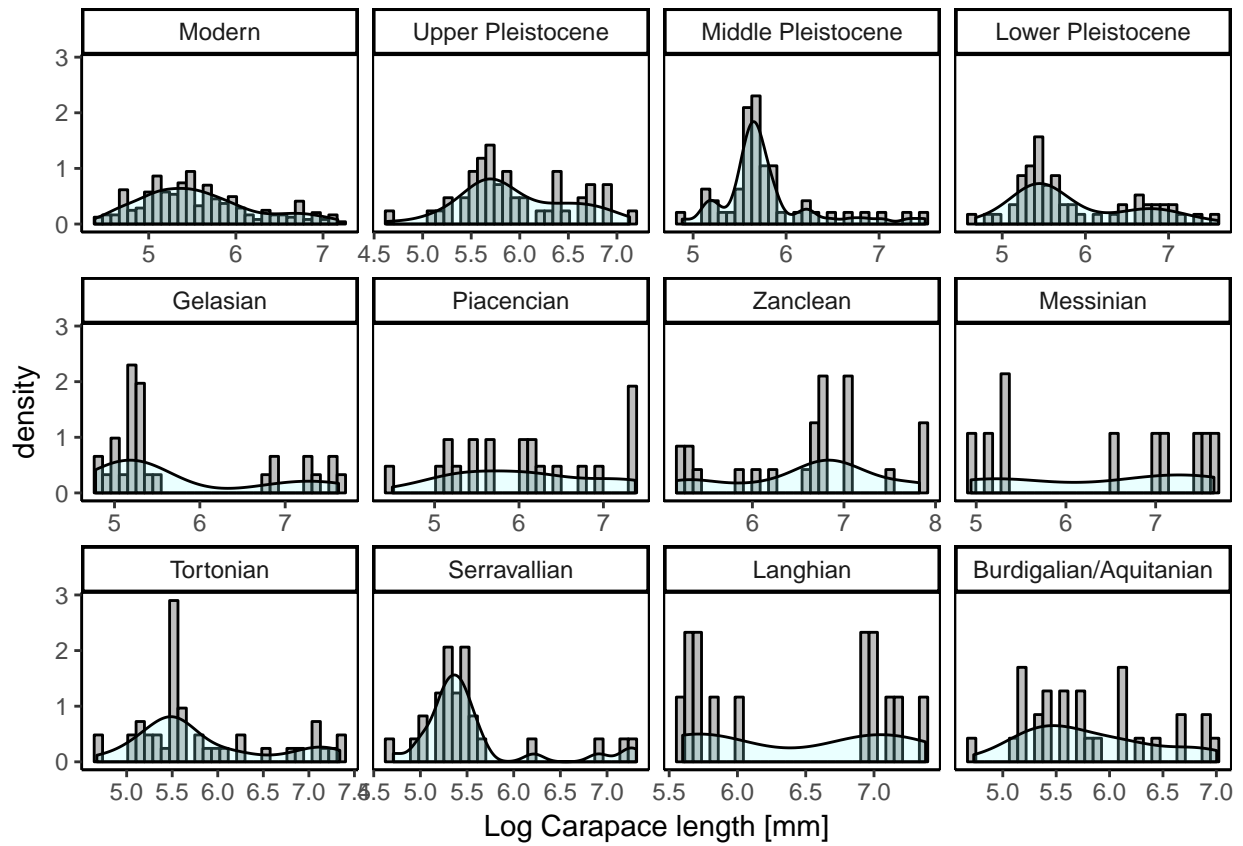


Figure 12: Distribution of body size data per time bin, logtransformed.

modern vs. fossil

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

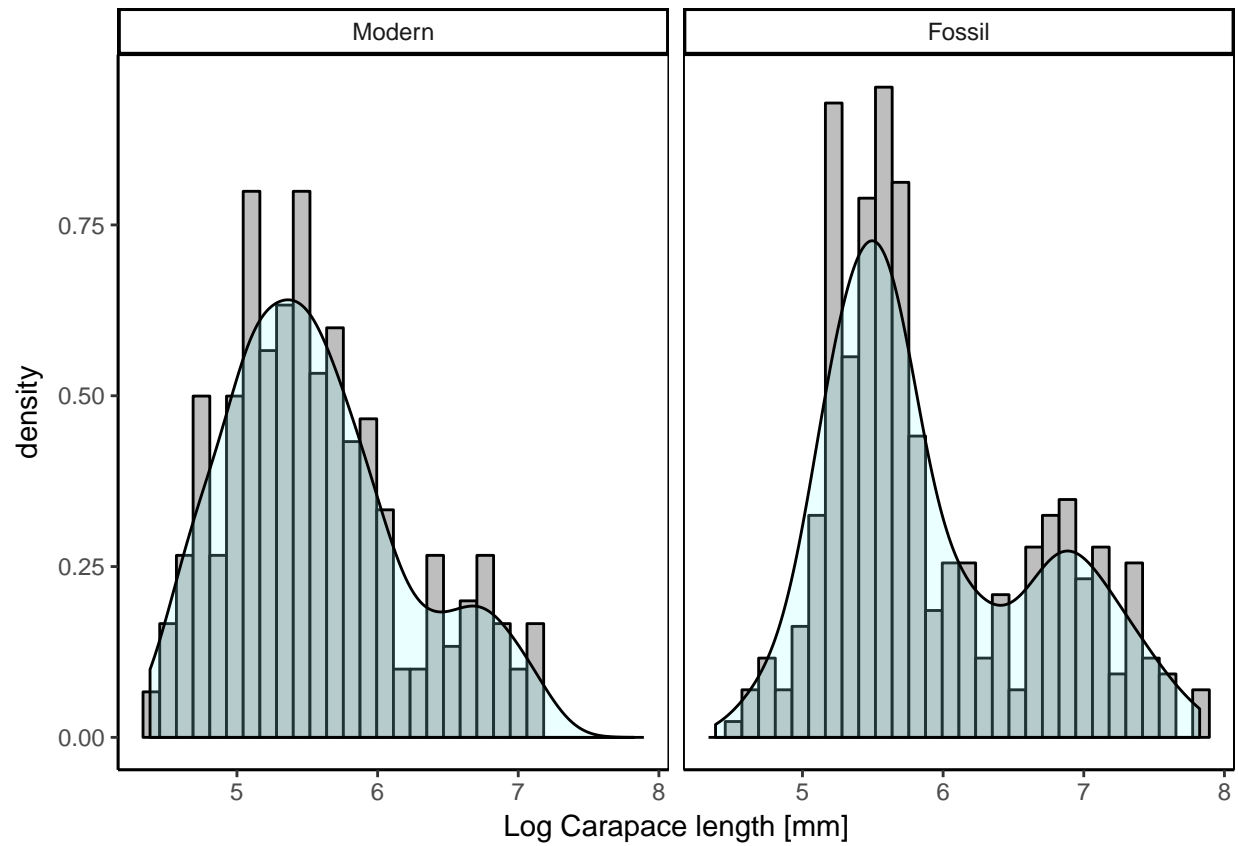


Figure 13: Distribution of body size data modern vs. fossil, logtransformed.

modern vs. fossil, continental vs. insular

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

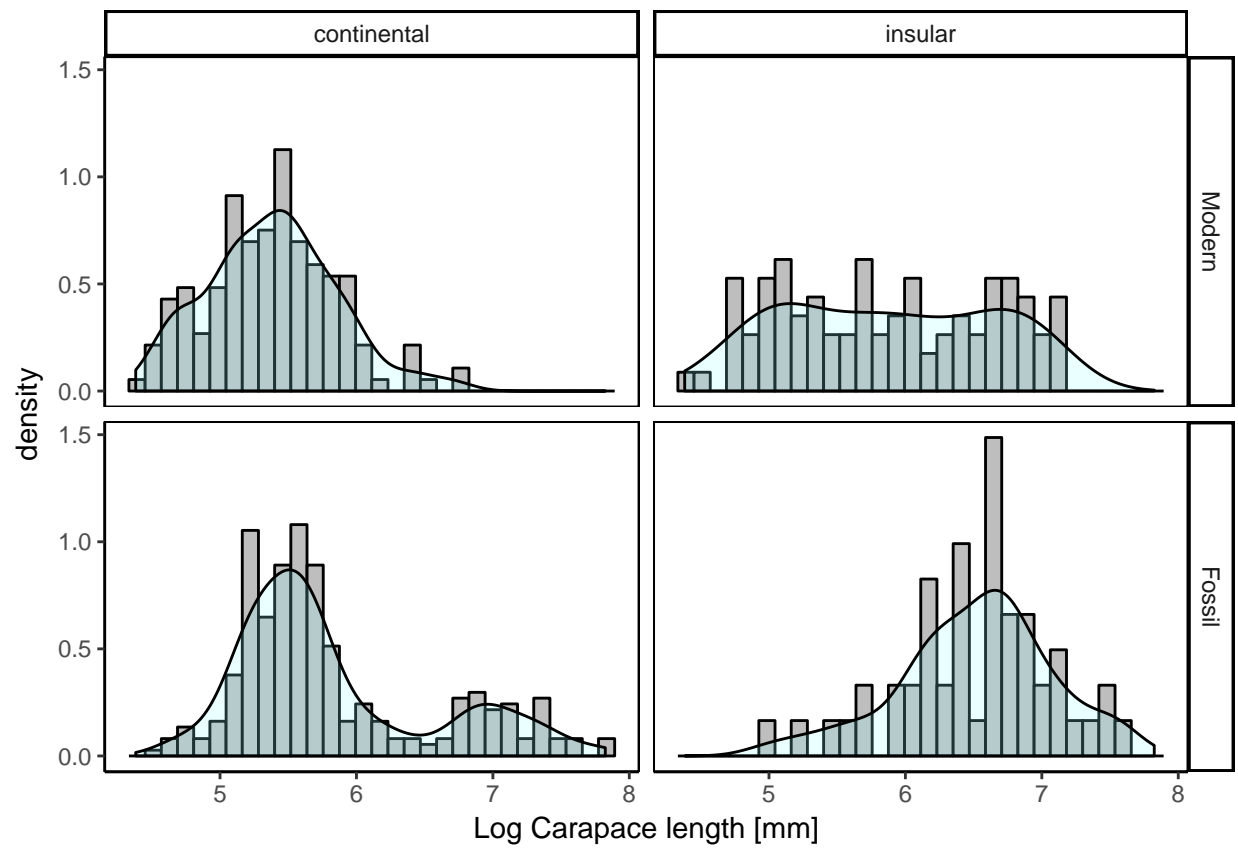


Figure 14: Distribution of body size data modern vs. fossil, continental vs. insular logtransformed.

continental vs. insular

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

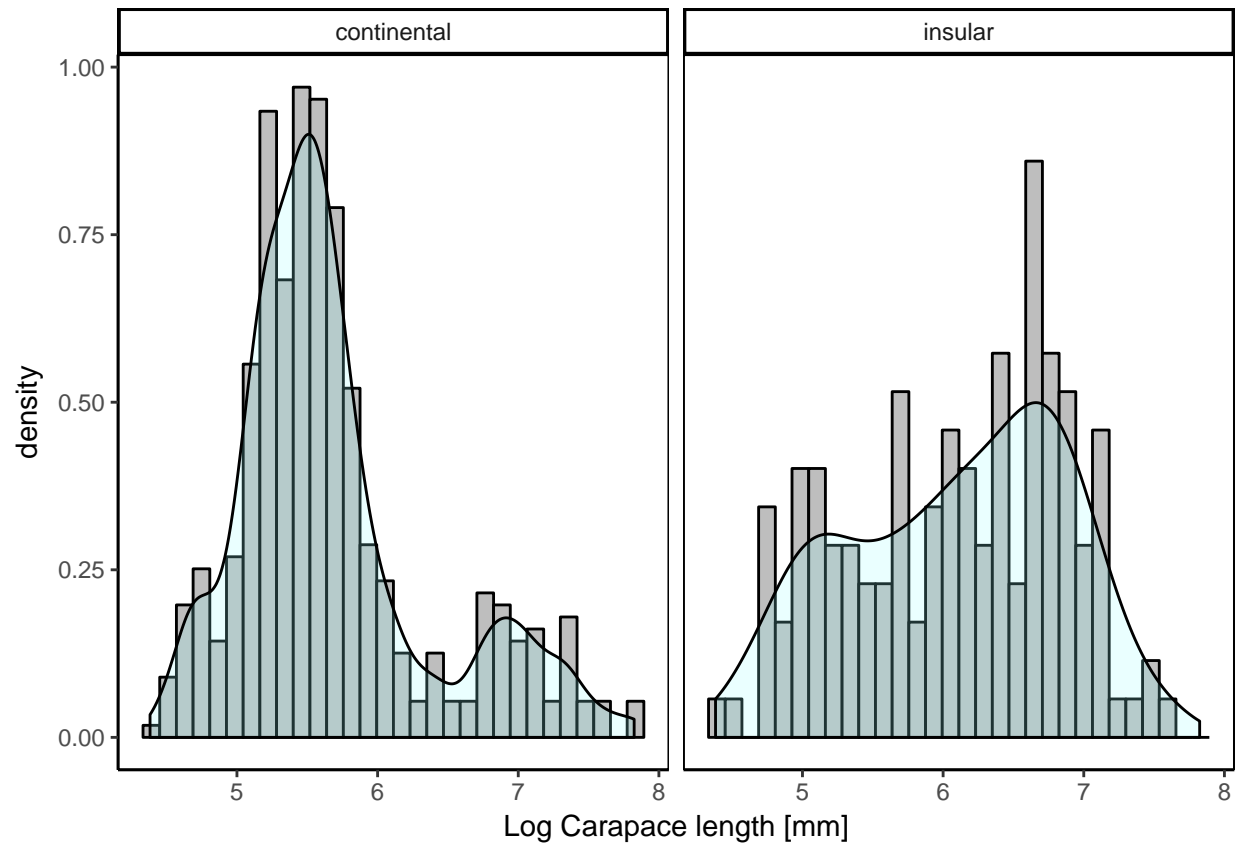


Figure 15: Distribution of body site data of continental (n) and insular(y) species, logtransformed.

continents

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

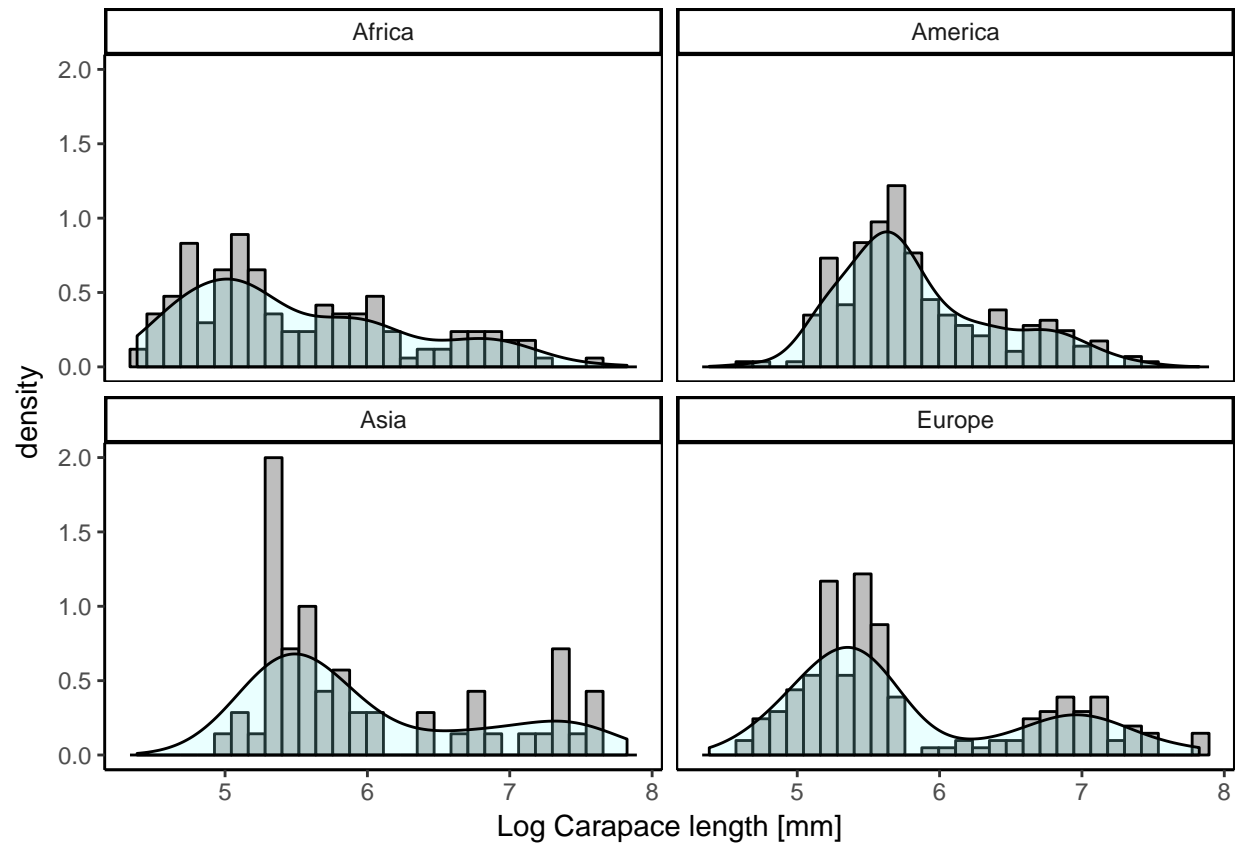


Figure 16: Distribution of body site data per continent, logtransformed.

Descriptive statistics

Table 7: General statistics of body size data: all, per time bin, insular and continental, per continent (all referring to CL: min, max, variance, mean, logmean, median, logmedian, skewness, logskewness, kurosis, logkurtosis)

nCL	min	max	var	mean	logm	med	logmed	skew	logsk	kurt	logku	Variable
616	80.00	2500	164537.80	437.2	2.5	270.5	2.4	2.14	0.69	8.00	2.73	all
253	80.00	1300	67485.50	330.3	2.4	242.0	2.4	1.83	0.58	5.87	2.69	Modern
49	102.44	1250	69690.66	445.9	2.6	334.7	2.5	1.20	0.24	3.61	2.56	Upper Pleistocene
53	132.00	1800	97910.83	387.1	2.5	292.9	2.5	3.03	1.52	12.24	5.55	Middle Pleistocene
57	107.80	2000	161948.82	463.5	2.5	263.0	2.4	1.74	0.73	5.76	2.40	Lower Pleistocene
31	118.90	2050	411224.51	555.2	2.5	194.9	2.3	1.31	0.93	3.12	2.11	Gelasian
21	90.00	1600	270535.82	610.6	2.6	428.0	2.6	1.00	0.14	2.50	1.99	Piacencian
26	176.00	2500	476162.71	955.2	2.9	857.5	2.9	1.11	-0.40	3.56	2.30	Zanclean
10	140.00	2100	602611.21	948.9	2.8	916.0	2.9	0.26	-0.22	1.49	1.29	Messinian
45	107.00	1540	175470.12	462.7	2.5	250.0	2.4	1.49	0.81	3.74	2.54	Tortonian
27	111.00	1500	126060.40	337.7	2.4	220.0	2.3	2.49	1.77	7.77	5.30	Serravallian
14	270.00	1600	230451.33	747.9	2.8	700.0	2.8	0.30	0.03	1.55	1.18	Langhian
30	113.00	1100	76288.76	406.8	2.5	302.4	2.5	1.27	0.45	3.45	2.26	Burdigalian/Aquitanian
253	80.00	1300	67485.50	330.3	2.4	242.0	2.4	1.83	0.58	5.87	2.69	Modern
363	90.00	2500	219004.66	511.7	2.6	285.6	2.5	1.83	0.68	6.11	2.42	Fossil
469	81.00	2500	157808.79	392.9	2.5	250.0	2.4	2.65	1.07	10.57	3.74	continental
147	80.00	2000	160834.35	578.5	2.6	500.0	2.7	1.02	-0.27	3.95	2.05	insular
157	81.00	830	17009.02	244.0	2.3	221.0	2.3	1.92	0.29	8.09	2.98	modern-con
96	80.00	1300	118641.09	471.5	2.6	353.0	2.5	0.82	0.01	2.47	1.77	modern-ins
312	90.00	2500	212116.79	467.9	2.5	270.0	2.4	2.11	0.96	7.25	2.96	fossil-con
51	150.00	2000	180825.40	780.0	2.8	750.0	2.9	1.11	-0.40	4.02	3.18	fossil-ins
142	80.00	2050	112417.26	347.7	2.4	193.5	2.3	2.10	0.68	7.97	2.48	Africa
242	102.44	1800	82209.71	415.0	2.5	302.2	2.5	1.92	0.75	6.79	2.91	America
59	150.00	2100	323123.20	585.5	2.6	280.0	2.4	1.43	0.85	3.61	2.24	Asia
173	107.00	2500	254222.84	491.2	2.5	245.0	2.4	1.86	0.81	6.30	2.34	Europe

nCL	min	max	var	mean	logm	med	logmed	skew	logsk	kurt	logku	Variable
-----	-----	-----	-----	------	------	-----	--------	------	-------	------	-------	----------

Boxplots

genera per time bins

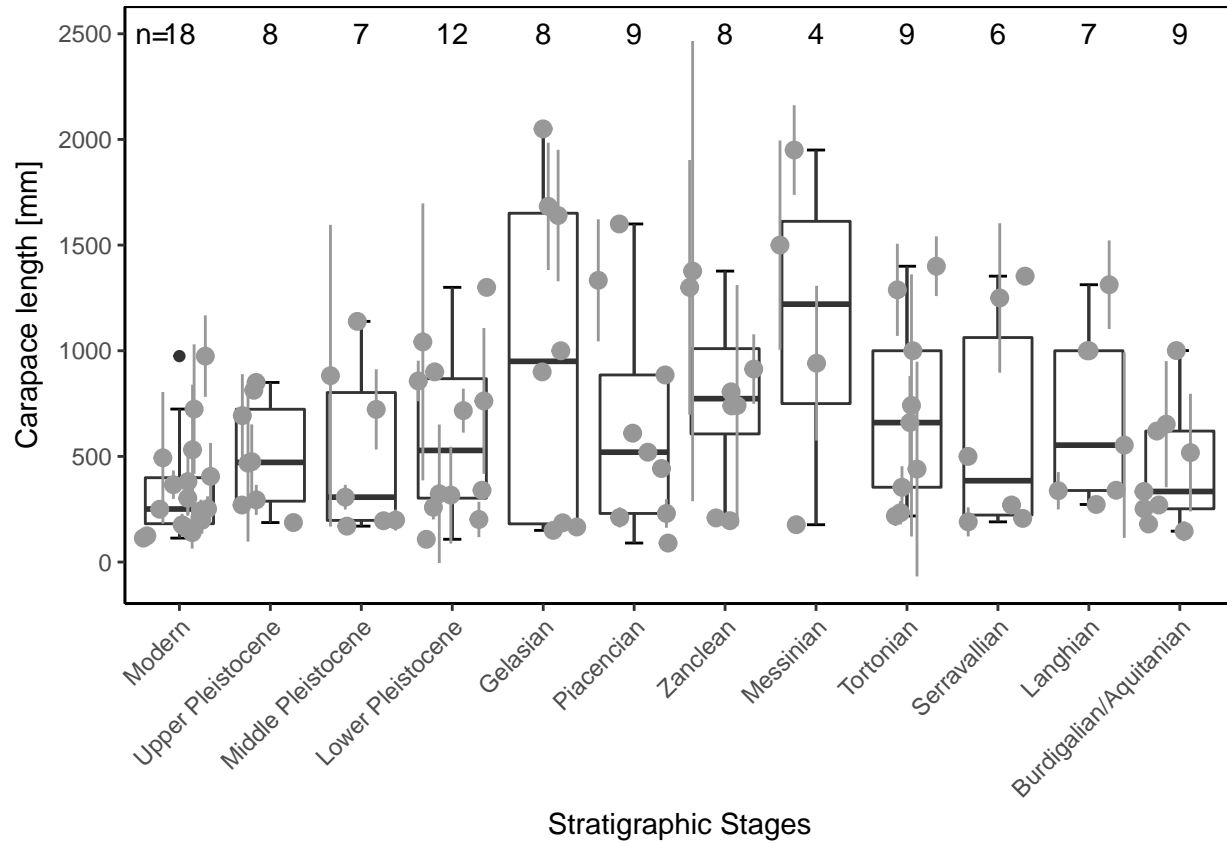


Figure 17: Boxplots of mean CL per time bin, including mean and sd CL for each genus (as pointrange).

```
## [1] "EpochBins" "Genus"      "GenusMean" "GenusSD"    "n"

## Multiple comparison test after Kruskal-Wallis
## p.value: 0.05
## Comparisons
##
##                                obs.dif critical.dif
## Modern-Upper Pleistocene      16.7916667    43.58276
## Modern-Middle Pleistocene     11.5238095    45.68715
## Modern-Lower Pleistocene      20.7500000    38.22461
## Modern-Gelasian              28.6666667    43.58276
## Modern-Piacencian             21.0000000    41.87296
```

## Modern-Zanclean	31.3541667	43.58276
## Modern-Messinian	40.1666667	56.69626
## Modern-Tortonian	28.2777778	41.87296
## Modern-Serravallian	18.5000000	48.35073
## Modern-Langhian	30.2380952	45.68715
## Modern-Burdigalian/Aquitania	9.8888889	41.87296
## Upper Pleistocene-Middle Pleistocene	5.2678571	53.08367
## Upper Pleistocene-Lower Pleistocene	3.9583333	46.81540
## Upper Pleistocene-Gelasian	11.8750000	51.28370
## Upper Pleistocene-Piacencian	4.2083333	49.83880
## Upper Pleistocene-Zanclean	14.5625000	51.28370
## Upper Pleistocene-Messinian	23.3750000	62.80945
## Upper Pleistocene-Tortonian	11.4861111	49.83880
## Upper Pleistocene-Serravallian	1.7083333	55.39273
## Upper Pleistocene-Langhian	13.4464286	53.08367
## Upper Pleistocene-Burdigalian/Aquitania	6.9027778	49.83880
## Middle Pleistocene-Lower Pleistocene	9.2261905	48.78053
## Middle Pleistocene-Gelasian	17.1428571	53.08367
## Middle Pleistocene-Piacencian	9.4761905	51.68911
## Middle Pleistocene-Zanclean	19.8303571	53.08367
## Middle Pleistocene-Messinian	28.6428571	64.28752
## Middle Pleistocene-Tortonian	16.7539683	51.68911
## Middle Pleistocene-Serravallian	6.9761905	57.06323
## Middle Pleistocene-Langhian	18.7142857	54.82458
## Middle Pleistocene-Burdigalian/Aquitania	1.6349206	51.68911
## Lower Pleistocene-Gelasian	7.9166667	46.81540
## Lower Pleistocene-Piacencian	0.2500000	45.22797
## Lower Pleistocene-Zanclean	10.6041667	46.81540
## Lower Pleistocene-Messinian	19.4166667	59.21731
## Lower Pleistocene-Tortonian	7.5277778	45.22797
## Lower Pleistocene-Serravallian	2.2500000	51.28370
## Lower Pleistocene-Langhian	9.4880952	48.78053
## Lower Pleistocene-Burdigalian/Aquitania	10.8611111	45.22797

## Gelasian-Piacencian	7.6666667	49.83880
## Gelasian-Zanclean	2.6875000	51.28370
## Gelasian-Messinian	11.5000000	62.80945
## Gelasian-Tortonian	0.3888889	49.83880
## Gelasian-Serravallian	10.1666667	55.39273
## Gelasian-Langhian	1.5714286	53.08367
## Gelasian-Burdigalian/Aquitania	18.7777778	49.83880
## Piacencian-Zanclean	10.3541667	49.83880
## Piacencian-Messinian	19.1666667	61.63534
## Piacencian-Tortonian	7.2777778	48.35073
## Piacencian-Serravallian	2.5000000	54.05776
## Piacencian-Langhian	9.2380952	51.68911
## Piacencian-Burdigalian/Aquitania	11.1111111	48.35073
## Zanclean-Messinian	8.8125000	62.80945
## Zanclean-Tortonian	3.0763889	49.83880
## Zanclean-Serravallian	12.8541667	55.39273
## Zanclean-Langhian	1.1160714	53.08367
## Zanclean-Burdigalian/Aquitania	21.4652778	49.83880
## Messinian-Tortonian	11.8888889	61.63534
## Messinian-Serravallian	21.6666667	66.20697
## Messinian-Langhian	9.9285714	64.28752
## Messinian-Burdigalian/Aquitania	30.2777778	61.63534
## Tortonian-Serravallian	9.7777778	54.05776
## Tortonian-Langhian	1.9603175	51.68911
## Tortonian-Burdigalian/Aquitania	18.3888889	48.35073
## Serravallian-Langhian	11.7380952	57.06323
## Serravallian-Burdigalian/Aquitania	8.6111111	54.05776
## Langhian-Burdigalian/Aquitania	20.3492063	51.68911
##	difference	
## Modern-Upper Pleistocene	FALSE	
## Modern-Middle Pleistocene	FALSE	
## Modern-Lower Pleistocene	FALSE	
## Modern-Gelasian	FALSE	

## Modern-Piacencian	FALSE
## Modern-Zanclean	FALSE
## Modern-Messinian	FALSE
## Modern-Tortonian	FALSE
## Modern-Serravallian	FALSE
## Modern-Langhian	FALSE
## Modern-Burdigalian/Aquitania	FALSE
## Upper Pleistocene-Middle Pleistocene	FALSE
## Upper Pleistocene-Lower Pleistocene	FALSE
## Upper Pleistocene-Gelasian	FALSE
## Upper Pleistocene-Piacencian	FALSE
## Upper Pleistocene-Zanclean	FALSE
## Upper Pleistocene-Messinian	FALSE
## Upper Pleistocene-Tortonian	FALSE
## Upper Pleistocene-Serravallian	FALSE
## Upper Pleistocene-Langhian	FALSE
## Upper Pleistocene-Burdigalian/Aquitania	FALSE
## Middle Pleistocene-Lower Pleistocene	FALSE
## Middle Pleistocene-Gelasian	FALSE
## Middle Pleistocene-Piacencian	FALSE
## Middle Pleistocene-Zanclean	FALSE
## Middle Pleistocene-Messinian	FALSE
## Middle Pleistocene-Tortonian	FALSE
## Middle Pleistocene-Serravallian	FALSE
## Middle Pleistocene-Langhian	FALSE
## Middle Pleistocene-Burdigalian/Aquitania	FALSE
## Lower Pleistocene-Gelasian	FALSE
## Lower Pleistocene-Piacencian	FALSE
## Lower Pleistocene-Zanclean	FALSE
## Lower Pleistocene-Messinian	FALSE
## Lower Pleistocene-Tortonian	FALSE
## Lower Pleistocene-Serravallian	FALSE
## Lower Pleistocene-Langhian	FALSE

## Lower Pleistocene-Burdigalian/Aquitania	FALSE
## Gelasian-Piacencian	FALSE
## Gelasian-Zanclean	FALSE
## Gelasian-Messinian	FALSE
## Gelasian-Tortonian	FALSE
## Gelasian-Serravallian	FALSE
## Gelasian-Langhian	FALSE
## Gelasian-Burdigalian/Aquitania	FALSE
## Piacencian-Zanclean	FALSE
## Piacencian-Messinian	FALSE
## Piacencian-Tortonian	FALSE
## Piacencian-Serravallian	FALSE
## Piacencian-Langhian	FALSE
## Piacencian-Burdigalian/Aquitania	FALSE
## Zanclean-Messinian	FALSE
## Zanclean-Tortonian	FALSE
## Zanclean-Serravallian	FALSE
## Zanclean-Langhian	FALSE
## Zanclean-Burdigalian/Aquitania	FALSE
## Messinian-Tortonian	FALSE
## Messinian-Serravallian	FALSE
## Messinian-Langhian	FALSE
## Messinian-Burdigalian/Aquitania	FALSE
## Tortonian-Serravallian	FALSE
## Tortonian-Langhian	FALSE
## Tortonian-Burdigalian/Aquitania	FALSE
## Serravallian-Langhian	FALSE
## Serravallian-Burdigalian/Aquitania	FALSE
## Langhian-Burdigalian/Aquitania	FALSE
## [1] "bin" "Taxon" "CL" "extraCL"	
## [5] "PL" "size" "estimated" "Age"	
## [9] "Island" "Continent" "Genus" "EpochBins"	

```

## [13] "Stages"          "MeanBins"          "nIndividuals" "nSpecies"
## [17] "nGenera"

## Multiple comparison test after Kruskal-Wallis
## p.value: 0.05
## Comparisons
##
##                                obs.dif critical.dif
## Modern-Upper Pleistocene      116.987013    93.54915
## Modern-Middle Pleistocene      80.140652    90.54349
## Modern-Lower Pleistocene       66.123604    87.87753
## Modern-Gelasian               1.627566   114.05459
## Modern-Piacencian             113.296537   136.11314
## Modern-Zanclean               205.945804   123.43828
## Modern-Messinian             137.122727   193.24680
## Modern-Tortonian              61.739394    96.96976
## Modern-Serravallian           21.764310   121.34770
## Modern-Langhian              202.487013   164.56067
## Modern-Burdigalian/Aquitania  70.472727   115.73561
## Upper Pleistocene-Middle Pleistocene 36.846361   118.78423
## Upper Pleistocene-Lower Pleistocene 50.863409   116.76486
## Upper Pleistocene-Gelasian    115.359447   137.55006
## Upper Pleistocene-Piacencian    3.690476   156.32773
## Upper Pleistocene-Zanclean     88.958791   145.42551
## Upper Pleistocene-Messinian    20.135714   207.98052
## Upper Pleistocene-Tortonian    55.247619   123.75260
## Upper Pleistocene-Serravallian 138.751323   143.65527
## Upper Pleistocene-Langhian     85.500000   181.63641
## Upper Pleistocene-Burdigalian/Aquitania 46.514286   138.94713
## Middle Pleistocene-Lower Pleistocene 14.017047   114.37094
## Middle Pleistocene-Gelasian   78.513086   135.52379
## Middle Pleistocene-Piacencian  33.155885   154.54785
## Middle Pleistocene-Zanclean    125.805152   143.51048
## Middle Pleistocene-Messinian   56.982075   206.64601

```

## Middle Pleistocene-Tortonian	18.401258	121.49644
## Middle Pleistocene-Serravallian	101.904962	141.71632
## Middle Pleistocene-Langhian	122.346361	180.10681
## Middle Pleistocene-Burdigalian/Aquitania	9.667925	136.94153
## Lower Pleistocene-Gelasian	64.496038	133.75738
## Lower Pleistocene-Piacencian	47.172932	153.00123
## Lower Pleistocene-Zanclean	139.822200	141.84356
## Lower Pleistocene-Messinian	70.999123	205.49188
## Lower Pleistocene-Tortonian	4.384211	119.52289
## Lower Pleistocene-Serravallian	87.887914	140.02804
## Lower Pleistocene-Langhian	136.363409	178.78144
## Lower Pleistocene-Burdigalian/Aquitania	4.349123	135.19364
## Gelasian-Piacencian	111.668971	169.39706
## Gelasian-Zanclean	204.318238	159.39129
## Gelasian-Messinian	135.495161	217.97454
## Gelasian-Tortonian	60.111828	139.89893
## Gelasian-Serravallian	23.391876	157.77782
## Gelasian-Langhian	200.859447	192.99946
## Gelasian-Burdigalian/Aquitania	68.845161	153.50345
## Piacencian-Zanclean	92.649267	175.85199
## Piacencian-Messinian	23.826190	230.28513
## Piacencian-Tortonian	51.557143	158.39839
## Piacencian-Serravallian	135.060847	174.39088
## Piacencian-Langhian	89.190476	206.80215
## Piacencian-Burdigalian/Aquitania	42.823810	170.53342
## Zanclean-Messinian	68.823077	223.02794
## Zanclean-Tortonian	144.206410	147.64914
## Zanclean-Serravallian	227.710114	164.68880
## Zanclean-Langhian	3.458791	198.68908
## Zanclean-Burdigalian/Aquitania	135.473077	160.59847
## Messinian-Tortonian	75.383333	209.54137
## Messinian-Serravallian	158.887037	221.87771
## Messinian-Langhian	65.364286	248.16258

## Messinian-Burdigalian/Aquitania	66.650000	218.85882
## Tortonian-Serravallian	83.503704	145.90588
## Tortonian-Langhian	140.747619	183.42158
## Tortonian-Burdigalian/Aquitania	8.733333	141.27276
## Serravallian-Langhian	224.251323	197.39708
## Serravallian-Burdigalian/Aquitania	92.237037	158.99725
## Langhian-Burdigalian/Aquitania	132.014286	193.99761
##	difference	
## Modern-Upper Pleistocene	TRUE	
## Modern-Middle Pleistocene	FALSE	
## Modern-Lower Pleistocene	FALSE	
## Modern-Gelasian	FALSE	
## Modern-Piacencian	FALSE	
## Modern-Zanclean	TRUE	
## Modern-Messinian	FALSE	
## Modern-Tortonian	FALSE	
## Modern-Serravallian	FALSE	
## Modern-Langhian	TRUE	
## Modern-Burdigalian/Aquitania	FALSE	
## Upper Pleistocene-Middle Pleistocene	FALSE	
## Upper Pleistocene-Lower Pleistocene	FALSE	
## Upper Pleistocene-Gelasian	FALSE	
## Upper Pleistocene-Piacencian	FALSE	
## Upper Pleistocene-Zanclean	FALSE	
## Upper Pleistocene-Messinian	FALSE	
## Upper Pleistocene-Tortonian	FALSE	
## Upper Pleistocene-Serravallian	FALSE	
## Upper Pleistocene-Langhian	FALSE	
## Upper Pleistocene-Burdigalian/Aquitania	FALSE	
## Middle Pleistocene-Lower Pleistocene	FALSE	
## Middle Pleistocene-Gelasian	FALSE	
## Middle Pleistocene-Piacencian	FALSE	
## Middle Pleistocene-Zanclean	FALSE	

## Middle Pleistocene-Messinian	FALSE
## Middle Pleistocene-Tortonian	FALSE
## Middle Pleistocene-Serravallian	FALSE
## Middle Pleistocene-Langhian	FALSE
## Middle Pleistocene-Burdigalian/Aquitania	FALSE
## Lower Pleistocene-Gelasian	FALSE
## Lower Pleistocene-Piacencian	FALSE
## Lower Pleistocene-Zanclean	FALSE
## Lower Pleistocene-Messinian	FALSE
## Lower Pleistocene-Tortonian	FALSE
## Lower Pleistocene-Serravallian	FALSE
## Lower Pleistocene-Langhian	FALSE
## Lower Pleistocene-Burdigalian/Aquitania	FALSE
## Gelasian-Piacencian	FALSE
## Gelasian-Zanclean	TRUE
## Gelasian-Messinian	FALSE
## Gelasian-Tortonian	FALSE
## Gelasian-Serravallian	FALSE
## Gelasian-Langhian	TRUE
## Gelasian-Burdigalian/Aquitania	FALSE
## Piacencian-Zanclean	FALSE
## Piacencian-Messinian	FALSE
## Piacencian-Tortonian	FALSE
## Piacencian-Serravallian	FALSE
## Piacencian-Langhian	FALSE
## Piacencian-Burdigalian/Aquitania	FALSE
## Zanclean-Messinian	FALSE
## Zanclean-Tortonian	FALSE
## Zanclean-Serravallian	TRUE
## Zanclean-Langhian	FALSE
## Zanclean-Burdigalian/Aquitania	FALSE
## Messinian-Tortonian	FALSE
## Messinian-Serravallian	FALSE

```

## Messinian-Langhian                                FALSE
## Messinian-Burdigalian/Aquitania                    FALSE
## Tortonian-Serravallian                             FALSE
## Tortonian-Langhian                                 FALSE
## Tortonian-Burdigalian/Aquitania                    FALSE
## Serravallian-Langhian                              TRUE
## Serravallian-Burdigalian/Aquitania                 FALSE
## Langhian-Burdigalian/Aquitania                     FALSE

##

## Kruskal-Wallis rank sum test

##

## data:  list(M, UPle, MPle, LPle, G, Pia, Z, Mess, Tort, S, L, BA)
## Kruskal-Wallis chi-squared = 71.441, df = 11, p-value = 6.496e-11

##

## Wilcoxon rank sum test with continuity correction

##

## data:  M and UPle
## W = 3853.5, p-value = 1.392e-05
## alternative hypothesis: true location shift is less than 0

## [1] TRUE

##

## Wilcoxon rank sum test with continuity correction

##

## data:  UPle and MPle
## W = 1560, p-value = 0.08043
## alternative hypothesis: true location shift is not equal to 0

## [1] FALSE

##

## Wilcoxon rank sum test with continuity correction

##

## data:  MPle and LPle

```

```

## W = 1643.5, p-value = 0.428
## alternative hypothesis: true location shift is not equal to 0
## [1] FALSE

##
## Wilcoxon rank sum test with continuity correction
##
## data:  LPle and G
## W = 1124, p-value = 0.01802
## alternative hypothesis: true location shift is greater than 0
## [1] TRUE

## Warning in wilcox.test.default(G, Pia, paired = FALSE): cannot compute
## exact p-value with ties

##
## Wilcoxon rank sum test with continuity correction
##
## data:  G and Pia
## W = 246, p-value = 0.1406
## alternative hypothesis: true location shift is not equal to 0
## [1] FALSE

## Warning in wilcox.test.default(Pia, Z, paired = FALSE): cannot compute
## exact p-value with ties

##
## Wilcoxon rank sum test with continuity correction
##
## data:  Pia and Z
## W = 185.5, p-value = 0.06256
## alternative hypothesis: true location shift is not equal to 0
## [1] FALSE

## Warning in wilcox.test.default(Z, Mess, paired = FALSE): cannot compute
## exact p-value with ties

```

```

##
## Wilcoxon rank sum test with continuity correction
##
## data:  Z and Mess
## W = 134.5, p-value = 0.8876
## alternative hypothesis: true location shift is not equal to 0
## [1] FALSE

## Warning in wilcox.test.default(Mess, Tort, paired = FALSE): cannot compute
## exact p-value with ties

##
## Wilcoxon rank sum test with continuity correction
##
## data:  Mess and Tort
## W = 274.5, p-value = 0.2844
## alternative hypothesis: true location shift is not equal to 0
## [1] FALSE

## Warning in wilcox.test.default(Tort, S, paired = FALSE, alternative = "g"):
## cannot compute exact p-value with ties

##
## Wilcoxon rank sum test with continuity correction
##
## data:  Tort and S
## W = 810, p-value = 0.009363
## alternative hypothesis: true location shift is greater than 0
## [1] TRUE

## Warning in wilcox.test.default(S, L, paired = FALSE, alternative = "l"):
## cannot compute exact p-value with ties

##
## Wilcoxon rank sum test with continuity correction
##

```

```

## data:  S and L
## W = 45, p-value = 3.952e-05
## alternative hypothesis: true location shift is less than 0

## [1] TRUE

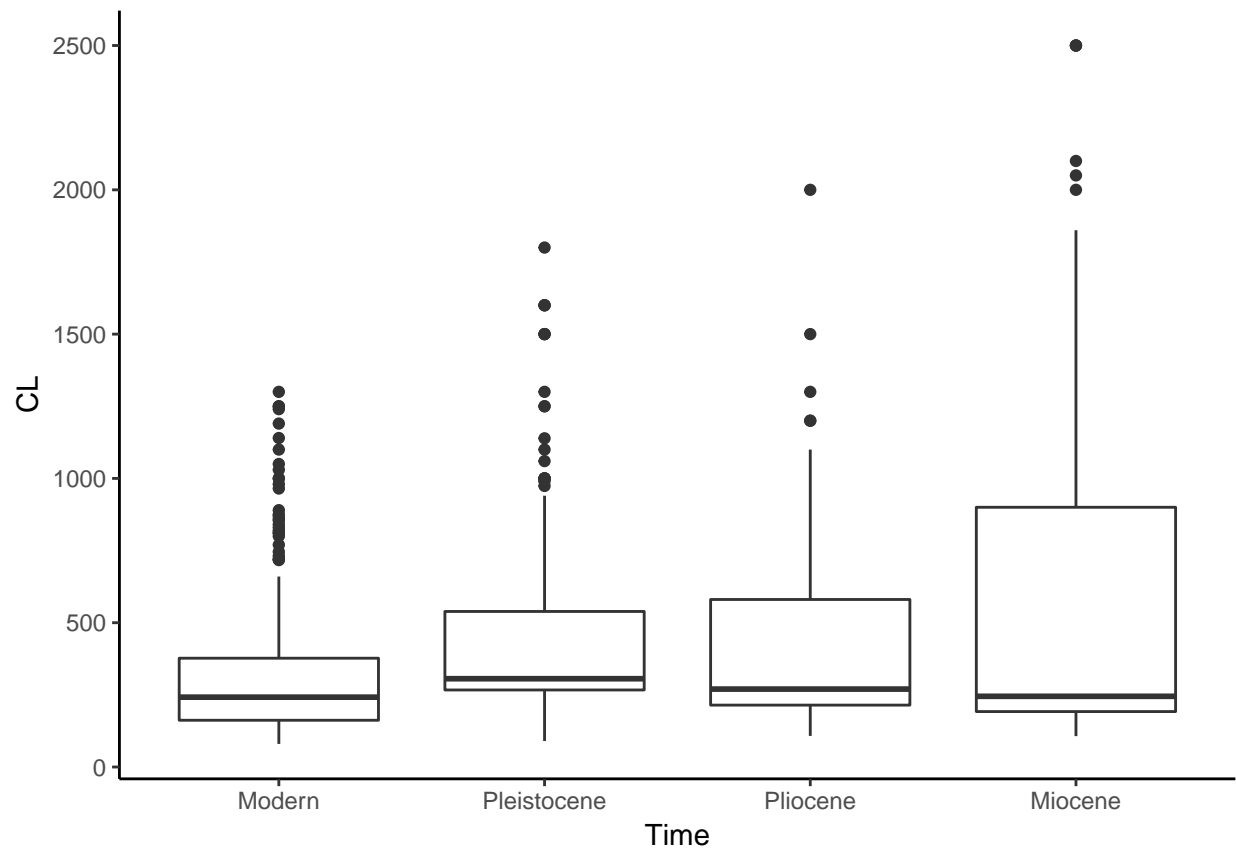
## Warning in wilcox.test.default(L, BA, paired = FALSE, alternative = "g"):
## cannot compute exact p-value with ties

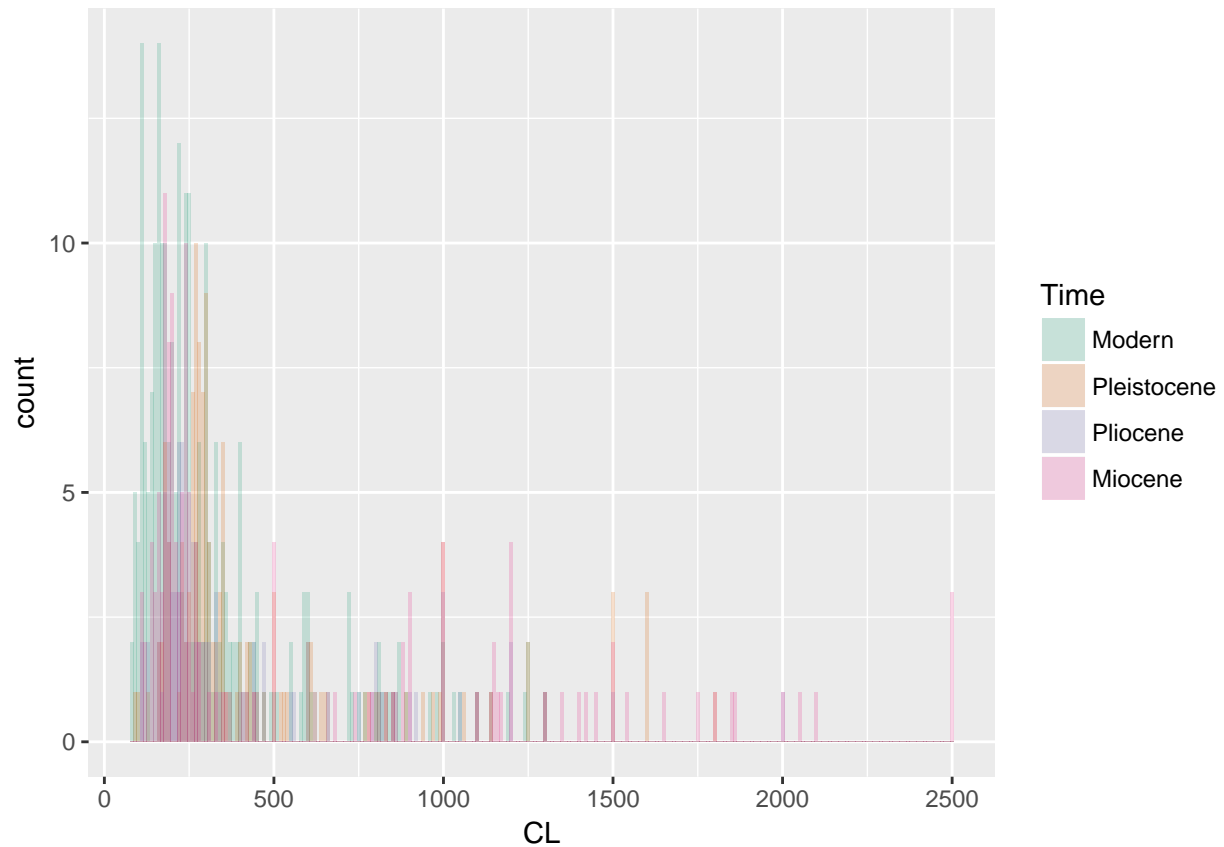
##
## Wilcoxon rank sum test with continuity correction
##
## data:  L and BA
## W = 311, p-value = 0.005639
## alternative hypothesis: true location shift is greater than 0

## [1] TRUE

```

lineage	pvalue	Bonferroni
M and UPle	0.0000139	0.0001531
S and L	0.0000395	0.0004347
L and BA	0.0056389	0.0620282
Tort and S	0.0093632	0.1029949
LPle and G	0.0180154	0.1981690
Pia and Z	0.0625644	0.6882088
UPle and MPle	0.0804319	0.8847504
G and Pia	0.1405871	1.0000000
Mess and Tort	0.2844360	1.0000000
MPle and LPle	0.4279860	1.0000000
Z and Mess	0.8876030	1.0000000





```
##
##  Kruskal-Wallis rank sum test
##
## data:  list(Modern, Plei, Plio, Mio)
## Kruskal-Wallis chi-squared = 37.764, df = 3, p-value = 3.172e-08

## [1] "EpochBins"      "bin"             "Taxon"           "CL"
## [5] "extraCL"         "PL"              "size"            "estimated"
## [9] "Age"             "Island"          "Continent"       "Genus"
## [13] "Stages"          "MeanBins"        "nIndividuals"    "nSpecies"
## [17] "nGenera"         "Time"

## Multiple comparison test after Kruskal-Wallis
## p.value: 0.05
## Comparisons

##               obs.dif critical.dif difference
## Modern-Pleistocene 110.904114    49.80480      TRUE
```

## Modern-Pliocene	67.623302	58.35513	TRUE
## Modern-Miocene	64.510137	49.57182	TRUE
## Pleistocene-Pliocene	43.280812	64.36704	FALSE
## Pleistocene-Miocene	46.393977	56.52575	FALSE
## Pliocene-Miocene	3.113165	64.18694	FALSE

continental vs. insular per time bin

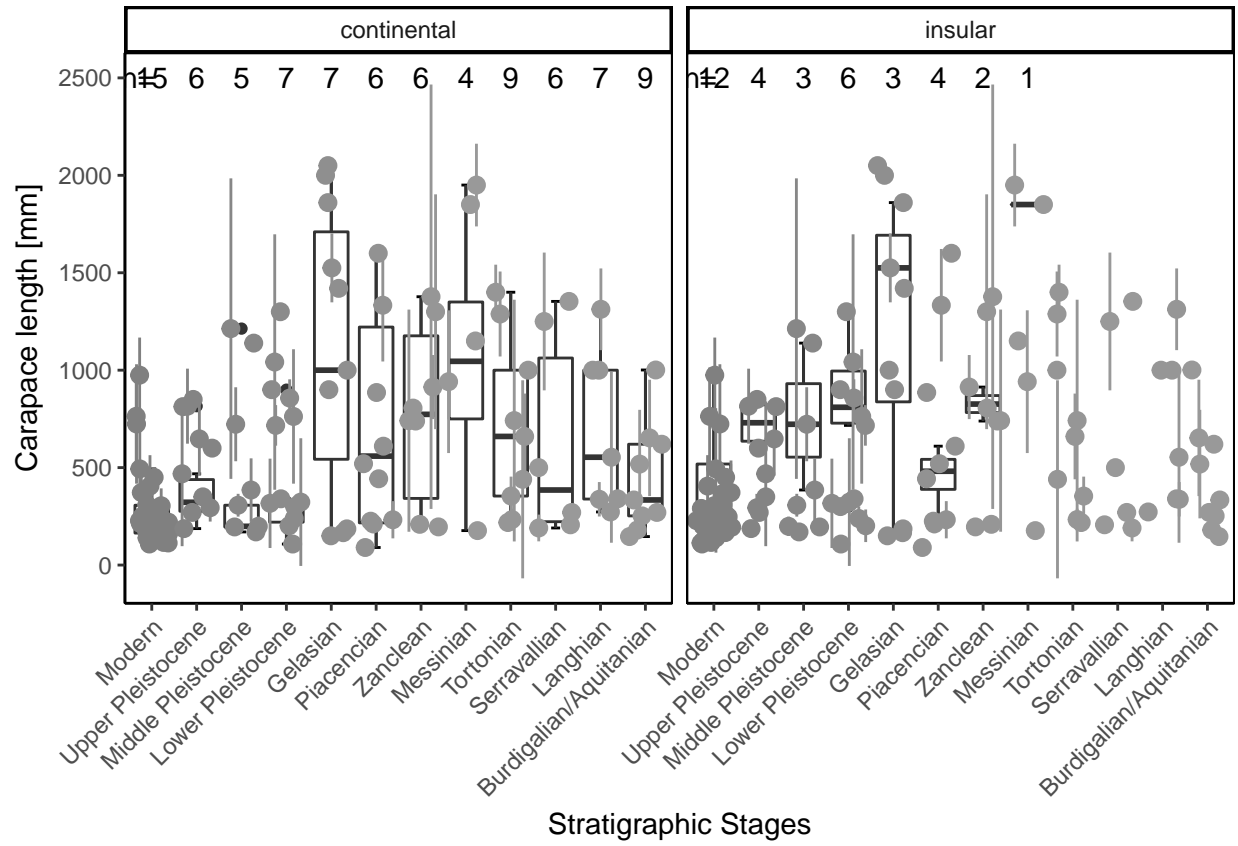


Figure 18: Boxplots of each genus per time bin, continental vs. insular species.

fossil vs. modern

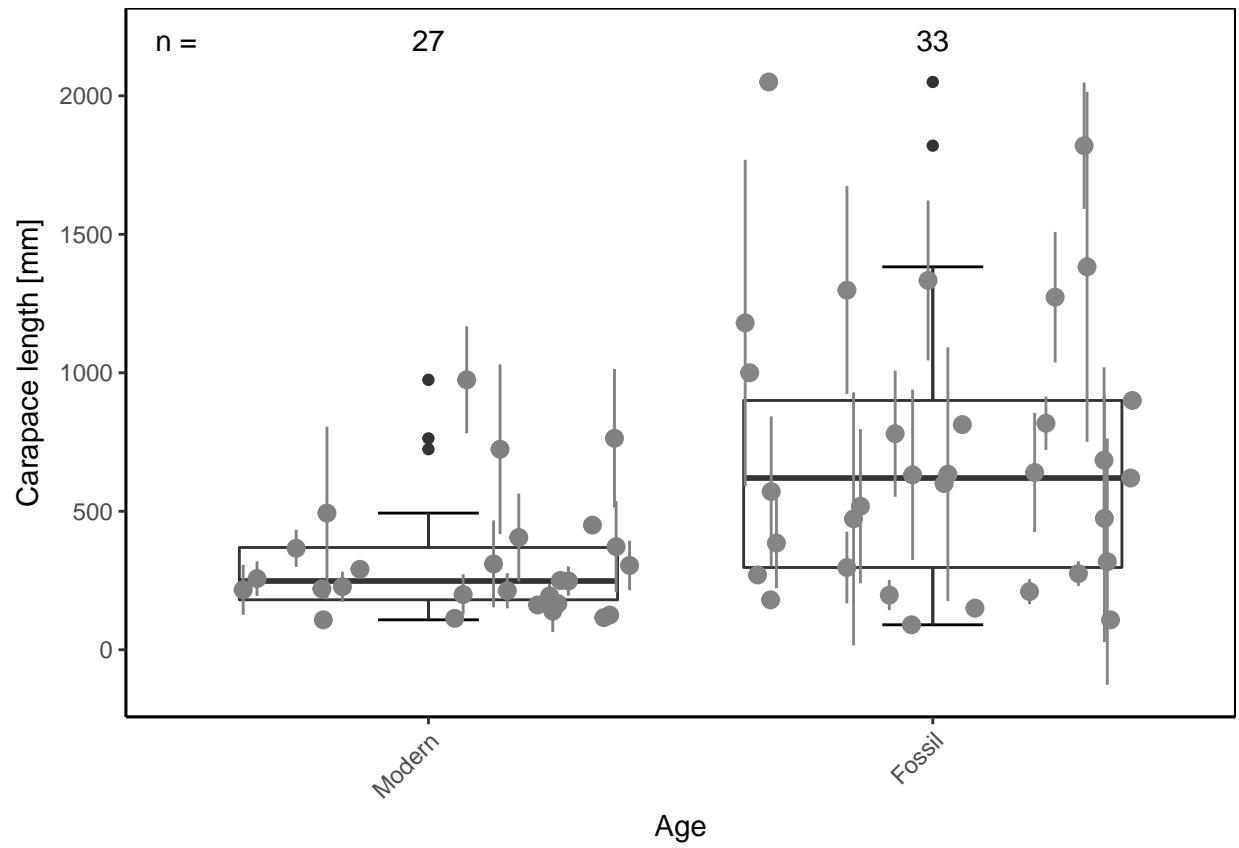
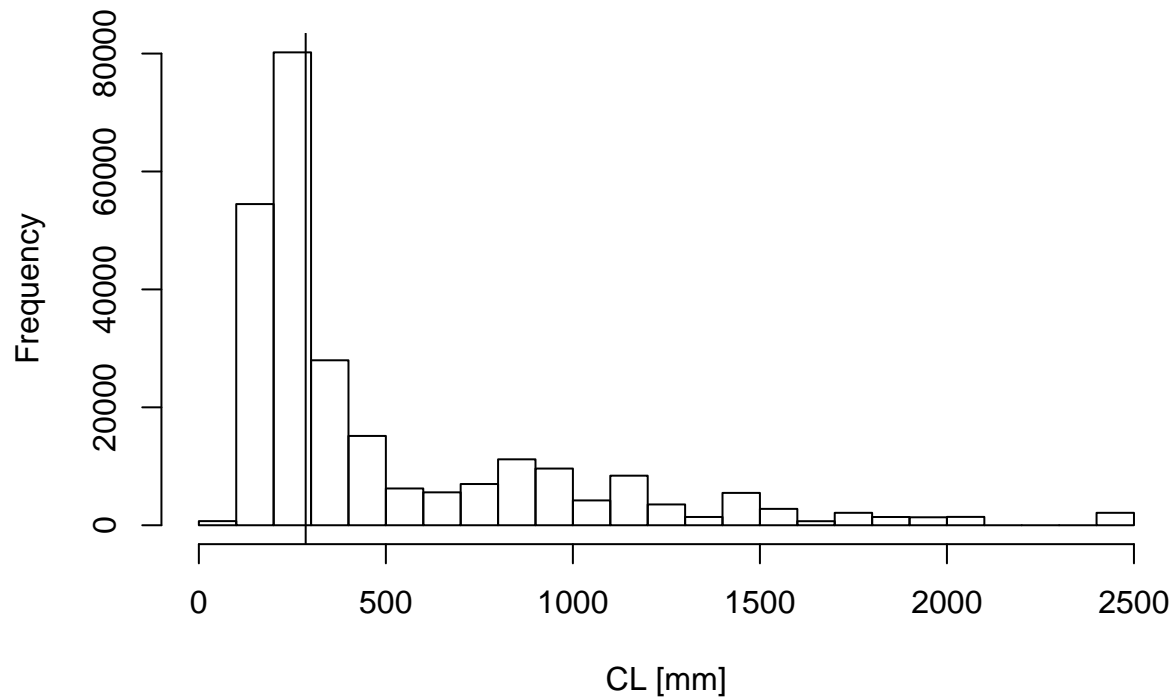


Figure 19: Boxplots fossil vs. modern.

Fossil, random sampling



```
## [1] 330.3495
```

```
## [1] 498.133
```

```
##
```

```
## Wilcoxon rank sum test with continuity correction
```

```
##
```

```
## data: Modern and Fossil
```

```
## W = 23361, p-value = 1.431e-07
```

```
## alternative hypothesis: true location shift is less than 0
```

Wilcoxon Rank Sum Test (unpaired data):

modern < fossil ($P = 1.430602 \times 10^{-7}$)

fossil vs. modern, continental vs. insular

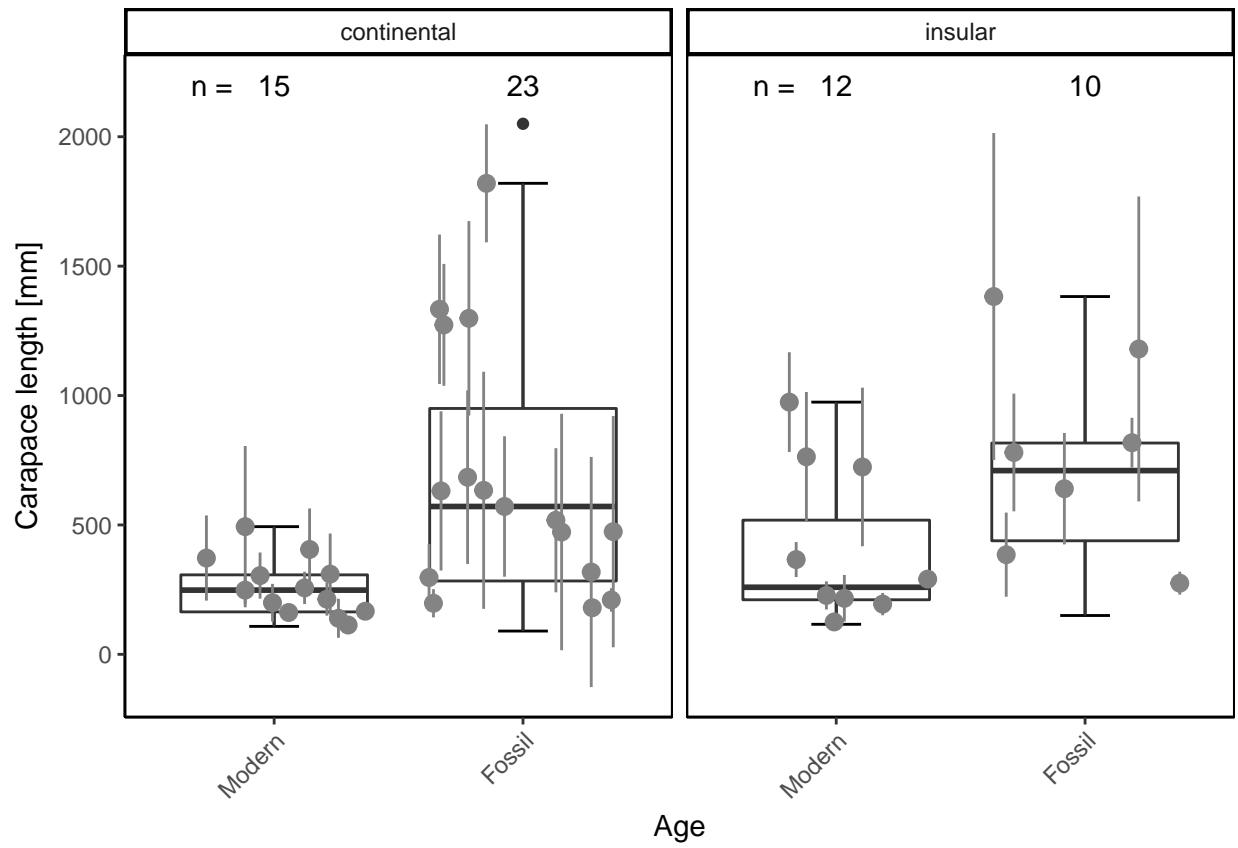
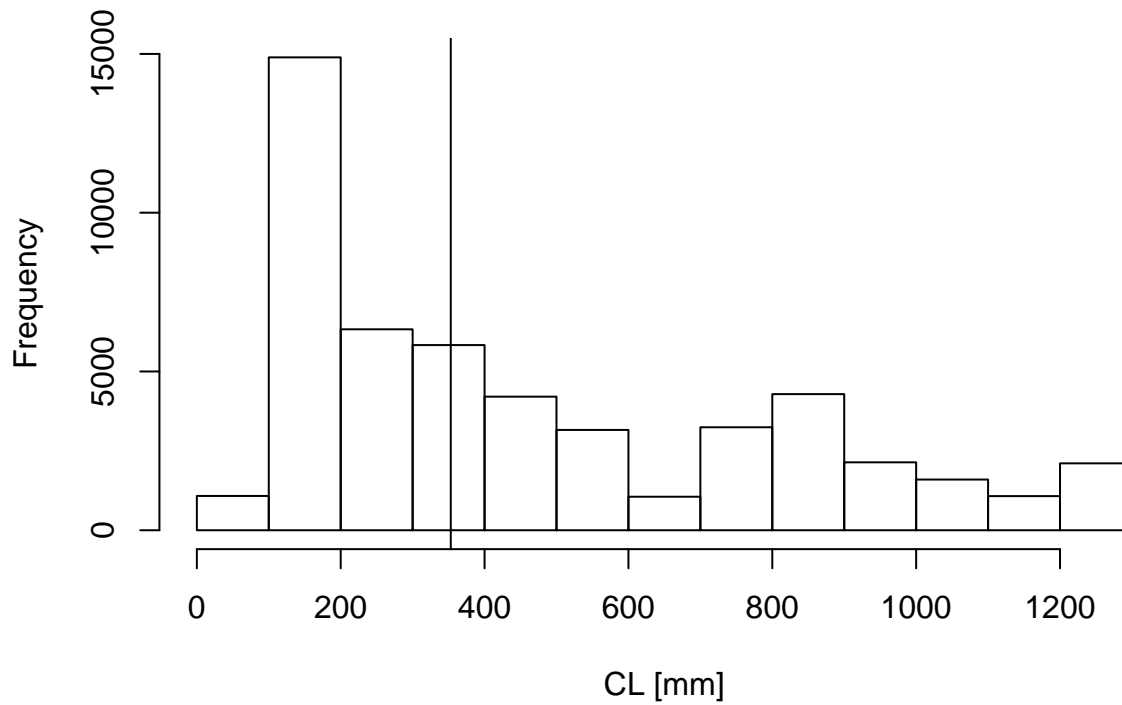


Figure 20: Boxplots fossil vs. modern, continental vs. insular species.

[1] 51

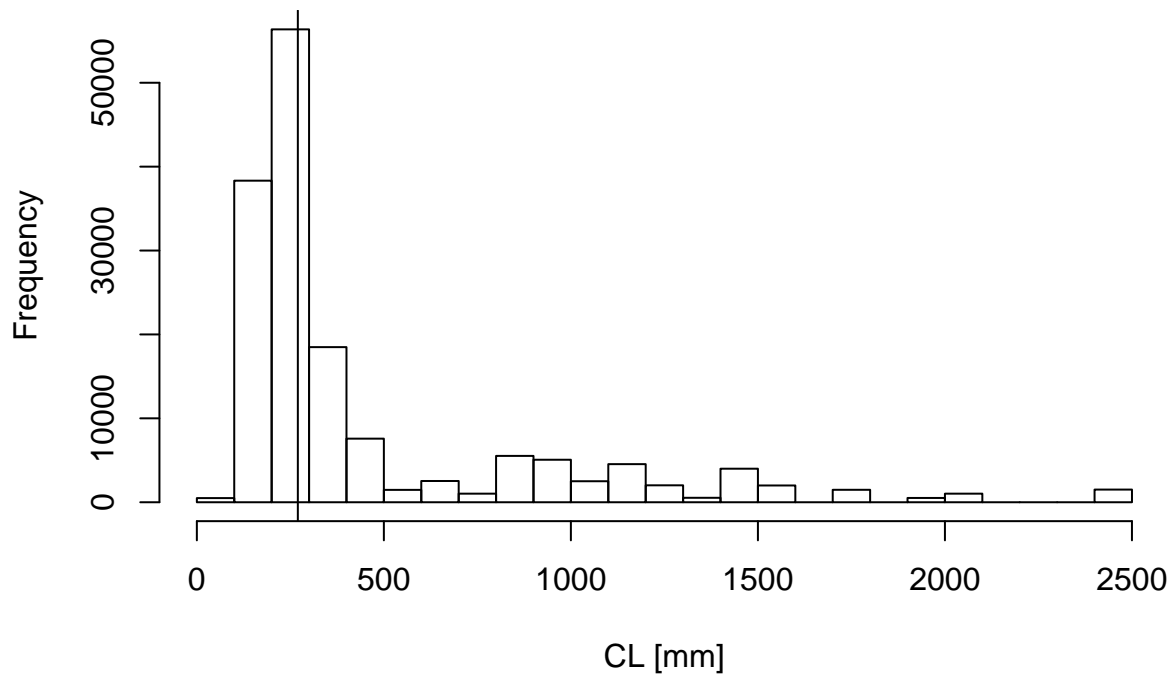
[1] 51

Modern, insular, random sampling



```
##  
## Wilcoxon rank sum test with continuity correction  
##  
## data: ModernIsland and FossilIsland  
## W = 601, p-value = 1.443e-06  
## alternative hypothesis: true location shift is less than 0  
  
## [1] 157  
  
## [1] 157
```

Fossil, continental, random sampling



```
##
## Wilcoxon rank sum test with continuity correction
##
## data: ModernCon and FossilCon
## W = 8306.5, p-value = 2.948e-07
## alternative hypothesis: true location shift is less than 0
```

Wilcoxon Rank Sum Test (unpaired data):

modern continental < fossil continental ($P = 2.9475076 \times 10^{-7}$)

modern insular < fossil insular ($P = 1.4430889 \times 10^{-6}$)

continental vs. insular

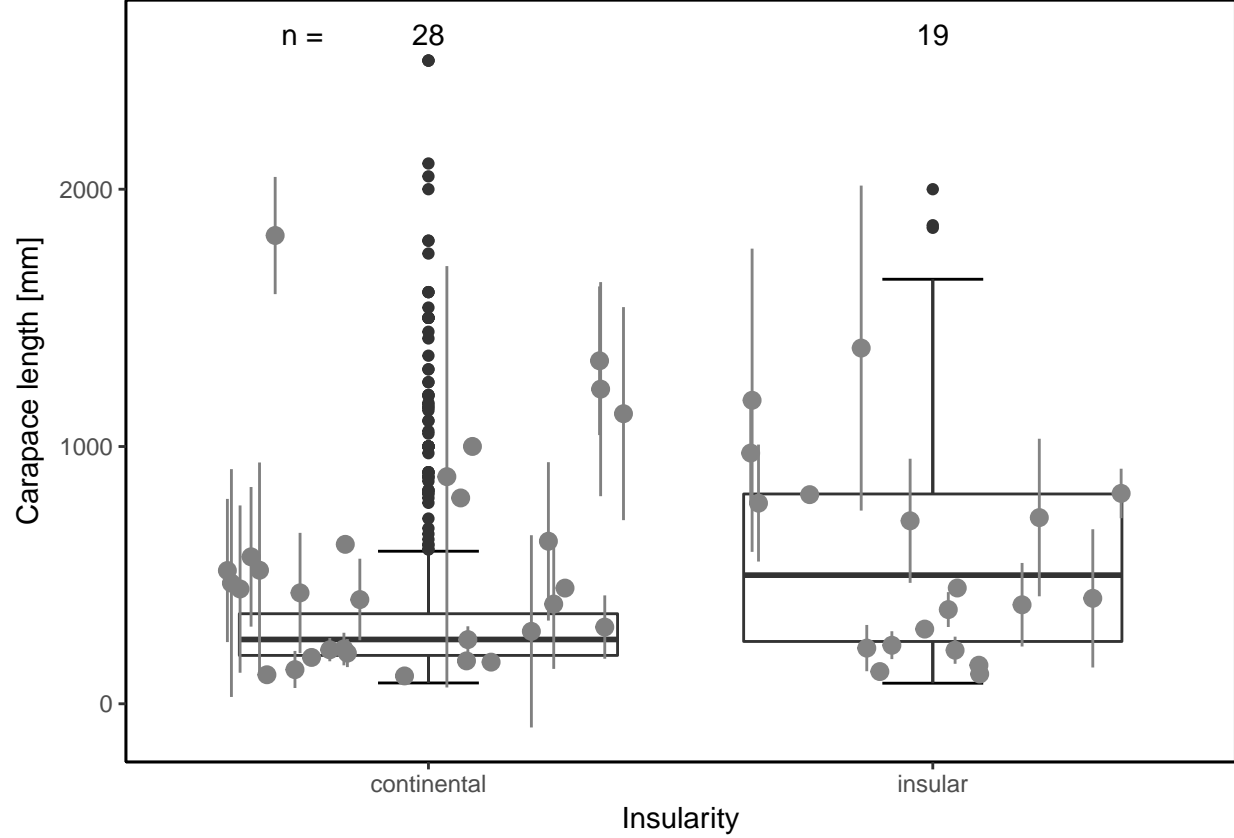
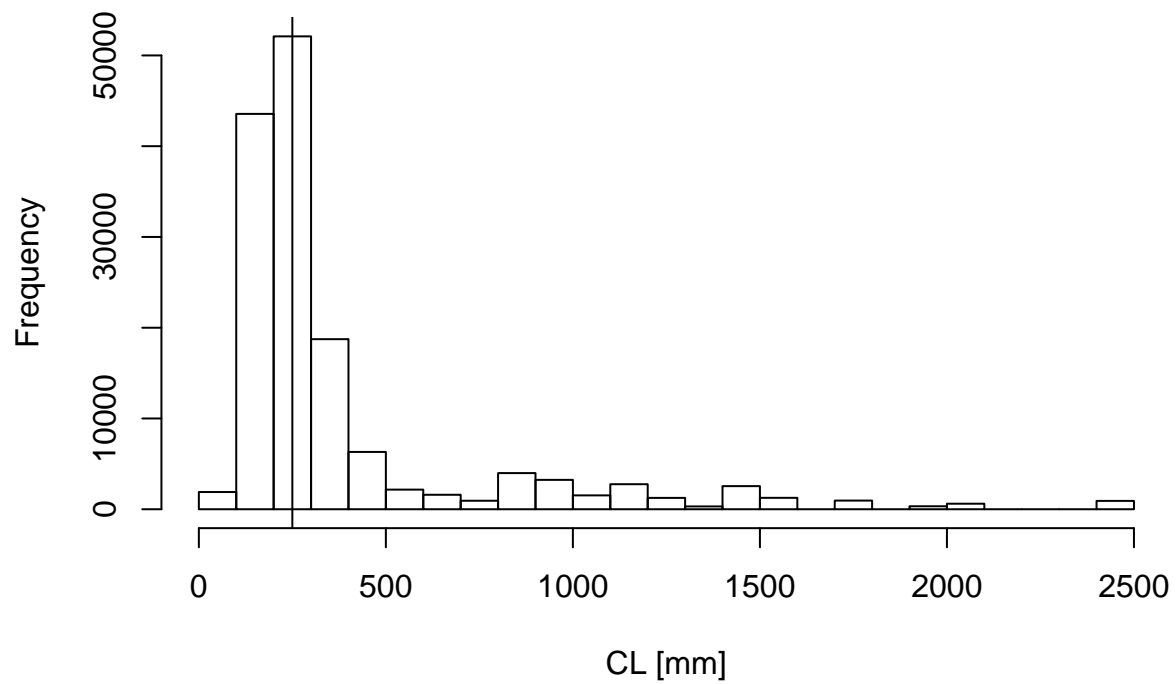


Figure 21: Boxplot continental vs. insular, genera summarised

[1] 147

[1] 147

Continental, random sampling



```
##  
## Wilcoxon rank sum test with continuity correction  
##  
## data: Insular and Continental  
## W = 14826, p-value = 1.724e-08  
## alternative hypothesis: true location shift is greater than 0
```

Wilcoxon Rank Sum Test (unpaired data):

continental < insular ($P = 1.7235087 \times 10^{-8}$)

continental vs. insular per time bin

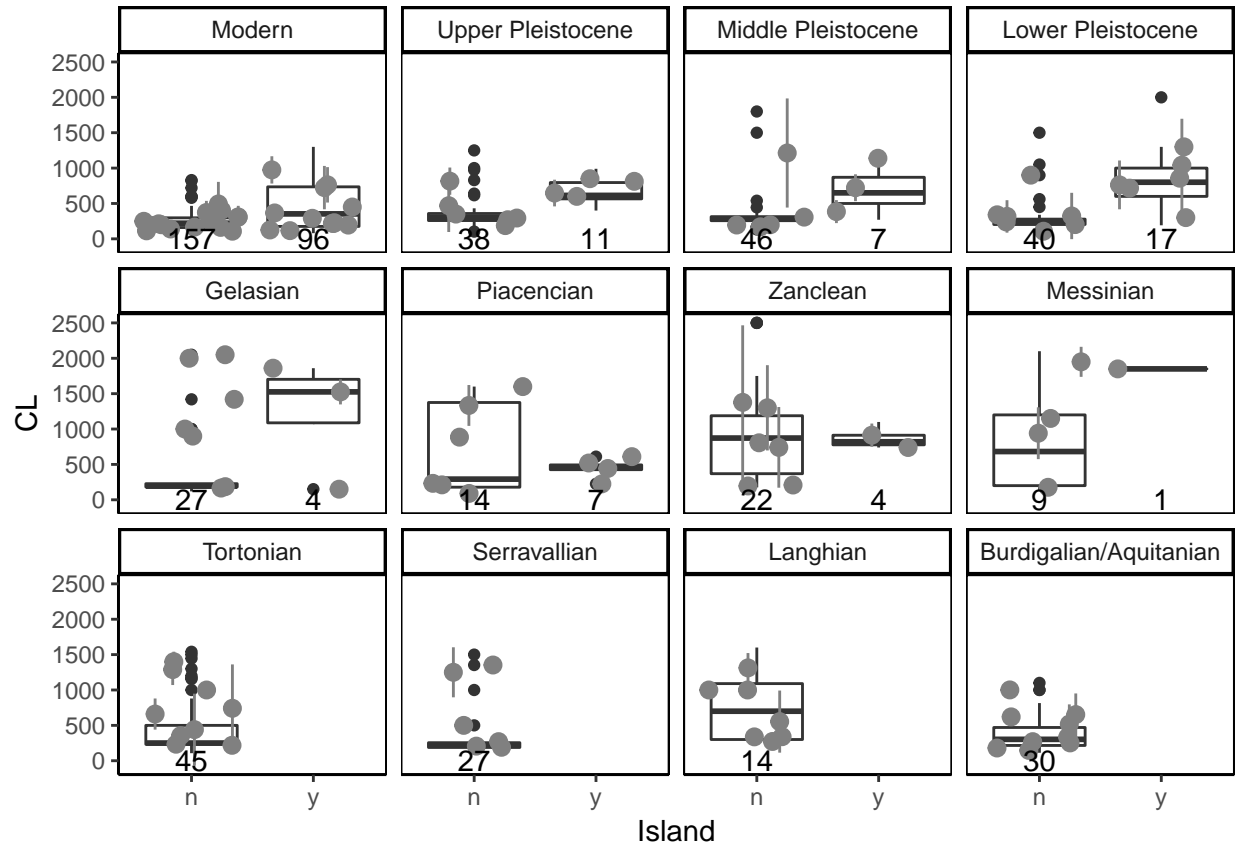


Figure 22: Boxplot continental vs. insular, genera summarised

Multiple comparison test after Kruskal-Wallis			0.05
	obs.dif	critical.dif	difference
Africa-America	108.957339	49.63331	TRUE
Africa-Asia	118.618286	72.72560	TRUE
Africa-Europe	58.612310	53.16766	TRUE
America-Asia	9.660947	68.17247	FALSE
America-Europe	50.345029	46.74690	TRUE
Asia-Europe	60.005976	70.78714	FALSE

continents

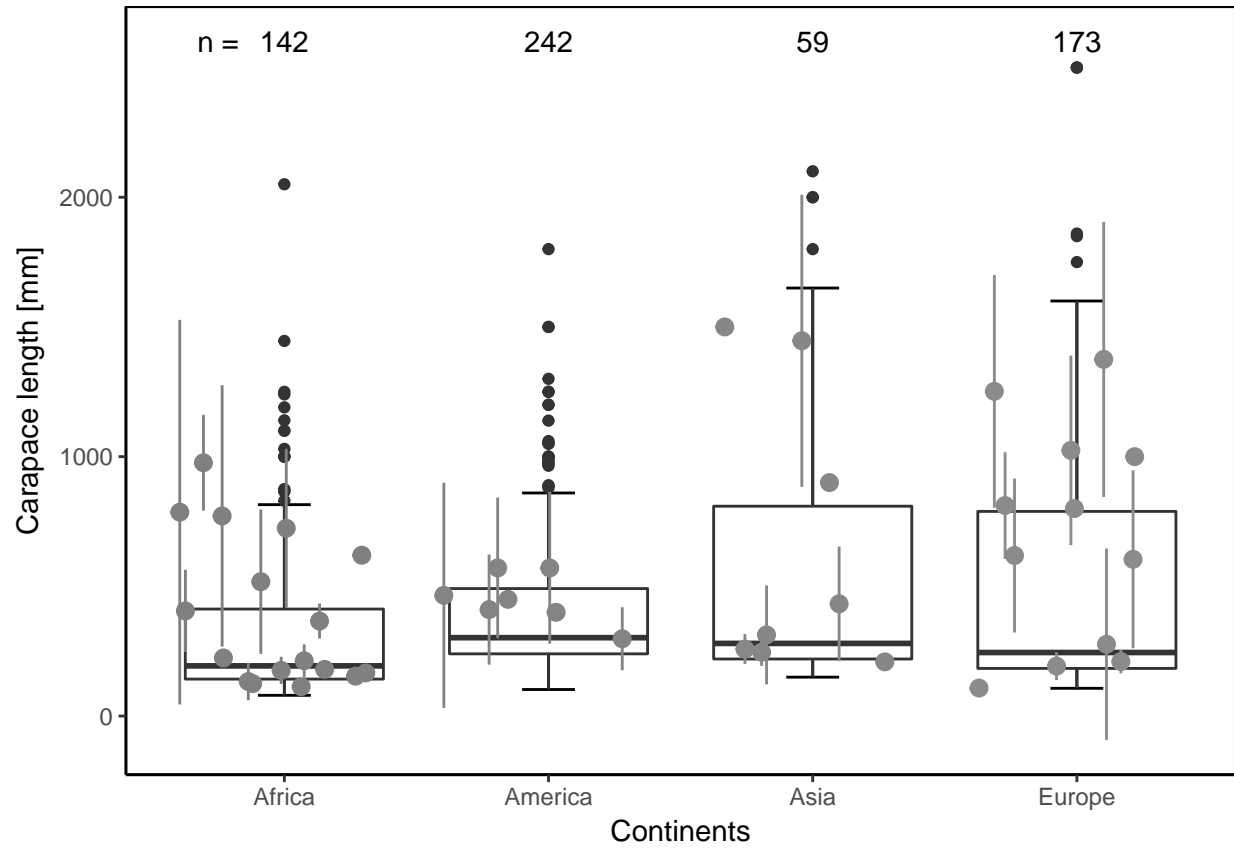


Figure 23: Boxplot: body size on different continents, genera summarised

```
## [1] "Continent"      "bin"             "Taxon"           "CL"
## [5] "extraCL"        "PL"              "size"            "estimated"
## [9] "Age"            "Island"          "Genus"           "EpochBins"
## [13] "Stages"         "MeanBins"        "nIndividuals"    "nSpecies"
## [17] "nGenera"        "Con"
## [1] 142
```

[1] 347.6887

[1] 142

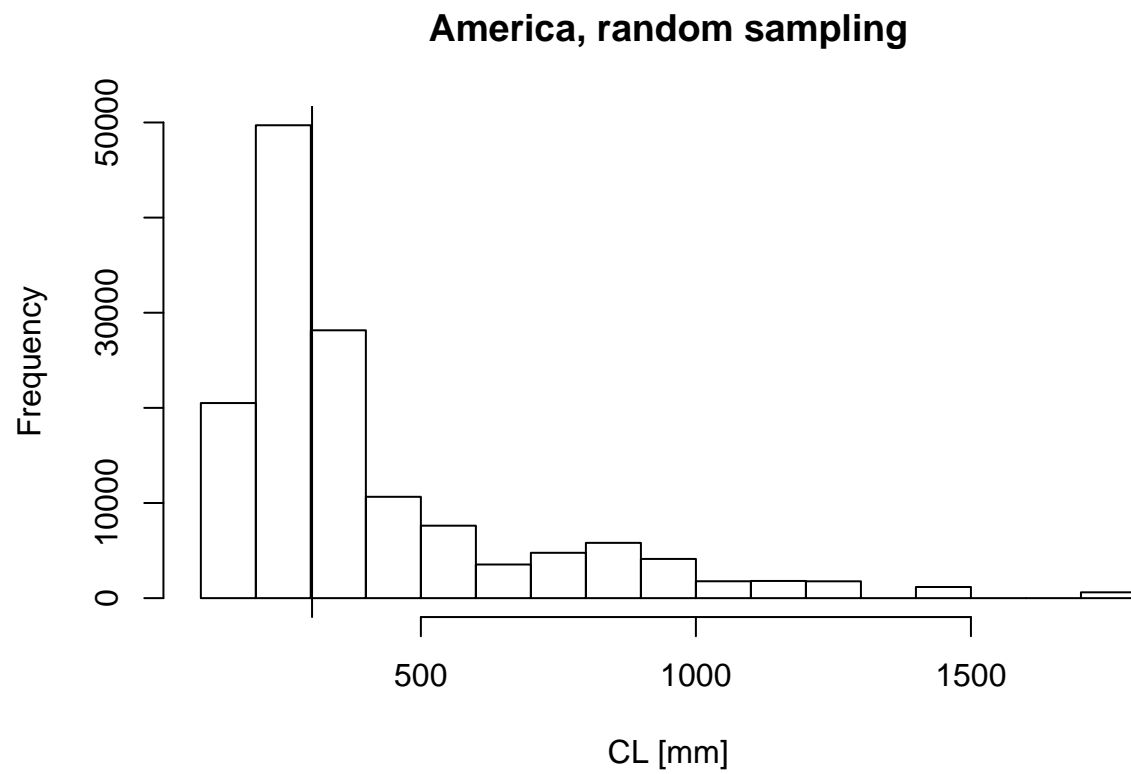
[1] 443.0153

[1] 59

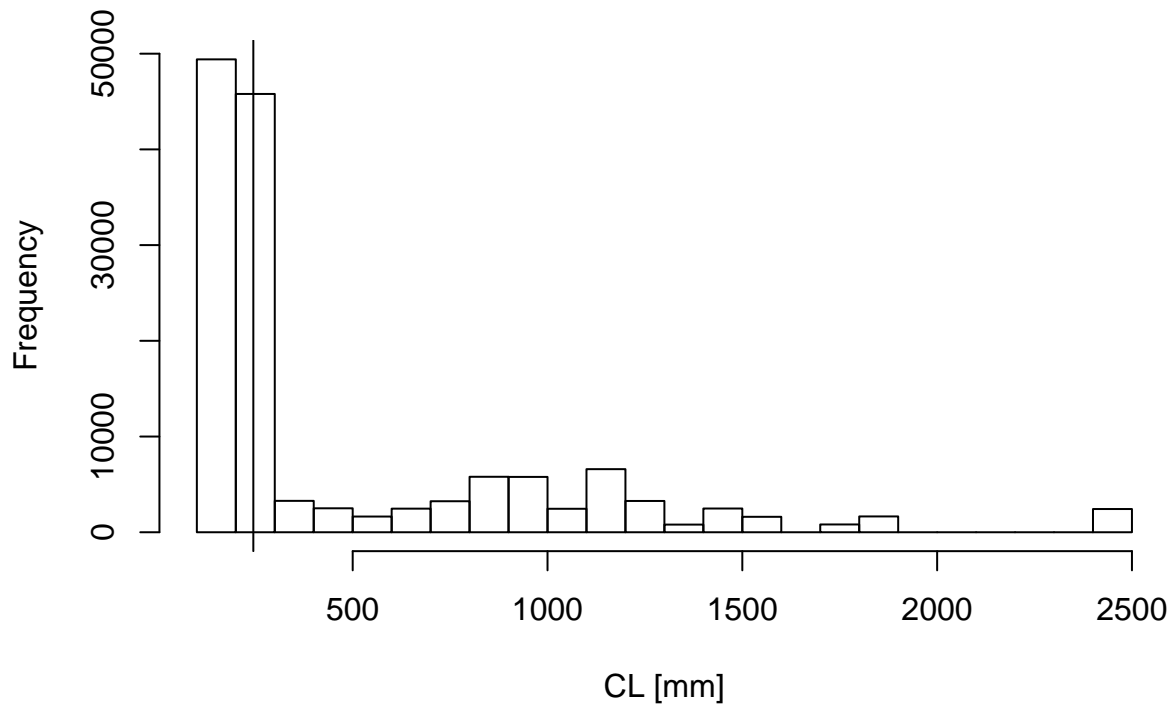
[1] 173

[1] 142

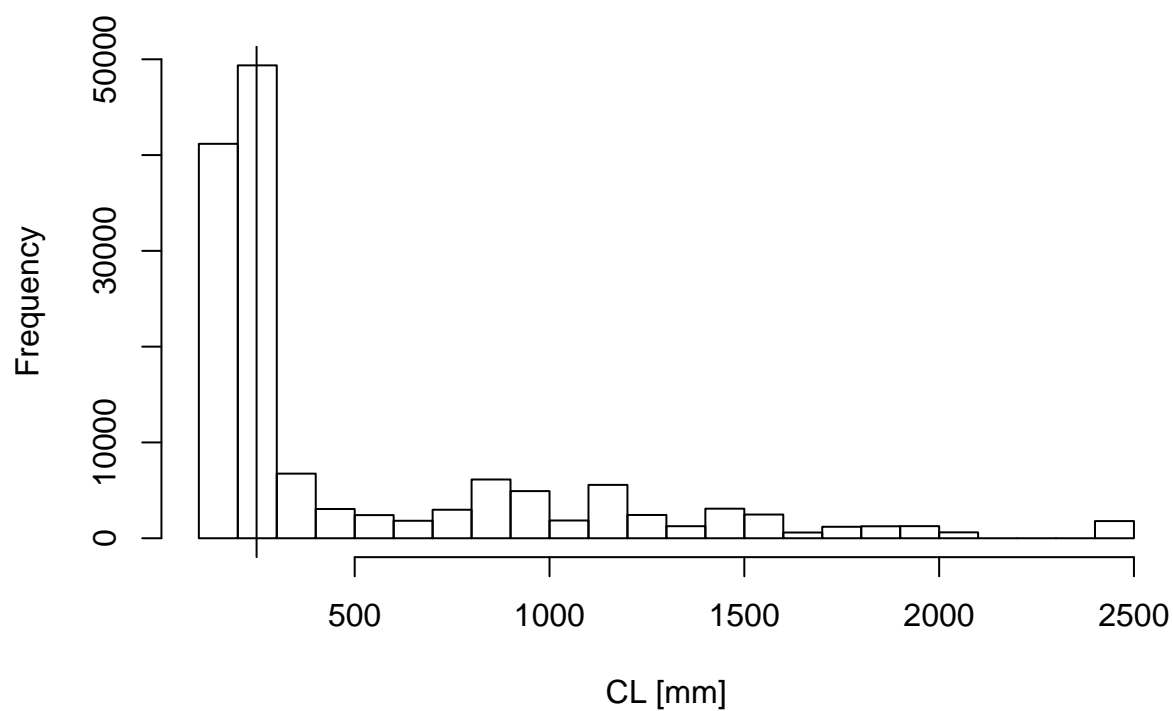
[1] 475.2345



Europe, random sampling



Eurasia, random sampling



```
##
```

```
## Kruskal-Wallis rank sum test
```

```
##
```

```
## data: list(Africa, America, Eurasia, Europe)
```

```
## Kruskal-Wallis chi-squared = 34.789, df = 3, p-value = 1.35e-07
```

Kruskal-Wallis-Test:

Continent means differ ($P = 1.3500562 \times 10^{-7}$) (still have to look into the details...)

continents, continental vs. insular

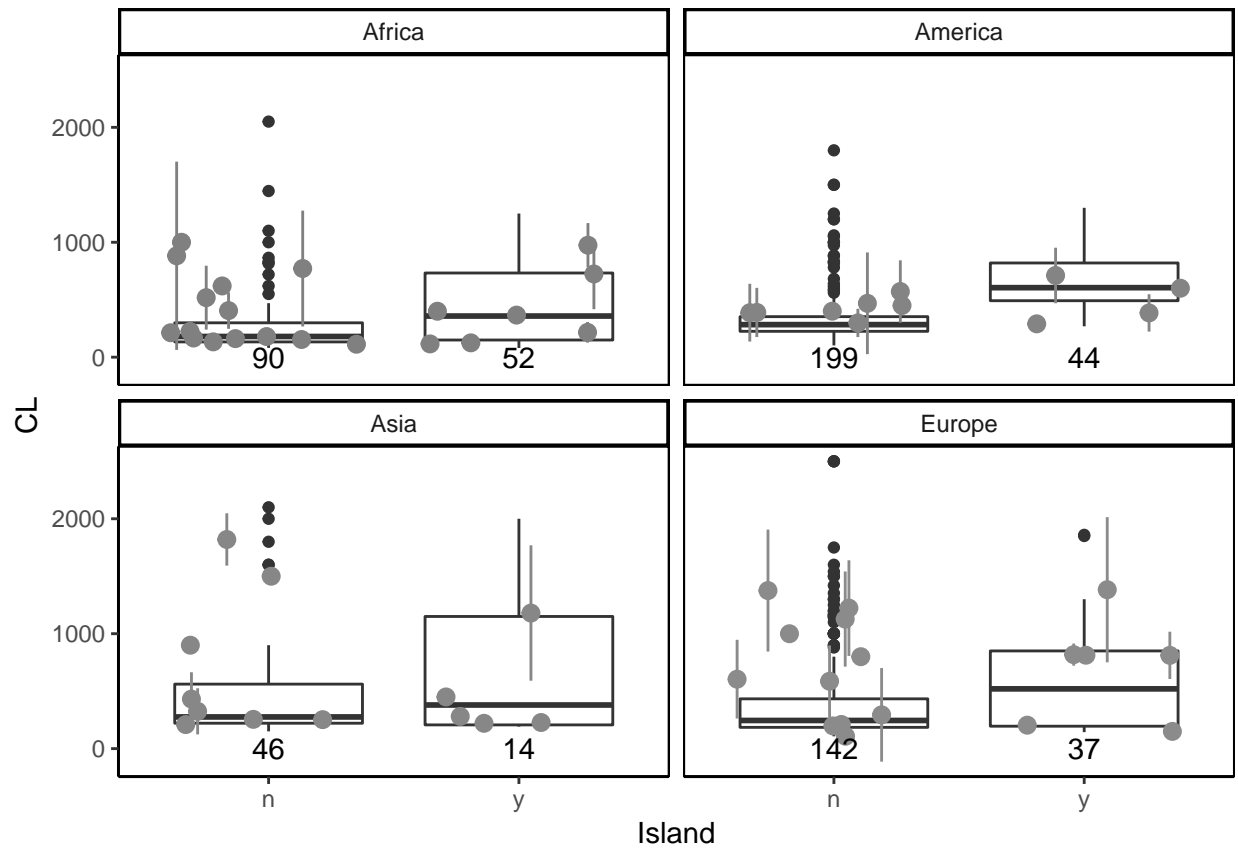


Figure 24: Boxplot: body size on different continents, genera summarised

paleoTS analysis

all (continental and insular)

genera (all)

Table 9: Model-fitting results for testudinidae, genera, all

	logL	K	AICc	Akaike.wt
GRW	-74.86614	2	155.2323	0.025
URW	-75.39607	1	153.2366	0.068
Stasis	-71.27845	2	148.0569	0.907

continental (excluding insular species)

genera (continental)

Table 10: Model-fitting results for testudinidae, genera, continental

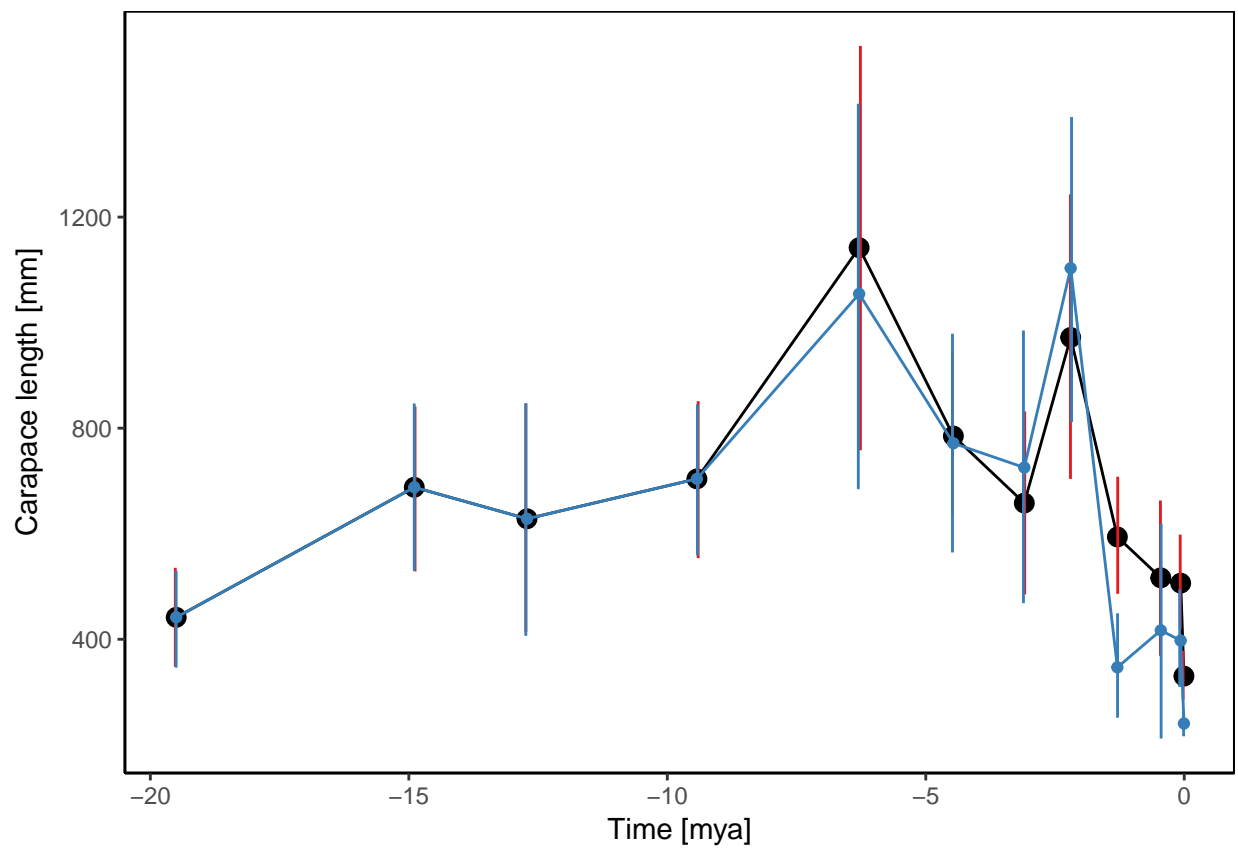
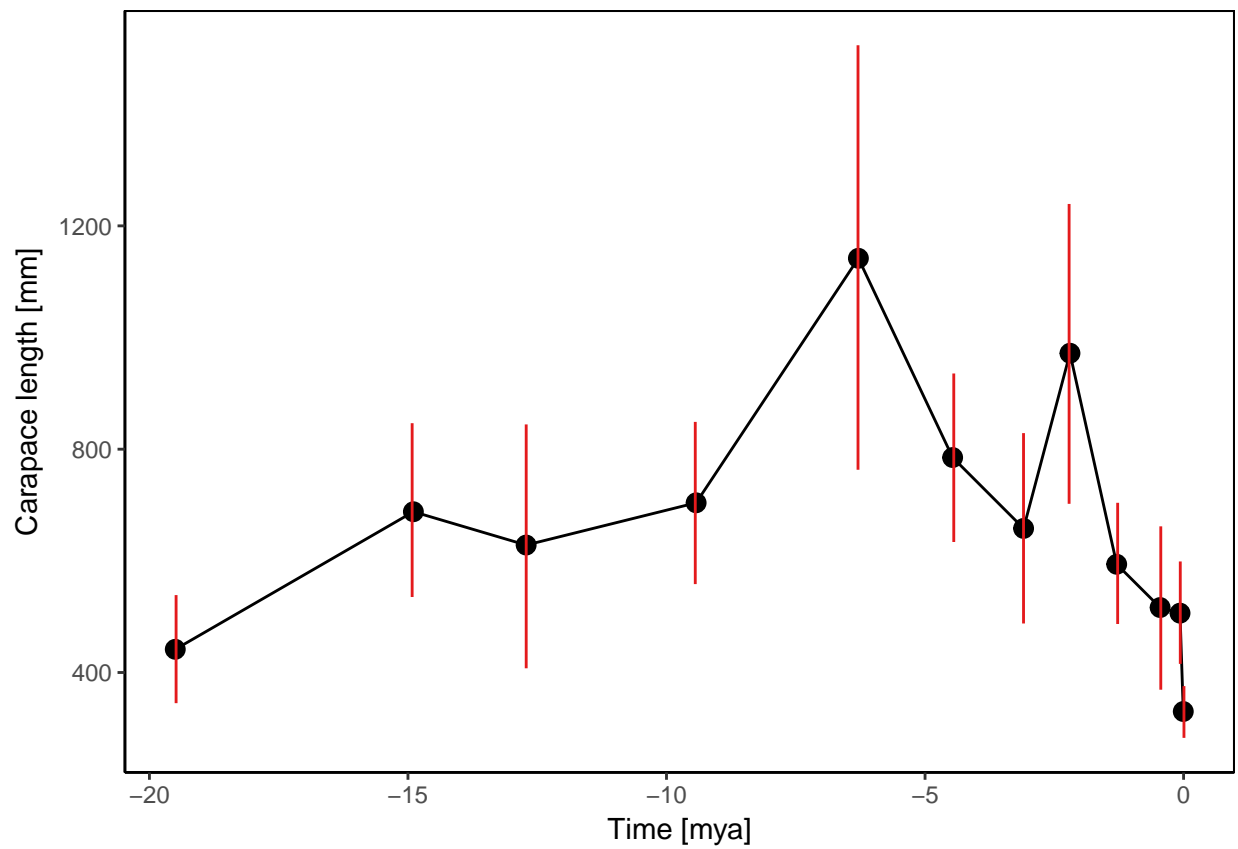
	logL	K	AICc	Akaike.wt
GRW	-77.27805	2	160.0561	0.073
URW	-77.88282	1	158.2101	0.183
Stasis	-74.94957	2	155.3991	0.745

insular (excluding continental)

genera (insular)

Table 11: Model-fitting results for testudinidae, genera, insular

	logL	K	AICc	Akaike.wt
GRW	-55.46118	2	117.9224	0.061
URW	-123.81751	1	250.4350	0.000
Stasis	-52.73284	2	112.4657	0.939



```
## Warning: Removed 4 rows containing missing values (geom_path).
## Warning: Removed 4 rows containing missing values (geom_point).
## Warning: Removed 5 rows containing missing values (geom_linerange).
## Warning: Removed 4 rows containing missing values (geom_path).
## Warning: Removed 4 rows containing missing values (geom_point).
## Warning: Removed 4 rows containing missing values (geom_linerange).
## Warning: Removed 1 rows containing missing values (geom_linerange).
```

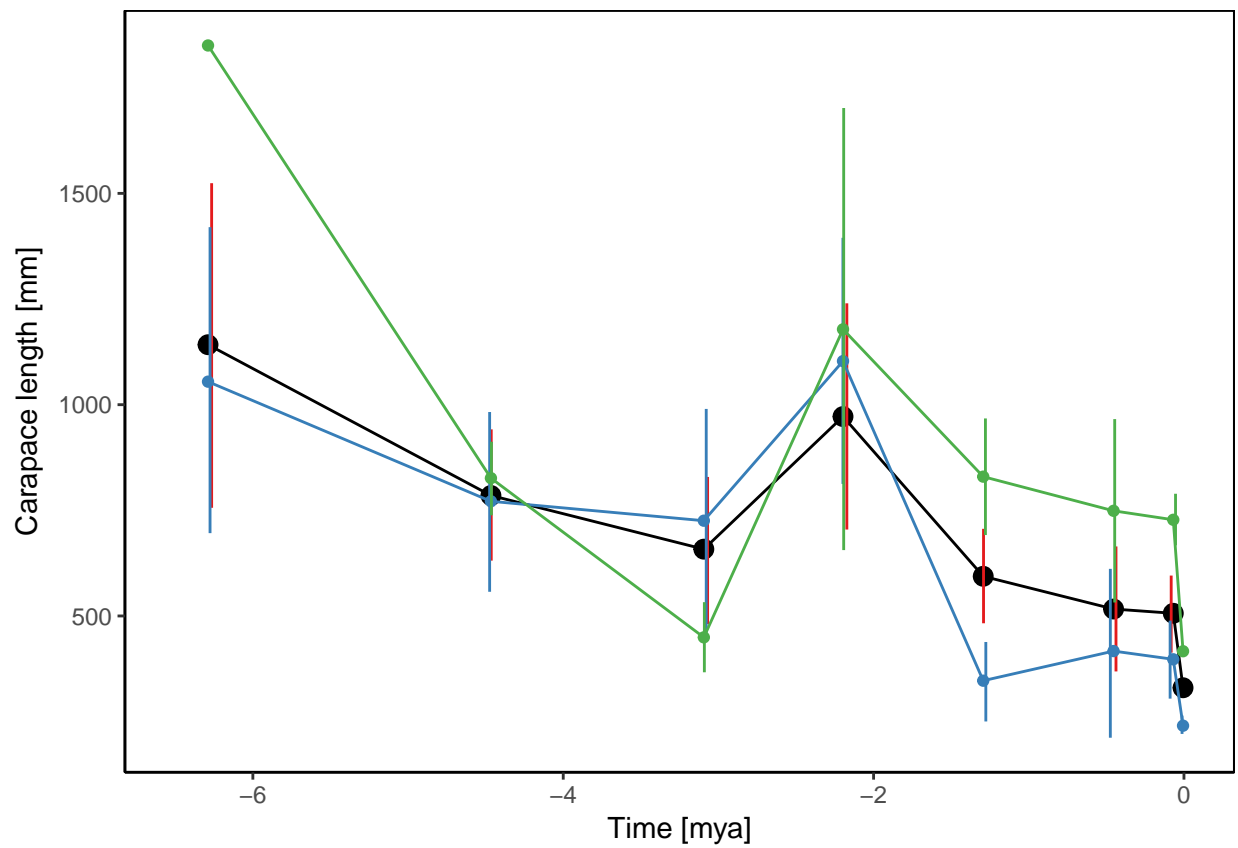


Figure 25: Combined paleoTS plots

per continent

Europe, genera

Europe, smaller original bins (see Table 2), genera, continental

Europe, smaller original bins (see Table 2), genera, insular

Eurasia, genera

Eurasia, genera, continental

Eurasia, smaller original bins (See Table 2), genera, insular

Table 12: Data set,

	Locality	Genus	T
1	Laetoli, Tanzania	Aldabrachelys	“1
2	Sal Island	Centrochelys	C
3	Ahl al Oughlam (near Casablanca)	Centrochelys	C
4	Kanapoi	Geochelone	G
5	Djebel Krechem	Geochelone	G
6	Pellatal Phosphate Member, Varswater Formation, E Quarry Langebaanweg	Geochelone	G
7	Pellatal Phosphate Member, Varswater Formation, E Quarry Langebaanweg	Geochelone	G
8	South Africa	Homopus	H
9	Rusinga Island, Lake Victoria, Kenya	Impregnochelys	Im
10	Arrisdrift	Mesocherus	M
11	Arrisdrift	Mesocherus	M
12	Arrisdrift	Mesocherus	M
13	Arrisdrift	Mesocherus	M
14	Arrisdrift	Mesocherus	M
15	Arrisdrift	Mesocherus	M
16	Arrisdrift	Mesocherus	M
17	Arrisdrift	Namibchersus	N
18	Arrisdrift	Namibchersus	N
19	Arrisdrift	Namibchersus	N
20	Auchas	Namibchersus	N
21	Elisabethfeld (= Elisabeth Bay) area, northern Sperrgebiet	Namibchersus	N
22	Elisabethfeld (= Elisabeth Bay) area, northern Sperrgebiet	Namibchersus	N
23	Auchas	Namibchersus	N
24	Auchas	Namibchersus	N
25	Auchas	Namibchersus	N
26	Drimolon, Sterkfontein, Krugersdorp District, Gauteng Province	Psammobates	P
27	Ahl al Oughlam (near Casablanca)	Testudo	T
28	Kénitra, Guilloux quarry, near Rabat	Testudo	T

	Locality	Genus	T
29	Ahl al Oughlam (near Casablanca)	Testudo	T
30	Ahl al Oughlam (near Casablanca)	Testudo	T
31	Ahl al Oughlam (near Casablanca)	Testudo	T
32	Tha Chang area, Chaloem Pra Kiat district, Nakhon Ratchasima Province	Aldabrachelys	A
33	Tha Chang area, Chaloem Pra Kiat district, Nakhon Ratchasima Province	Aldabrachelys	A
34	Tha Chang area, Chaloem Pra Kiat district, Nakhon Ratchasima Province	Aldabrachelys	A
35	Tha Chang area, Chaloem Pra Kiat district, Nakhon Ratchasima Province	Aldabrachelys	A
36	Altan-Teli main fossiliferous bed (Dzereg valley)	Ergilemys	E
37	Altan-Teli main fossiliferous bed (Dzereg valley)	Ergilemys	E
38	Guangxi	gen.	g
39	Ghaba	Geochelone	G
40	Lang Rongrien Rockshelter, Krabi, Thailand	Indotestudo	In
41	Punjab	Manouria	M
42	Sulawesi (Celebes), Indonesia	Megalochelys	M
43	Northwest of Naipli	Megalochelys	M
44	Northwest of Naipli	Megalochelys	M
45	Northwest of Naipli	Megalochelys	M
46	Northwest of Naipli	Megalochelys	M
47	Sulawesi (Celebes), Indonesia	Megalochelys	M
48	Pauk Twonship	Megalochelys	M
49	Siwalik	Megalochelys	M
50	Pauk Twonship	Megalochelys	M
51	Tres Hermanas, Manila, Luzon	Megalochelys	M
52	Tres Hermanas, Manila, Luzon	Megalochelys	M
53	Flores	Megalochelys	M
54	Bumiayu, Java Island	Megalochelys	M
55	Java Island	Megalochelys	M
56	Zhejiang	Testudo	T
57	Khatlon	Testudo	T
58	Gerogia (Caucasus)	Testudo	T
59	Sawmill Sink, Abaco	Chelonoidis	C

	Locality	Genus	T
60	Sawmill Sink, Abaco	Chelonoidis	C
61	Sawmill Sink, Abaco	Chelonoidis	C
62	Sawmill Sink, Abaco	Chelonoidis	C
63	Santa Clara	Chelonoidis	C
64	Cueva del Papayo, Pedernales	Chelonoidis	C
65	Cueva del Papayo, Pedernales	Chelonoidis	C
66	Cueva del Papayo, Pedernales	Chelonoidis	C
67	Cueva del Papayo, Pedernales	Chelonoidis	C
68	Mona Island	Chelonoidis	C
69	Sombrero Island	Chelonoidis	C
70	Navassa Island	Chelonoidis	C
71	San Pedro, Curaçao	Chelonoidis	C
72	Bayaguana, Los Haitises, San Cristobal	Chelonoidis	C
73	San Pedro, Curaçao	Chelonoidis	C
74	San Pedro, Curaçao	Chelonoidis	C
75	Cedazo local fauna, Aguascalientes, Mexico	Geochelone	G
76	Cedazo local fauna, Aguascalientes, Mexico	Gopherus	G
77	Cedazo local fauna, Aguascalientes, Mexico	Gopherus	G
78	Cedazo local fauna, Aguascalientes, Mexico	Gopherus	G
79	Smith's Parrish, No. 3 Vermont Valley Close	Hesperotestudo	H
80	Smith's Parrish, No. 3 Vermont Valley Close	Hesperotestudo	H
81	Río Tomayate, Apopa Municipality	Hesperotestudo	H
82	Belomechetskaya	Ergilemys	E
83	Dmanisi	Testudo	T
84	Prottes	"Hadrianus"	"
85	Adeje, Tenerife	Centrochelys	C
86	Callao de Fañabé, Tenerife	Centrochelys	C
87	Adeje, Tenerife	Centrochelys	C
88	Callao de Fañabé, Tenerife	Centrochelys	C
89	Corrida, Malta	Centrochelys	C
90	Ghar Dalam	Centrochelys	C

	Locality	Genus	T
91	Ghar Dalam	Centrochelys	C
92	Mnaidra Gap, Malta	Centrochelys	C
93	Corrida, Malta	Centrochelys	C
94	Zebbug and Gahr Dalam Cave deposits	Centrochelys	C
95	Ghar Dalam	Centrochelys	C
96	Barranco de las Ballenas, Las Palmas, Gran Canaria	Centrochelys	C
97	Pujo d'es Fum, Formentera, Balearic Islands	Cheirogaster	C
98	Punta Nati near Ciutadella, Minorca	Cheirogaster	C
99	Hostalets de Piérola, Barcelone province, Cataluña, Vallés-Penedés basin	Cheirogaster	C
100	La Ciesma 1, Aragón	Cheirogaster	C
101	El Lugarejo (Arévalo), Ávila, Castilla	Cheirogaster	C
102	Chañe, Segovia	Cheirogaster	C
103	Crevillente 2	Cheirogaster	C
104	Rock-Cavities, Gibraltar Peninsula	Cheirogaster	C
105	Soave, Zoppega 2 cave, Verona	Eurotestudo	E
106	Soave, Zoppega 2 cave, Verona	Eurotestudo	E
107	Monte Tuttavista VII mustelide, Sardinia	Eurotestudo	E
108	Le Ville, Upper Valdarno	Eurotestudo	E
109	Cueva de la Victoria-1 (CV-1), Carthagène, Murcia	Eurotestudo	E
110	Saint-Estève-Janson, l'Escale Cave (Bouches du Rhône)	Eurotestudo	E
111	Cova del Rinoceront, eastern Garraf Massif, Can 'Aymerich quarry, Castelldefels	Eurotestudo	E
112	Saint-Estève-Janson, l'Escale Cave (Bouches du Rhône)	Eurotestudo	E
113	Sierra de Quibas, Abanilla, Murcia	Eurotestudo	E
114	Tarazona de Aragón	gen.	g
115	La Ciesma 1, Aragón	gen.	g
116	Monteagudo, Aragón	gen.	g
117	Kohfidisch	gen.	g
118	Kohfidisch	gen.	g
119	Zubbio di Cozzo San Pietro	gen.	g
120	Kohfidisch	gen.	g
121	Jambol	Geochelone	G

	Locality	Genus	T
122	Kirchdorf an der Iller	Geochelone	G
123	Hohenhöwen, Engen, Hegau, southwestern Germany	Paleotestudo	P
124	Hohenhöwen, Engen, Hegau, southwestern Germany	Paleotestudo	P
125	Hohenhöwen, Engen, Hegau, southwestern Germany	Paleotestudo	P
126	Hohenhöwen, Engen, Hegau, southwestern Germany	Paleotestudo	P
127	Gammelsdorf	Paleotestudo	P
128	Hohenhöwen, Engen, Hegau, southwestern Germany	Paleotestudo	P
129	Sansan, Gers (lake)	Paleotestudo	P
130	Hohenhöwen, Engen, Hegau, southwestern Germany	Paleotestudo	P
131	Hohenhöwen, Engen, Hegau, southwestern Germany	Paleotestudo	P
132	Gammelsdorf	Paleotestudo	P
133	Hohenhöwen, Engen, Hegau, southwestern Germany	Paleotestudo	P
134	Sansan, Gers (lake)	Paleotestudo	P
135	Hohenhöwen, Engen, Hegau, southwestern Germany	Paleotestudo	P
136	Hohenhöwen, Engen, Hegau, southwestern Germany	Paleotestudo	P
137	Sansan, Gers (lake)	Paleotestudo	P
138	Hohenhöwen, Engen, Hegau, southwestern Germany	Paleotestudo	P
139	Sansan, Gers (lake)	Paleotestudo	P
140	Barajas, Madrid	Paleotestudo	P
141	Illescas, Toledo	Paleotestudo	P
142	Can Mas near El Papiol, Barcelone province, Cataluña, Vallés-Penedés basin	Paleotestudo	P
143	El Buste, Aragón	Paleotestudo	P
144	Tarazona de Aragón	Paleotestudo	P
145	Cerro de los Batallones, Madrid	Paleotestudo	P
146	Teiritzberg (T1 = 001/D/C), Korneuburg Basin, Lower Austria	Paleotestudo	P
147	Cerro de los Batallones, Madrid	Paleotestudo	P
148	Cerro de los Batallones, Madrid	Paleotestudo	P
149	Torrente Melacce, Cinigiano (GR)	Testudo	T
150	Milia, Grevena, W Macedonia	Testudo	T
151	Milia, Grevena, W Macedonia	Testudo	T
152	Kohfdisch	Testudo	T

	Locality	Genus	T
153	Kohfidisch	Testudo	T
154	Sant Quirze de Terrassa/de Galliners (del Vallès), Barcelona	Testudo	T
155	Castell de Barbera	Testudo	T
156	Sant Quirze de Terrassa/de Galliners (del Vallès), Barcelona	Testudo	T
157	Sant Quirze de Terrassa/de Galliners (del Vallès), Barcelona	Testudo	T
158	Abocador de Can Mata (els Hostalets de Pierola)(ACM/BDA), Vallés-Penedés basin, Cataluña	Testudo	T
159	Megalo Emvolon 1 (MEV), 20 km SW Thessaloniki	Testudo	T
160	Prottes	Testudo	T
161	Prottes	Testudo	T
162	Prottes	Testudo	T
163	Prottes	Testudo	T
164	Prottes	Testudo	T
165	Prottes	Testudo	T
166	Prottes	Testudo	T
167	Prottes	Testudo	T
168	Prottes	Testudo	T
169	Prottes	Testudo	T
170	Prottes	Testudo	T
171	Prottes	Testudo	T
172	Prottes	Testudo	T
173	Prottes	Testudo	T
174	Prottes	Testudo	T
175	Prottes	Testudo	T
176	Prottes	Testudo	T
177	Prottes	Testudo	T
178	Prottes	Testudo	T
179	Prottes	Testudo	T
180	Prottes	Testudo	T
181	Prottes	Testudo	T
182	Prottes	Testudo	T
183	Prottes	Testudo	T

	Locality	Genus	T
184	Prottes	Testudo	T
185	Pylea, eastern part of Thessaloniki, western Chalkidiki peninsula	Testudo	T
186	Allatini, eastern part of Thessaloniki, western Chalkidiki peninsula	Testudo	T
187	Platania, Drama basin	Testudo	T
188	Sima del Elefante TE14, Sierra de Atapuerca, Burgos	Eurotestudo	T
189	Obermaintor, Ebensfeld (Lichtenfels), Franken	Testudo	T
190	Leithagebirge between Au and Loretto	Testudo	T
191	Eggenburg-Schindergraben, Lower Austria	Testudo	T
192	Wien-Kalksburg	Testudo	T
193	Cova de Gràcia, Park Güell, Barcelona	Testudo	T
194	Caverna de Gràcia, Güell park, Barcelona	Testudo	T
195	Cova de Gràcia, Park Güell, Barcelona	Testudo	T
196	Caverna de Gràcia, Güell park, Barcelona	Testudo	T
197	Lakonia	Testudo	T
198	Zourida-Höhle	Testudo	T
199	Gerani-Höhle an der Nordküste Kretamin der Nähe von Rethymnon	Testudo	T
200	Capo Mannu near San Vero Milis, base of D4 dune, Sardinia	Testudo	T
201	Saint-Gérard-le-Puy, Allier	Testudo	T
202	Saint-Gérard-le-Puy, Allier	Testudo	T
203	Neuville-aux-Bois, Loiret	Testudo	T
204	Sandelzhausen	Testudo	T
205	Nikiti 2, Chalkidiki, Macedonia	Testudo	T
206	Liossati, Kiourka	Testudo	T
207	Santa-Vittoria d'Alba	Testudo	T
208	Holzmannsdorfberg bei St. Marein	Testudo	T
209	Prottes	Testudo	T
210	Prottes	Testudo	T
211	Prottes	Testudo	T
212	Prottes	Testudo	T
213	Prottes	Testudo	T
214	Prottes	Testudo	T

	Locality	Genus	T
215	Prottes	Testudo	T
216	Prottes	Testudo	T
217	Prottes	Testudo	T
218	Prottes	Testudo	T
219	Prottes	Testudo	T
220	Prottes	Testudo	T
221	Prottes	Testudo	T
222	Prottes	Testudo	T
223	Prottes	Testudo	T
224	Prottes	Testudo	T
225	Prottes	Testudo	T
226	Prottes	Testudo	T
227	Prottes	Testudo	T
228	Prottes	Testudo	T
229	Prottes	Testudo	T
230	Prottes	Testudo	T
231	Prottes	Testudo	T
232	Prottes	Testudo	T
233	Prottes	Testudo	T
234	Prottes	Testudo	T
235	Prottes	Testudo	T
236	Prottes	Testudo	T
237	Prottes	Testudo	T
238	Prottes	Testudo	T
239	Prottes	Testudo	T
240	Prottes	Testudo	T
241	Prottes	Testudo	T
242	Prottes	Testudo	T
243	Prottes	Testudo	T
244	Prottes	Testudo	T
245	Megalo Emvolon 1 (MEV), 20 km SW Thessaloniki	Testudo	T

	Locality	Genus	T
246	Megalo Emvolon 1 (MEV), 20 km SW Thessaloniki	Testudo	T
247	Megalo Emvolon 1 (MEV), 20 km SW Thessaloniki	Testudo	T
248	Megalo Emvolon 1 (MEV), 20 km SW Thessaloniki	Testudo	T
249	W??e 1	Testudo	T
250	Altenstadt, 7 km S Illertissen	Testudo	T
251	Steinheim a. Albuch	Testudo	T
252	Lesbos Island, F-Site	Titanochelon	T
253	Epanomi (EPN II), western Chalkidiki Peninsula, Thessaloniki area	Titanochelon	T
254	Epanomi (EPN I), western Chalkidiki Peninsula, Thessaloniki area	Titanochelon	T
255	Nea Michaniona, western Chalkidiki Peninsula, Thessaloniki area	Titanochelon	T
256	Nea Kallikratia, western Chalkidiki Peninsula, Thessaloniki area	Titanochelon	T
257	Nea Michaniona, western Chalkidiki Peninsula, Thessaloniki area	Titanochelon	T
258	Nea Kallikratia, western Chalkidiki Peninsula, Thessaloniki area	Titanochelon	T
259	Vallecas, Madrid	Titanochelon	T
260	Puerto de la Cadena, Murcia	Titanochelon	T
261	Alcalá de Henares, Cerro del Viso (Barranco de los Mártires y Santos de la Humosa), Madrid	Titanochelon	T
262	Cerro de los Batallones, Madrid	Titanochelon	T
263	Cerro del Otero, Palencia	Titanochelon	T
264	Charneco do Lumiar	Titanochelon	T
265	Aveiras de Baixo, Azambuja	Titanochelon	T
266	Quinta da Farinheira	Titanochelon	T
267	Sandelzhausen unterer Geröllmergel (B)	Titanochelon	T
268	Cala Es Pous near Ciutadella, Minorca	Titanochelon	T
269	Serrat-d'en-Vacquer near Perpignan, Pyrénées-Orientales	Titanochelon	T
270	Samos 1	Titanochelon	T
271	Pikermi	Titanochelon	T
272	Fonelas P-1, Guadix Basin	Titanochelon	T
273	Cova de Ca Na Reia, Eivissa, Ibiza	Titanochelon	T
274	Plum Point, Calvert County, Maryland	Caudochelys	C
275	Rexroad local fauna (Fox Canyon locality 3), Meade County, Kansas	Caudochelys	C
276	Rexroad local fauna (Fox Canyon locality 3), Meade County, Kansas	Caudochelys	C

	Locality	Genus	T
277	Garvin Gully, 2 mi. north of Navasota, Jl J . Grimes County, Texas, Garvin Gully local fauna	Caudochelys	C
278	Gilliland local fauna, Burnett Ranch, 7 miles W of Vera, Knox County, Texas	Geochelone	G
279	Santee, Knox County, Nebraska	Geochelone	G
280	Orange Lake 2 miles south, Marion County, Florida	Geochelone	G
281	Ricardo Fauna, Mojave Desert, Kern County, California	Geochelone	G
282	Banana Hole, New Providence Island	Geochelone	G
283	Lee Creek Mine, Yorktown Sample, Beaufort County, North Carolina	Geochelone	G
284	Thomas Farm Local Fauna, Gilchrist County, Florida	Geochelone	G
285	Thomas Farm Local Fauna, Gilchrist County, Florida	Geochelone	G
286	Ricardo Fauna, Mojave Desert, Kern County, California	Gopherus	G
287	Iron Canyon Fauna, Mojave Desert, Kern County, California	Gopherus	G
288	Sabertooth Camel Maze, Dry Cave (UTEP 5), Eddy County, New Mexico	Gopherus	G
289	Pecos River near Melena and Acme, 10-15 km NE Roswell, Chaves County, New Mexico	Gopherus	G
290	North Cita Canyon (Middle Stratum), Randall County, Texas	Gopherus	G
291	Texas	Gopherus	G
292	Barstow Beds, San Bernardino County, California	Gopherus	G
293	Cache Peak fauna, Tehachapi Mountains, Kern County, California	Gopherus	G
294	Barstow Beds, San Bernardino County, California	Gopherus	G
295	Barstow Beds, San Bernardino County, California	Gopherus	G
296	Barstow Beds, San Bernardino County, California	Gopherus	G
297	Texas	Gopherus	G
298	Surprise Cave, Alachua, Florida	Gopherus	G
299	Reddick IA+B, Marion County, Florida	Gopherus	G
300	Leisey Shell Pit 1A, Hillsborough County, Florida	Gopherus	G
301	Haile, Alachua County, Florida	Gopherus	G
302	Surprise Cave, Alachua, Florida	Gopherus	G
303	Haile, Alachua County, Florida	Gopherus	G
304	Haile, Alachua County, Florida	Gopherus	G
305	Haile, Alachua County, Florida	Gopherus	G
306	Surprise Cave, Alachua, Florida	Gopherus	G
307	Surprise Cave, Alachua, Florida	Gopherus	G

	Locality	Genus	T
308	Coleman 2A	Gopherus	G
309	Coleman 2A	Gopherus	G
310	Haile, Alachua County, Florida	Gopherus	G
311	Leisey Shell Pit 1A, Hillsborough County, Florida	Gopherus	G
312	Haile, Alachua County, Florida	Gopherus	G
313	Coleman 2A	Gopherus	G
314	Surprise Cave, Alachua, Florida	Gopherus	G
315	Haile, Alachua County, Florida	Gopherus	G
316	Leisey Shell Pit 1A, Hillsborough County, Florida	Gopherus	G
317	Surprise Cave, Alachua, Florida	Gopherus	G
318	Surprise Cave, Alachua, Florida	Gopherus	G
319	Haile, Alachua County, Florida	Gopherus	G
320	Haile, Alachua County, Florida	Gopherus	G
321	Surprise Cave, Alachua, Florida	Gopherus	G
322	Haile, Alachua County, Florida	Gopherus	G
323	Coleman 2A	Gopherus	G
324	Haile, Alachua County, Florida	Gopherus	G
325	Haile, Alachua County, Florida	Gopherus	G
326	Coleman 2A	Gopherus	G
327	Coleman 2A	Gopherus	G
328	Surprise Cave, Alachua, Florida	Gopherus	G
329	Coleman 2A	Gopherus	G
330	Surprise Cave, Alachua, Florida	Gopherus	G
331	Surprise Cave, Alachua, Florida	Gopherus	G
332	Haile, Alachua County, Florida	Gopherus	G
333	Surprise Cave, Alachua, Florida	Gopherus	G
334	Coleman 2A	Gopherus	G
335	Haile, Alachua County, Florida	Gopherus	G
336	Haile, Alachua County, Florida	Gopherus	G
337	Haile, Alachua County, Florida	Gopherus	G
338	Haile, Alachua County, Florida	Gopherus	G

	Locality	Genus	T
339	Coleman 2A	Gopherus	G
340	Haile, Alachua County, Florida	Gopherus	G
341	Haile, Alachua County, Florida	Gopherus	G
342	Surprise Cave, Alachua, Florida	Gopherus	G
343	Reddick IA+B, Marion County, Florida	Gopherus	G
344	Surprise Cave, Alachua, Florida	Gopherus	G
345	Haile, Alachua County, Florida	Gopherus	G
346	Coleman 2A	Gopherus	G
347	Surprise Cave, Alachua, Florida	Gopherus	G
348	Coleman 2A	Gopherus	G
349	Little Salt Spring, Florida	Gopherus	G
350	Coleman 2A	Gopherus	G
351	Reddick IA+B, Marion County, Florida	Gopherus	G
352	Surprise Cave, Alachua, Florida	Gopherus	G
353	Gilliland local fauna, Burnett Ranch, 7 miles W of Vera, Knox County, Texas	Gopherus	G
354	Melbourne, Brevard County, Florida	Gopherus	G
355	Inglis 1A, Florida	Gopherus	G
356	Inglis 1A, Florida	Gopherus	G
357	Inglis 1A, Florida	Gopherus	G
358	Inglis 1A, Florida	Gopherus	G
359	Inglis 1A, Florida	Gopherus	G
360	Inglis 1A, Florida	Gopherus	G
361	Inglis 1A, Florida	Gopherus	G
362	Inglis 1A, Florida	Gopherus	G
363	Inglis 1A, Florida	Gopherus	G
364	Inglis 1A, Florida	Gopherus	G
365	Inglis 1A, Florida	Gopherus	G
366	Inglis 1A, Florida	Gopherus	G
367	Inglis 1A, Florida	Gopherus	G
368	Inglis 1C, Florida	Gopherus	G
369	Inglis 1A, Florida	Gopherus	G

	Locality	Genus	T
370	Inglis 1A, Florida	Gopherus	G
371	Inglis 1A, Florida	Gopherus	G
372	Inglis 1C, Florida	Gopherus	G
373	Inglis 1C, Florida	Gopherus	G
374	Inglis 1A, Florida	Gopherus	G
375	Inglis 1C, Florida	Gopherus	G
376	Inglis 1C, Florida	Gopherus	G
377	Inglis 1C, Florida	Gopherus	G
378	McGehee Farm near Newberry, Alachua County, Florida	Hesperotestudo	H
379	Texas	Hesperotestudo	H
380	Little Salt Spring, Florida	Hesperotestudo	H
381	Haile, Alachua County, Florida	Hesperotestudo	H
382	Haile, Alachua County, Florida	Hesperotestudo	H
383	Reddick IA+B, Marion County, Florida	Hesperotestudo	H
384	Little Salt Spring, Florida	Hesperotestudo	H
385	Haile, Alachua County, Florida	Hesperotestudo	H
386	Reddick IA+B, Marion County, Florida	Hesperotestudo	H
387	Reddick IA+B, Marion County, Florida	Hesperotestudo	H
388	Haile, Alachua County, Florida	Hesperotestudo	H
389	Little Salt Spring, Florida	Hesperotestudo	H
390	Leisey Shell Pit 1A, Hillsborough County, Florida	Hesperotestudo	H
391	Cragin Quarry Local Fauna, Meade County, Kansas	Hesperotestudo	H
392	Haile, Alachua County, Florida	Hesperotestudo	H
393	Haile, Alachua County, Florida	Hesperotestudo	H
394	Haile, Alachua County, Florida	Hesperotestudo	H
395	Haile, Alachua County, Florida	Hesperotestudo	H
396	Haile, Alachua County, Florida	Hesperotestudo	H
397	Arredondo IIA, Alachua County, Florida	Hesperotestudo	H
398	Haile, Alachua County, Florida	Hesperotestudo	H
399	Haile, Alachua County, Florida	Hesperotestudo	H
400	Cita Canyon, UCMP V-3721, Harrell Ranch, Randall County, Texas	Hesperotestudo	H

	Locality	Genus	T
401	Leisey Shell Pit 1A, Hillsborough County, Florida	Hesperotestudo	H
402	Leisey Shell Pit 2, Hillsborough County, Florida	Hesperotestudo	H
403	Sand Draw local fauna, Brown County, Nebraska	Hesperotestudo	H
404	UCMP V71137, Turlock Lake 10, Stanislaus County, California	Hesperotestudo	H
405	UCMP V81248, Turlock Lake 11, Stanislaus County, California	Hesperotestudo	H
406	Buis Ranch Local Fauna, Beaver County, Oklahoma	Hesperotestudo	H
407	Buis Ranch Local Fauna, Beaver County, Oklahoma	Hesperotestudo	H
408	Buis Ranch Local Fauna, Beaver County, Oklahoma	Hesperotestudo	H
409	Buis Ranch Local Fauna, Beaver County, Oklahoma	Hesperotestudo	H
410	Sawrock Canyon local fauna, Seward County, Kansas	Hesperotestudo	H
411	Sawrock Canyon local fauna, Seward County, Kansas	Hesperotestudo	H
412	Rexroad local fauna (Fox Canyon locality 3), Meade County, Kansas	Hesperotestudo	H
413	Caballo Local Fauna, Palomas Basin, Sierra County, New Mexico	Hesperotestudo	H
414	UCMP V-3952, Ingram Creek site 8, Stanislaus County, California	Hesperotestudo	H
415	Gilliland local fauna, Burnett Ranch, 7 miles W of Vera, Knox County, Texas	Hesperotestudo	H
416	Cuchillo Negro Creek Local Fauna, Engle Basin, Sierra County, New Mexico	Hesperotestudo	H
417	Gilliland local fauna, Burnett Ranch, 7 miles W of Vera, Knox County, Texas	Hesperotestudo	H
418	Ingleside Local Fauna, San Patricio County, Texas	Hesperotestudo	H
419	Ingleside Local Fauna, San Patricio County, Texas	Hesperotestudo	H
420	Kansas	Hesperotestudo	H
421	Friesenhahn Cave, Bexar County, Texas	Hesperotestudo	H
422	Atascosa county, Texas	Testudo	T
423	Libertador San Martín north bank Ensenada stream, 15 km E Diamante, Entre Rios Province	Chelonoidis	C
424	Arroyo Toropí, Corrientes	Chelonoidis	C
425	Quebrada de Ñuapua, Chuquisaca department	Chelonoidis	C
426	Beautiful Bone, Alta Guajira Peninsula, Cocinetas basin	Chelonoidis	C
427	Beautiful Bone, Alta Guajira Peninsula, Cocinetas basin	Chelonoidis	C
428	Beautiful Bone, Alta Guajira Peninsula, Cocinetas basin	Chelonoidis	C
429	Beautiful Bone, Alta Guajira Peninsula, Cocinetas basin	Chelonoidis	C
430	Beautiful Bone, Alta Guajira Peninsula, Cocinetas basin	Chelonoidis	C
431	San Nicolas, UCMP locality V4536	Geochelone	G

Locality	Genus									T
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Table 13: Data set, extant

	Genus	Taxon	CollNr	SCL	CCL	SCW	CCW	CH	PL	PV
1	Kinixys	Kinixys belliana	ZMB 37388	162.0	16.20	22.5	15.5	21.5	164.0	12.0
2	Aldabrachelys	Aldabrachelys gigantea	ZMB 51996	770.0	77.00	106.0	52.0	112.0	NA	NA
3	Astrochelys	Astrochelys yniphora	-	426.0	42.60	NA	NA	NA	NA	NA
4	Centrochelys	Centrochelys sulcata	ZMB 63203	215.0	21.50	29.5	16.5	27.0	214.0	14.0
5	Malacochersus	Malacochersus tornieri	ZMB 63174	153.0	15.30	17.0	10.5	14.0	149.0	9.8
6	Astrochelys	Astrochelys radiata	-	395.0	39.50	NA	NA	NA	NA	NA
7	Pyxis	Pyxis arachnoides	ZMB 37616	110.0	11.00	15.0	8.0	14.0	75.0	7.6
8	Kinixys	Kinixys homeana	ZMB 17747	193.0	19.30	25.0	14.0	21.0	175.0	11.0
9	Aldabrachelys	Aldabrachelys gigantea	ZMB 47494	870.0	87.00	116.0	57.0	110.0	NA	NA
10	Psammobates	Psammobates tentorius	ZMB 28782	111.0	11.10	15.0	8.5	14.0	95.0	7.9
11	Psammobates	Psammobates oculifer	ZMB 25439	119.0	11.90	17.0	9.0	14.5	99.0	8.4
12	Psammobates	Psammobates oculifer	ZMB 37472	107.0	10.70	15.0	8.4	13.5	106.0	8.0
13	Astrochelys	Astrochelys yniphora	-	307.0	30.70	NA	NA	NA	NA	NA
14	Homopus	Homopus aerolatus	ZMB 229	88.0	8.80	10.5	6.9	9.0	78.0	6.1
15	Homopus	Homopus signatus	ZMB 63173	94.0	9.40	12.5	7.7	11.0	82.0	5.6
16	Kinixys	Kinixys belliana	ZMB 63191	194.0	19.40	25.5	12.5	19.0	173.0	12.0
17	Astrochelys	Astrochelys radiata	-	285.0	28.50	NA	NA	NA	NA	NA
18	Kinixys	Kinixys belliana	ZMB 63192	174.0	17.40	24.5	11.5	20.5	143.0	11.0
19	Kinixys	Kinixys belliana	ZMB 63193	157.0	15.70	21.0	9.9	16.5	141.0	9.4
20	Aldabrachelys	Aldabrachelys gigantea	ZMB 37545	810.0	81.00	110.0	52.0	NA	NA	NA
21	Chersina	Chersina angulata	ZMB 49400	162.0	16.20	21.5	10.9	17.5	170.0	9.2
22	Chersina	Chersina angulata	ZMB 63181	170.0	17.00	23.0	11.4	19.0	169.0	10.0
23	Chersina	Chersina angulata	ZMB 63183	120.0	12.00	17.0	8.6	15.5	118.0	7.3
24	Chersina	Chersina angulata	ZMB 63182	136.0	13.60	18.0	9.9	16.0	138.0	8.0
25	Kinixys	Kinixys erosa	ZMB 63190	164.0	16.40	21.0	11.2	16.5	163.0	10.0
26	Centrochelys	Centrochelys sulcata	ZMB 37387	435.0	43.50	54.0	29.9	53.0	405.0	29.0
27	Indotestudo	Indotestudo travancorica	ZMB 37717	224.0	22.40	28.0	15.2	23.0	200.0	15.0

	Genus	Taxon	CollNr	SCL	CCL	SCW	CCW	CH	PL	PV
28	Stigmochelys	Stigmochelys pardalis	ZMB 37344	405.0	40.50	55.0	27.0	50.5	350.0	24.0
29	Stigmochelys	Stigmochelys pardalis	ZMB 63235	315.0	31.50	43.5	23.4	39.0	298.0	22.0
30	Stigmochelys	Stigmochelys pardalis	ZMB 37495	297.0	29.70	41.5	21.4	36.0	271.0	19.0
31	Stigmochelys	Stigmochelys pardalis	ZMB 42400	345.0	34.50	46.5	24.0	40.0	285.0	21.0
32	Stigmochelys	Stigmochelys pardalis	ZMB 63232	350.0	35.00	46.0	23.9	45.0	303.0	21.0
33	Psammobates	Psammobates geometricus	ZMB 192	92.0	9.20	13.5	7.1	13.0	68.0	6.3
34	Chersina	Chersina angulata	-	181.9	18.19	NA	NA	NA	NA	NA
35	Aldabrachelys	Aldabrachelys gigantea	ZMB 47443	800.0	80.00	105.0	51.5	105.0	NA	NA
36	Astrochelys	Astrochelys yniphora	-	415.0	41.50	NA	NA	NA	NA	NA
37	Astrochelys	Astrochelys yniphora	-	370.0	37.00	NA	NA	NA	NA	NA
38	Aldabrachelys	Aldabrachelys gigantea	ZMB 51995	1030.0	103.00	138.0	NA	NA	NA	NA
39	Aldabrachelys	Aldabrachelys gigantea	ZMB ???	720.0	72.00	105.5	55.0	117.0	NA	NA
40	Cylindraspis	Cylindraspis triserrata	-	1100.0	110.00	NA	NA	NA	NA	NA
41	Cylindraspis	Cylindraspis vosmaeri	-	500.0	50.00	NA	NA	NA	NA	NA
42	Astrochelys	Astrochelys radiata	-	334.0	33.40	NA	NA	NA	NA	NA
43	Astrochelys	Astrochelys radiata	-	305.0	30.50	NA	NA	NA	NA	NA
44	Centrochelys	Centrochelys sulcata	-	830.0	83.00	NA	NA	NA	NA	NA
45	Psammobates	Psammobates geometricus	ZMB 186	105.0	10.50	13.5	7.4	13.0	90.0	6.9
46	Astrochelys	Astrochelys radiata	-	242.0	24.20	NA	NA	NA	NA	NA
47	Psammobates	Psammobates tentorius	ZMB 37627	116.0	11.60	15.0	9.4	14.5	117.0	8.9
48	Psammobates	Psammobates tentorius	ZMB 50571	95.0	9.50	12.0	7.3	12.0	79.0	7.0
49	Psammobates	Psammobates tentorius	ZMB 14766	81.0	8.10	10.5	6.8	10.0	67.0	5.9
50	Pyxis	Pyxis planicauda	-	114.0	11.40	NA	NA	NA	NA	NA
51	Pyxis	Pyxis planicauda	-	134.0	13.40	NA	NA	NA	NA	NA
52	Pyxis	Pyxis planicauda	-	120.0	12.00	NA	NA	NA	NA	NA
53	Psammobates	Psammobates oculifer	ZMB 16399	111.0	11.10	16.0	8.8	14.0	108.0	7.9
54	Psammobates	Psammobates oculifer	ZMB 14772	101.0	10.10	15.0	8.0	14.0	98.0	7.3
55	Psammobates	Psammobates oculifer	ZMB 24261	103.0	10.30	14.0	8.2	13.5	100.0	7.8
56	Psammobates	Psammobates oculifer	ZMB 37623	105.0	10.50	14.5	7.9	13.5	93.0	7.4
57	Kinixys	Kinixys belliana	ZMB 37489	180.0	18.00	24.0	12.0	20.5	176.0	11.0
58	Pyxis	Pyxis planicauda	-	160.0	16.00	NA	NA	NA	NA	NA

	Genus	Taxon	CollNr	SCL	CCL	SCW	CCW	CH	PL	PV
59	Psammobates	Psammobates geometricus	ZMB 50568	107.0	10.70	15.0	7.9	14.5	79.0	7.3
60	Aldabrachelys	Aldabrachelys gigantea	-	875.0	87.50	NA	NA	NA	NA	NA
61	Aldabrachelys	Aldabrachelys gigantea	-	1190.0	119.00	NA	NA	NA	NA	NA
62	Chersina	Chersina angulata	-	202.0	20.20	NA	NA	NA	NA	NA
63	Chersina	Chersina angulata	-	351.0	35.10	NA	NA	NA	NA	NA
64	Astrochelys	Astrochelys yniphora	-	446.0	44.60	NA	NA	NA	NA	NA
65	Chersina	Chersina angulata	ZMB 37393	160.0	16.00	20.0	10.0	17.5	158.0	9.2
66	Kinixys	Kinixys erosa	ZMB 50198	271.0	27.10	31.5	18.5	26.0	231.0	15.0
67	Chersina	Chersina angulata	ZMB 37392	181.0	18.10	22.5	11.6	19.0	177.0	9.7
68	Psammobates	Psammobates oculifer	-	147.0	14.70	NA	NA	NA	NA	NA
69	Psammobates	Psammobates tentorius	-	145.0	14.50	NA	NA	NA	NA	NA
70	Pyxis	Pyxis arachnoides	-	150.0	15.00	NA	NA	NA	NA	NA
71	Psammobates	Psammobates geometricus	ZMB 185	118.0	11.80	18.0	9.1	16.5	112.0	8.2
72	Stigmochelys	Stigmochelys pardalis	-	720.0	72.00	NA	NA	NA	NA	NA
73	Chersina	Chersina angulata	-	179.3	17.93	NA	NA	NA	NA	NA
74	Astrochelys	Astrochelys radiata	-	355.0	35.50	NA	NA	NA	NA	NA
75	Pyxis	Pyxis planicauda	-	126.0	12.60	NA	NA	NA	NA	NA
76	Testudo	Testudo kleinmanni	-	144.0	14.40	NA	NA	NA	NA	NA
77	Cylindraspis	Cylindraspis indica	-	600.0	60.00	NA	NA	NA	NA	NA
78	Astrochelys	Astrochelys yniphora	-	361.0	36.10	NA	NA	NA	NA	NA
79	Astrochelys	Astrochelys yniphora	-	486.0	48.60	NA	NA	NA	NA	NA
80	Pyxis	Pyxis planicauda	-	148.0	14.80	NA	NA	NA	NA	NA
81	Pyxis	Pyxis arachnoides	-	111.0	11.10	NA	NA	NA	NA	NA
82	Pyxis	Pyxis arachnoides	-	110.0	11.00	NA	NA	NA	NA	NA
83	Pyxis	Pyxis arachnoides	-	80.0	8.00	NA	NA	NA	NA	NA
84	Kinixys	Kinixys lobatsiana	-	200.0	20.00	NA	NA	NA	NA	NA
85	Pyxis	Pyxis arachnoides	-	86.0	8.60	NA	NA	NA	NA	NA
86	Pyxis	Pyxis arachnoides	-	154.0	15.40	NA	NA	NA	NA	NA
87	Kinixys	Kinixys homeana	-	223.0	22.30	NA	NA	NA	NA	NA
88	Homopus	Homopus femoralis	-	168.0	16.80	NA	NA	NA	NA	NA
89	Pyxis	Pyxis planicauda	-	132.0	13.20	NA	NA	NA	NA	NA

	Genus	Taxon	CollNr	SCL	CCL	SCW	CCW	CH	PL	PV
90	Homopus	Homopus aerolatus	-	300.0	30.00	NA	NA	NA	NA	NA
91	Homopus	Homopus boulengeri	-	110.0	11.00	NA	NA	NA	NA	NA
92	Kinixys	Kinixys erosa	-	400.0	40.00	NA	NA	NA	NA	NA
93	Chersina	Chersina angulata	ZMB 37479	148.0	14.80	20.0	10.1	17.0	142.0	9.5
94	Psammobates	Psammobates geometricus	-	165.0	16.50	NA	NA	NA	NA	NA
95	Homopus	Homopus solus	-	109.0	10.90	NA	NA	NA	NA	NA
96	Malacochersus	Malacochersus tornieri	-	180.0	18.00	NA	NA	NA	NA	NA
97	Chersina	Chersina angulata	-	153.5	15.35	NA	NA	NA	NA	NA
98	Pyxis	Pyxis arachnoides	-	144.0	14.40	NA	NA	NA	NA	NA
99	Kinixys	Kinixys belliana	-	230.0	23.00	NA	NA	NA	NA	NA
100	Aldabrachelys	Aldabrachelys gigantea	-	1140.0	114.00	NA	NA	NA	NA	NA
101	Astrochelys	Astrochelys radiata	-	400.0	40.00	NA	NA	NA	NA	NA
102	Chersina	Chersina angulata	-	166.4	16.64	NA	NA	NA	NA	NA
103	Chersina	Chersina angulata	-	171.6	17.16	NA	NA	NA	NA	NA
104	Cylindraspis	Cylindraspis peltastes	-	420.0	42.00	NA	NA	NA	NA	NA
105	Chersina	Chersina angulata	-	161.3	16.13	NA	NA	NA	NA	NA
106	Homopus	Homopus signatus	-	106.0	10.60	NA	NA	NA	NA	NA
107	Kinixys	Kinixys spekii	-	220.0	22.00	NA	NA	NA	NA	NA
108	Cylindraspis	Cylindraspis inepta	-	1000.0	100.00	NA	NA	NA	NA	NA
109	Kinixys	Kinixys natalensis	-	160.0	16.00	NA	NA	NA	NA	NA
110	Geochelone	Geochelone elegans	ZMB 63222	208.0	20.80	29.5	14.6	28.5	199.0	13.0
111	Geochelone	Geochelone elegans	ZMB 37523	245.0	24.50	32.0	16.6	32.0	228.0	14.0
112	Geochelone	Geochelone elegans	ZMB 63220	221.0	22.10	32.0	16.0	31.0	179.0	13.0
113	Geochelone	Geochelone elegans	ZMB 63221	220.0	22.00	31.0	15.4	27.0	209.0	14.0
114	Geochelone	Geochelone elegans	ZMB 63218	221.0	22.10	31.5	15.1	30.0	203.0	13.0
115	Geochelone	Geochelone platynota	ZMB 6096	222.0	22.20	29.5	15.1	27.0	NA	MA
116	Manouria	Manouria emys	-	600.0	60.00	NA	NA	NA	NA	NA
117	Indotestudo	Indotestudo forstenii	-	202.0	20.20	NA	NA	NA	NA	NA
118	Indotestudo	Indotestudo travancorica	-	249.7	24.97	NA	NA	NA	NA	NA
119	Indotestudo	Indotestudo forstenii	-	309.0	30.90	NA	NA	NA	NA	NA
120	Indotestudo	Indotestudo elongata	-	360.0	36.00	NA	NA	NA	NA	NA

	Genus	Taxon	CollNr	SCL	CCL	SCW	CCW	CH	PL	PV
121	Indotestudo	Indotestudo forstenii	-	199.0	19.90	NA	NA	NA	NA	NA
122	Indotestudo	Indotestudo elongata	-	244.2	24.42	NA	NA	NA	NA	NA
123	Indotestudo	Indotestudo travancorica	-	244.2	24.42	NA	NA	NA	NA	NA
124	Manouria	Manouria impressa	ZMB 63172	165.0	16.50	20.0	12.9	18.0	157.0	10.0
125	Indotestudo	Indotestudo elongata	ZMB 50492	276.0	27.60	33.0	19.4	28.5	246.0	17.0
126	Indotestudo	Indotestudo elongata	ZMB 63175	235.0	23.50	30.5	16.0	29.5	202.0	14.0
127	Indotestudo	Indotestudo elongata	ZMB 4174	208.0	20.80	26.0	13.4	20.0	180.0	11.0
128	Indotestudo	Indotestudo elongata	ZMB 6106	166.0	16.60	21.0	11.3	18.0	151.0	11.0
129	Manouria	Manouria emys	-	600.0	60.00	NA	NA	NA	NA	NA
130	Testudo	Testudo graeca	-	250.0	25.00	NA	NA	NA	NA	NA
131	Testudo	Testudo graeca	-	280.0	28.00	NA	NA	NA	NA	NA
132	Manouria	Manouria emys	ZMB 49049	212.0	21.20	26.5	16.5	25.0	NA	NA
133	Manouria	Manouria emys	ZMB 37350	445.0	44.50	52.0	32.0	50.0	455.0	29.0
134	Manouria	Manouria emys	ZMB 37342	330.0	33.00	40.5	26.7	37.0	330.0	23.0
135	Indotestudo	Indotestudo travancorica	-	331.0	33.10	NA	NA	NA	NA	NA
136	Indotestudo	Indotestudo travancorica	-	219.6	21.96	NA	NA	NA	NA	NA
137	Indotestudo	Indotestudo forstenii	-	200.5	20.05	NA	NA	NA	NA	NA
138	Testudo	Testudo horsfieldii	-	280.0	28.00	NA	NA	NA	NA	NA
139	Manouria	Manouria impressa	-	350.0	35.00	NA	NA	NA	NA	NA
140	Geochelone	Geochelone elegans	-	380.0	38.00	NA	NA	NA	NA	NA
141	Manouria	Manouria impressa	-	275.0	27.50	NA	NA	NA	NA	NA
142	Indotestudo	Indotestudo elongata	-	219.6	21.96	NA	NA	NA	NA	NA
143	Geochelone	Geochelone platynota	-	300.0	30.00	NA	NA	NA	NA	NA
144	Testudo	Testudo graeca	-	300.0	30.00	NA	NA	NA	NA	NA
145	Gopherus	Gopherus flavomarginatus	-	400.0	40.00	NA	NA	NA	NA	NA
146	Gopherus	Gopherus morafkai	-	299.0	29.90	NA	NA	NA	NA	NA
147	Gopherus	Gopherus berlandieri	-	240.0	24.00	NA	NA	NA	NA	NA
148	Testudo	Testudo horsfieldii	ZMB 63259	111.0	11.10	14.0	10.0	15.0	108.0	9.5
149	Pyxis	Pyxis arachnoides	ZMB 37615	108.0	10.80	15.0	7.9	13.0	96.0	7.1
150	Testudo	Testudo marginata	-	241.7	24.17	NA	NA	NA	NA	NA
151	Testudo	Testudo horsfieldii	ZMB 63258	123.0	12.30	14.5	10.9	15.0	121.0	9.8

	Genus	Taxon	CollNr	SCL	CCL	SCW	CCW	CH	PL	PV
152	Testudo	Testudo hermanni	-	183.3	18.33	NA	NA	NA	NA	NA
153	Testudo	Testudo hermanni	-	176.9	17.69	NA	NA	NA	NA	NA
154	Testudo	Testudo horsfieldii	ZMB 63257	114.0	11.40	14.5	10.2	14.0	110.0	9.9
155	Testudo	Testudo marginata	-	246.7	24.67	NA	NA	NA	NA	NA
156	Testudo	Testudo hermanni	-	196.0	19.60	NA	NA	NA	NA	NA
157	Testudo	Testudo hermanni	-	143.5	14.35	NA	NA	NA	NA	NA
158	Testudo	Testudo graeca	-	194.6	19.46	NA	NA	NA	NA	NA
159	Testudo	Testudo hermanni	-	200.0	20.00	NA	NA	NA	NA	NA
160	Testudo	Testudo hermanni	-	250.0	25.00	NA	NA	NA	NA	NA
161	Testudo	Testudo marginata	-	246.0	24.60	NA	NA	NA	NA	NA
162	Testudo	Testudo marginata	-	242.5	24.25	NA	NA	NA	NA	NA
163	Testudo	Testudo marginata	-	246.0	24.60	NA	NA	NA	NA	NA
164	Testudo	Testudo hermanni	-	147.0	14.70	NA	NA	NA	NA	NA
165	Testudo	Testudo marginata	-	290.0	29.00	NA	NA	NA	NA	NA
166	Testudo	Testudo marginata	-	250.0	25.00	NA	NA	NA	NA	NA
167	Testudo	Testudo hermanni	-	145.9	14.59	NA	NA	NA	NA	NA
168	Testudo	Testudo graeca	-	178.2	17.82	NA	NA	NA	NA	NA
169	Testudo	Testudo marginata	-	400.0	40.00	NA	NA	NA	NA	NA
170	Testudo	Testudo horsfieldii	ZMB 63255	136.0	13.60	18.0	13.0	16.5	129.0	12.9
171	Testudo	Testudo horsfieldii	ZMB 63256	132.0	13.20	17.0	12.4	17.0	133.0	11.9
172	Testudo	Testudo hermanni	-	168.3	16.83	NA	NA	NA	NA	NA
173	Testudo	Testudo hermanni	-	160.0	16.00	NA	NA	NA	NA	NA
174	Testudo	Testudo hermanni	-	154.0	15.40	NA	NA	NA	NA	NA
175	Testudo	Testudo hermanni	-	138.5	13.85	NA	NA	NA	NA	NA
176	Testudo	Testudo hermanni	-	173.0	17.30	NA	NA	NA	NA	NA
177	Testudo	Testudo marginata	-	242.5	24.25	NA	NA	NA	NA	NA
178	Testudo	Testudo hermanni	-	195.0	19.50	NA	NA	NA	NA	NA
179	Testudo	Testudo hermanni	-	157.0	15.70	NA	NA	NA	NA	NA
180	Testudo	Testudo hermanni	-	176.6	17.66	NA	NA	NA	NA	NA
181	Testudo	Testudo hermanni	-	130.0	13.00	NA	NA	NA	NA	NA
182	Testudo	Testudo hermanni	-	161.0	16.10	NA	NA	NA	NA	NA

	Genus	Taxon	CollNr	SCL	CCL	SCW	CCW	CH	PL	PV
183	Gopherus	Gopherus polyphemus	-	300.0	30.00	NA	NA	NA	NA	NA
184	Gopherus	Gopherus sp.	MVZ 210020	NA	NA	NA	NA	NA	219.6	NA
185	Gopherus	Gopherus sp.	MVZ 210003	NA	NA	NA	NA	NA	192.1	NA
186	Gopherus	Gopherus polyphemus	-	268.8	26.88	NA	NA	NA	NA	NA
187	Gopherus	Gopherus sp.	MVZ 120004	NA	NA	NA	NA	NA	196.7	NA
188	Gopherus	Gopherus sp.	MVZ 210009	NA	NA	NA	NA	NA	232.8	NA
189	Gopherus	Gopherus sp.	MVZ 210010	NA	NA	NA	NA	NA	240.1	NA
190	Gopherus	Gopherus agassizii	-	400.0	40.00	NA	NA	NA	NA	NA
191	Gopherus	Gopherus flavomarginatus	KU 39415	303.0	30.30	NA	23.2	NA	NA	NA
192	Gopherus	Gopherus polyphemus	-	308.0	30.80	NA	NA	NA	NA	NA
193	Gopherus	Gopherus polyphemus	-	303.0	30.30	NA	NA	NA	NA	NA
194	Gopherus	Gopherus polyphemus	-	387.0	38.70	NA	NA	NA	NA	NA
195	Gopherus	Gopherus polyphemus	-	342.0	34.20	NA	NA	NA	NA	NA
196	Gopherus	Gopherus flavomarginatus	USNM 61253	222.0	22.20	NA	16.6	NA	212.0	NA
197	Gopherus	Gopherus flavomarginatus	USNM 61254	371.0	37.10	NA	29.2	NA	358.0	NA
198	Gopherus	Gopherus polyphemus	-	238.9	23.89	NA	NA	NA	NA	NA
199	Gopherus	Gopherus flavomarginatus	USNM 60976	246.0	24.60	NA	21.2	NA	252.0	NA
200	Gopherus	Gopherus flavomarginatus	IU 42953	281.0	28.10	NA	22.0	NA	NA	NA
201	Gopherus	Gopherus flavomarginatus	IU 42954	278.0	27.80	NA	21.4	NA	NA	NA
202	Chelonoidis	Chelonoidis nigra	USNM 51069	588.0	58.80	68.3	44.5	NA	506.0	NA
203	Chelonoidis	Chelonoidis nigra	USNM1 102904	610.0	61.00	67.5	44.4	NA	515.0	NA
204	Chelonoidis	Chelonoidis carbonaria	-	593.0	59.30	NA	NA	NA	NA	NA
205	Chelonoidis	Chelonoidis abingdonii	-	980.0	98.00	NA	NA	NA	NA	NA
206	Chelonoidis	Chelonoidis denticulata	-	333.4	33.34	NA	NA	NA	NA	NA
207	Chelonoidis	Chelonoidis chilensis	UF33604	169.0	16.90	21.5	13.2	NA	161.0	NA
208	Chelonoidis	Chelonoidis chilensis	UF33618	186.0	18.60	25.0	14.7	NA	169.0	NA
209	Chelonoidis	Chelonoidis nigra	-	717.0	71.70	NA	NA	NA	NA	NA
210	Chelonoidis	Chelonoidis chilensis	UF33617	169.0	16.90	22.8	14.6	NA	162.0	NA
211	Chelonoidis	Chelonoidis carbonaria	UF27384	242.0	24.20	31.7	15.5	NA	219.0	NA
212	Chelonoidis	Chelonoidis carbonaria	UF33597	253.0	25.30	31.7	15.3	NA	215.0	NA
213	Chelonoidis	Chelonoidis nigra	USNM1 222494	595.0	59.50	68.0	43.6	NA	533.0	NA

	Genus	Taxon	CollNr	SCL	CCL	SCW	CCW	CH	PL	PV
214	Chelonoidis	Chelonoidis carbonaria	-	333.4	33.34	NA	NA	NA	NA	NA
215	Chelonoidis	Chelonoidis carbonaria	UF5259	226.0	22.60	28.7	12.9	NA	198.0	NA
216	Chelonoidis	Chelonoidis becki	-	1050.0	105.00	NA	NA	NA	NA	NA
217	Chelonoidis	Chelonoidis denticulata	UF33661	333.0	33.30	38.0	21.4	NA	305.0	NA
218	Chelonoidis	Chelonoidis denticulata	UF61931	317.0	31.70	41.2	18.5	NA	291.0	NA
219	Chelonoidis	Chelonoidis denticulata	UF33670	365.0	36.50	47.0	22.0	NA	326.0	NA
220	Chelonoidis	Chelonoidis chilensis	UF33603	183.0	18.30	23.4	14.5	NA	166.0	NA
221	Chelonoidis	Chelonoidis nigra	-	731.3	73.13	NA	NA	NA	NA	NA
222	Chelonoidis	Chelonoidis chilensis	-	200.0	20.00	NA	NA	NA	NA	NA
223	Chelonoidis	Chelonoidis carbonaria	UF48278	247.0	24.70	33.9	15.5	NA	214.0	NA
224	Chelonoidis	Chelonoidis carbonaria	-	296.5	29.65	NA	NA	NA	NA	NA
225	Chelonoidis	Chelonoidis carbonaria	-	290.0	29.00	NA	NA	NA	NA	NA
226	Chelonoidis	Chelonoidis carbonaria	UF33596	189.0	18.90	24.7	12.1	NA	174.0	NA
227	Chelonoidis	Chelonoidis nigra	-	745.7	74.57	NA	NA	NA	NA	NA
228	Chelonoidis	Chelonoidis chathamensis	-	890.0	89.00	NA	NA	NA	NA	NA
229	Chelonoidis	Chelonoidis denticulata	UF19242	466.0	46.60	59.7	26.5	NA	410.0	NA
230	Chelonoidis	Chelonoidis denticulata	UF23231	377.0	37.70	47.1	23.8	NA	334.0	NA
231	Chelonoidis	Chelonoidis denticulata	-	820.0	82.00	NA	NA	NA	NA	NA
232	Chelonoidis	Chelonoidis duncanensis	-	840.0	84.00	NA	NA	NA	NA	NA
233	Chelonoidis	Chelonoidis chilensis	-	222.0	22.20	NA	NA	NA	NA	NA
234	Chelonoidis	Chelonoidis chilensis	UF33600	157.0	15.70	20.8	11.9	NA	145.0	NA
235	Chelonoidis	Chelonoidis phantastica	-	860.0	86.00	NA	NA	NA	NA	NA
236	Chelonoidis	Chelonoidis vicina	-	1250.0	125.00	NA	NA	NA	NA	NA
237	Chelonoidis	Chelonoidis hoodensis	-	813.0	81.30	NA	NA	NA	NA	NA
238	Chelonoidis	Chelonoidis nigra	-	1300.0	130.00	NA	NA	NA	NA	NA
239	Chelonoidis	Chelonoidis darwini	-	965.0	96.50	NA	NA	NA	NA	NA
240	Chelonoidis	Chelonoidis chilensis	-	450.0	45.00	NA	NA	NA	NA	NA

```
length(unique(tidyCL$Locality))
```

```
## [1] 193
```

```
length(unique(tidyCL$Locality[which(tidyCL$Age < 23.000)]))
```

```
## [1] 186
```

```
length(unique(FossilOccurrences$Locality))
```

```
## [1] 647
```

```
length(unique(FossilOccurrences$Locality[which(FossilOccurrences$Clavailability=="yes")]))
```

```
## [1] 112
```

```
Fossil0cMiocene <- FossilOccurrences %>%
```

```
  mutate(Age=(MA.min+Ma.max)/2) %>%
```

```
  filter(Age < 23.000)
```

```
length(unique(Fossil0cMiocene$Locality))
```

```
## [1] 534
```

```
length(unique(Fossil0cMiocene$Locality[which(FossilOccurrences$Clavailability=="yes")]))
```

```
## [1] 108
```

number of all fossil localities with body size data (body size data set) 193

number of fossil localities that match the relevant age 186

number of localities according to FosFarBase 647

number of FosFarBase localities for which body size was available 112

number of FosFarBase localities of relevant age 534

number of FosFarBase localities of relevant age for which body size data was available 106

Body size data set: number of data records 384

number of data records of relevant age 376

number of Countries where data records occurred 54

number of measured SCLs 97

number of measured SCLs 33

number of estimated SCLs 254

number of SCLs measured from figure 38

number of SCLs estimated from PL 61

number of SCLs that were estimated by original authors 158

Occurrences: number of data records 770

number of data records of relevant age 641

number of data available body sizes 132

number of available body sizes of relevant age 126

Extant:

number of extant data records 240

number of specimens from MFN collection 67

number of specimens from literature 173

[1] 384

[1] 119

[1] 384

[1] 26

[1] 144

[1] 11

[1] Ergilemys Testudo Cheirogaster Titanochelon Paleotestudo

[6] Geochelone Centrochelys gen. "Hadrianus" Eurotestudo

[11] Taraschelon

26 Levels: "Hadrianus" Aldabrachelys Caudochelys ... Titanochelon

[1] 7

[1] 2

[1] Geochelone Chelonoidis

26 Levels: "Hadrianus" Aldabrachelys Caudochelys ... Titanochelon

[1] 167

[1] 15

[1] Testudo Geochelone Ergilemys Aldabrachelys Megalochelys

[6] Manouria Indotestudo gen. Cheirogaster Titanochelon

[11] Paleotestudo Centrochelys "Hadrianus" Eurotestudo Taraschelon

26 Levels: "Hadrianus" Aldabrachelys Caudochelys ... Titanochelon

Table 14: Relative abundances of individuals per genera across the continents. Basis for sampling accumulation curves.

Genus	Africa.x	America	N-America	S-America	Asia.x	Europe.x	n
"Hadrianus"	-	-	-	-	-	1	1
Aldabrachelys	4	-	-	-	2	-	2
Caudochelys	-	4	4	-	-	-	-
Centrochelys	2	-	-	-	-	12	12
Cheirogaster	-	-	-	-	-	9	9
Chelonoidis	-	28	-	6	-	-	-
Ergilemys	-	-	-	-	2	3	4
Eurotestudo	-	-	-	-	-	10	10
gen.	-	-	-	-	1	7	8
Geochelone	4	10	8	1	1	2	3
Gopherus	-	92	88	-	-	-	-
Hesperotestudo	-	46	43	-	-	-	-
Homopus	1	-	-	-	-	-	-
Impregnochelys	1	-	-	-	-	-	-
Indotestudo	-	-	-	-	1	-	1
Kinixys	1	-	-	-	-	-	-
Manouria	-	-	-	-	2	-	2
Megalochelys	-	-	-	-	12	-	12
Mesocherus	5	-	-	-	-	-	-
Namibchersus	9	-	-	-	-	-	-
Paleotestudo	-	-	-	-	-	26	26

Genus	Africa.x	America	N-America	S-America	Asia.x	Europe.x	n
Psammobates	1	-	-	-	-	-	-
Stylemys	-	1	1	-	-	-	-
Taraschelon	-	-	-	-	-	1	1
Testudo	5	1	1	-	4	51	54
Titanochelon	-	-	-	-	-	22	22