

# MAthesis

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

bin	EpochBins	MeanBins	nIndividuals	nSpecies	nGenera
(0,1e-06]	Modern	0.0000005	240	58	17
(1e-06,0.0117]	Holocene	0.0058500	12	6	4
(0.0117,0.126]	Upper Pleistocene	0.0688500	46	15	7
(0.126,0.781]	Middle Pleistocene	0.4535000	46	9	6
(0.781,2.59]	Lower Pleistocene	1.6845000	68	24	11
(2.59,3.6]	Upper Pliocene	3.0940000	21	14	9
(3.6,5.33]	Lower Pliocene	4.4660000	27	16	8
(5.33,11.6]	Upper Miocene	8.4700000	41	21	9

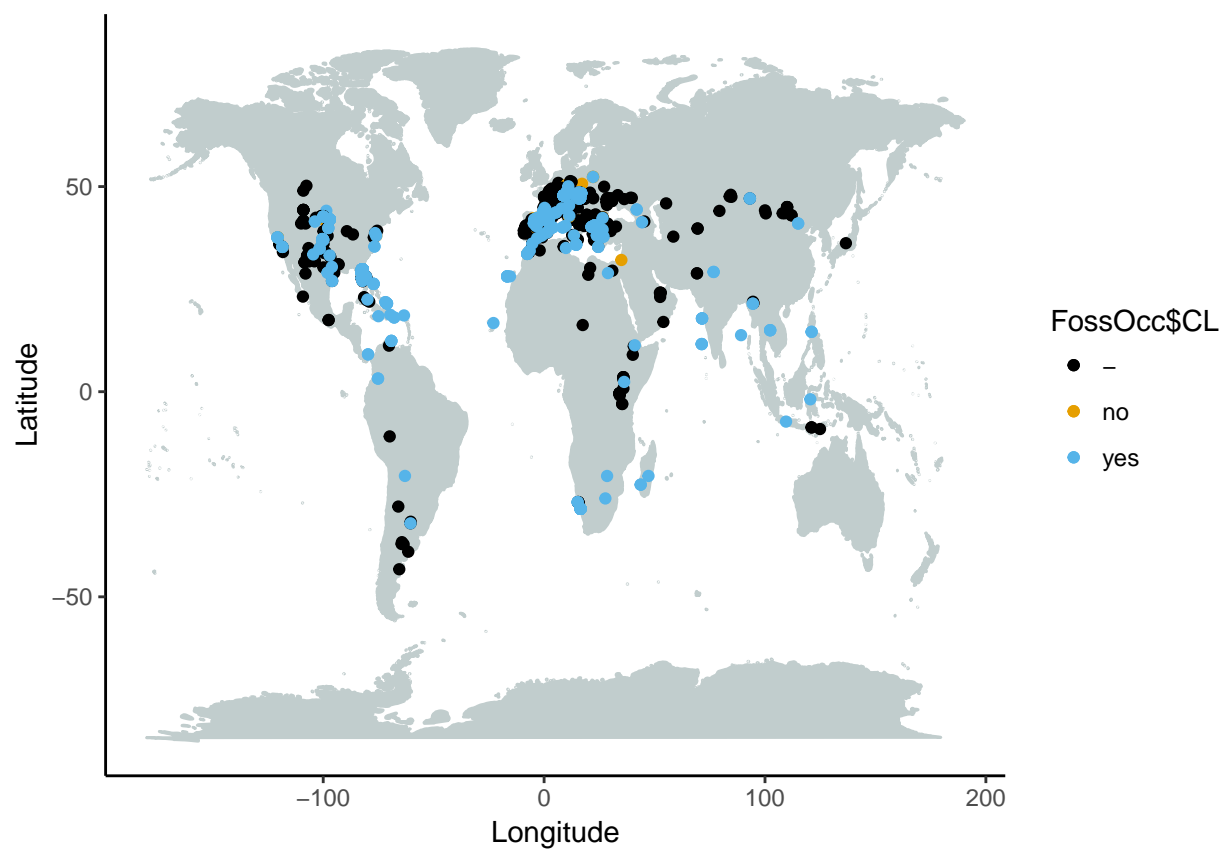


Figure 1: Map displaying all fossil occurrences of testudinids, with color indicating whether relevant literature was available (black if not) and if it was, whether body size data was available or not (yes and no, respectively).

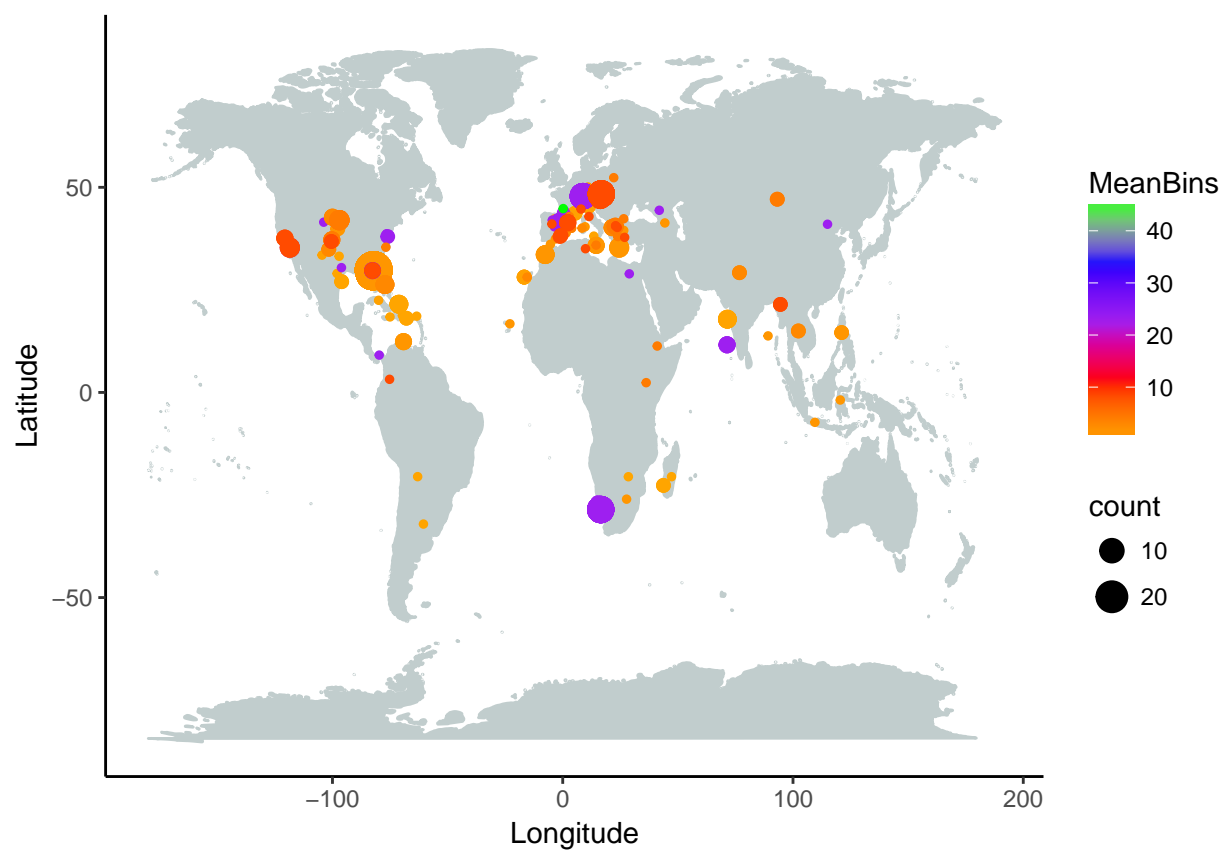


Figure 2: Map displaying all localities for which body size data for testudinids was available in the literature. Size of points denotes sample size, color denotes approximate age.

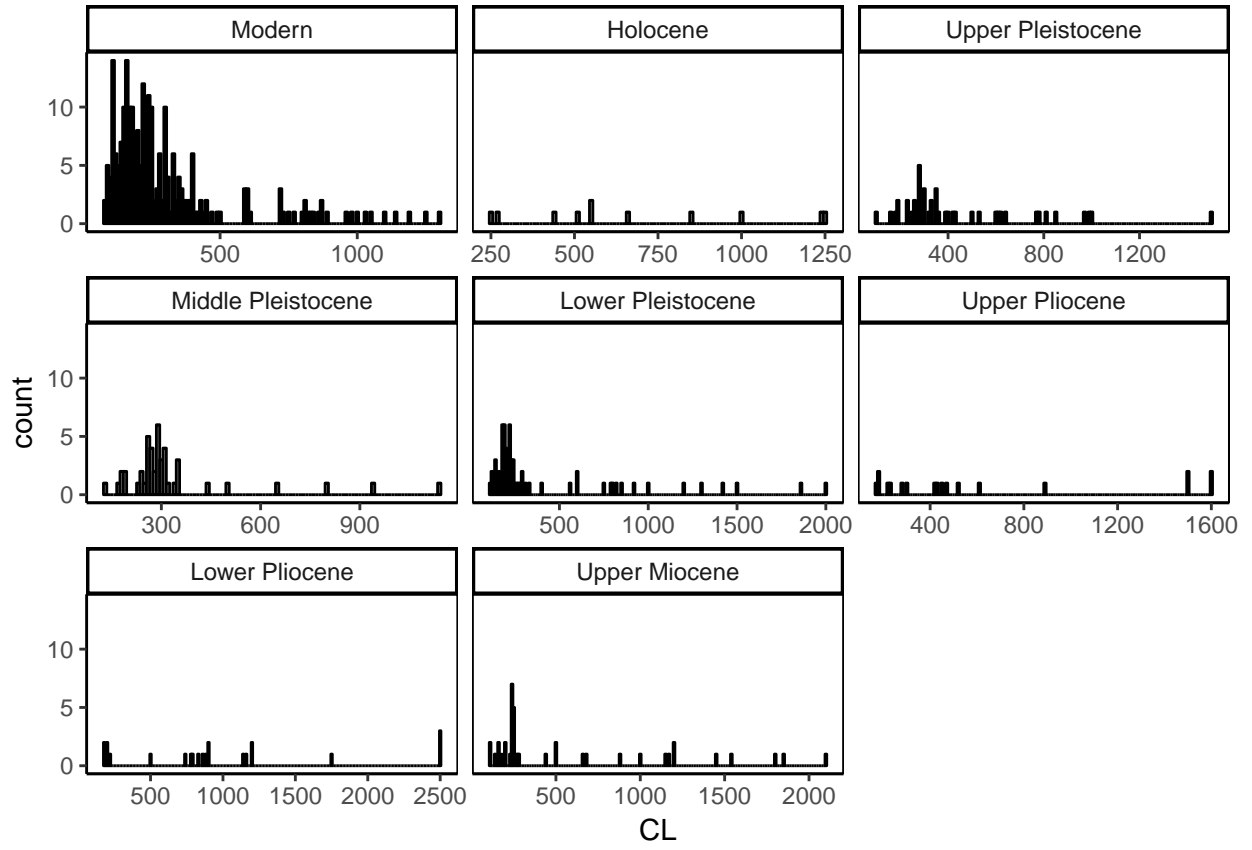
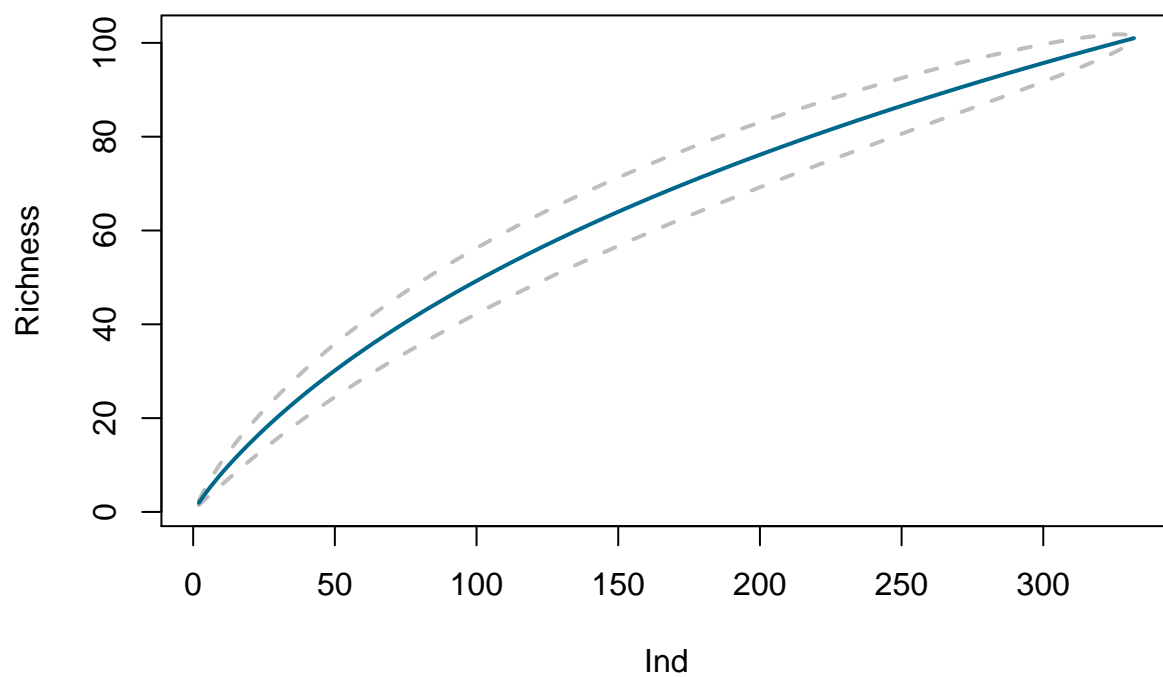
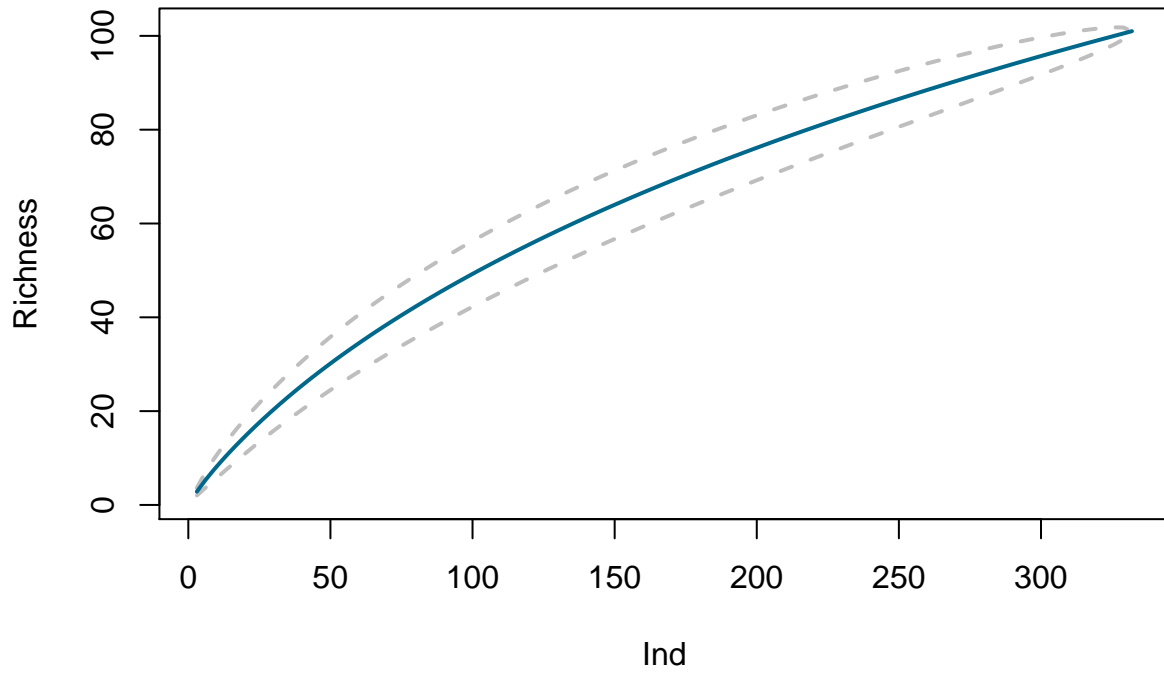


Figure 3: Distribution of body site data per time bin

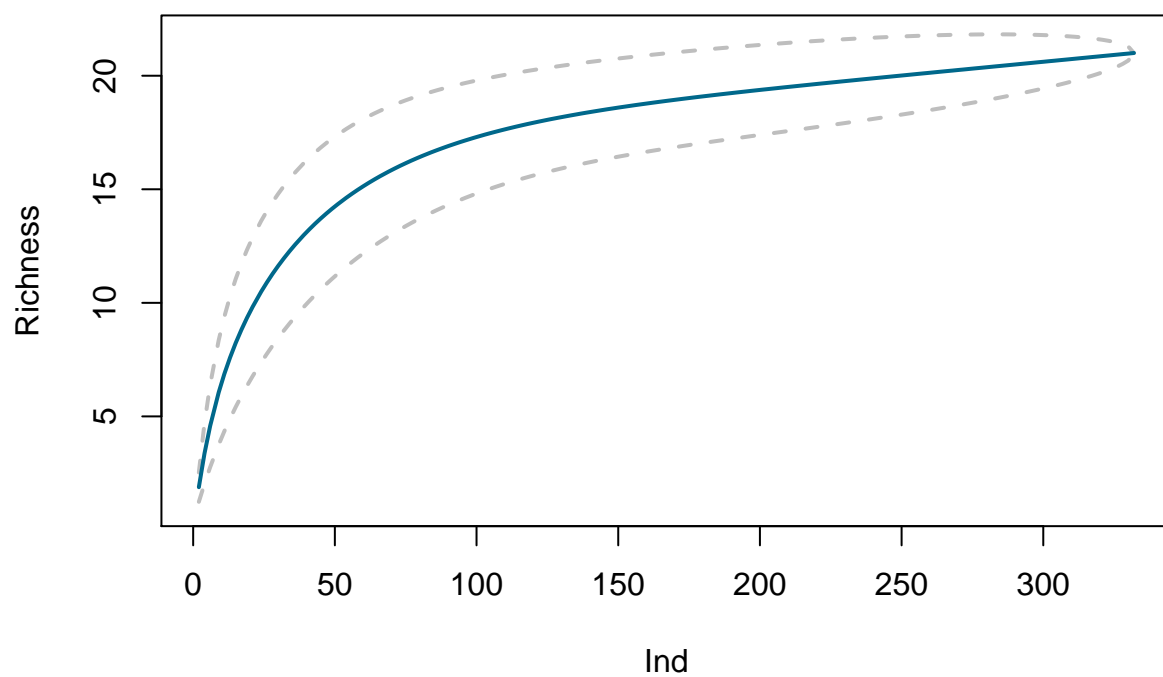
### Fossil species, CL, per Locality



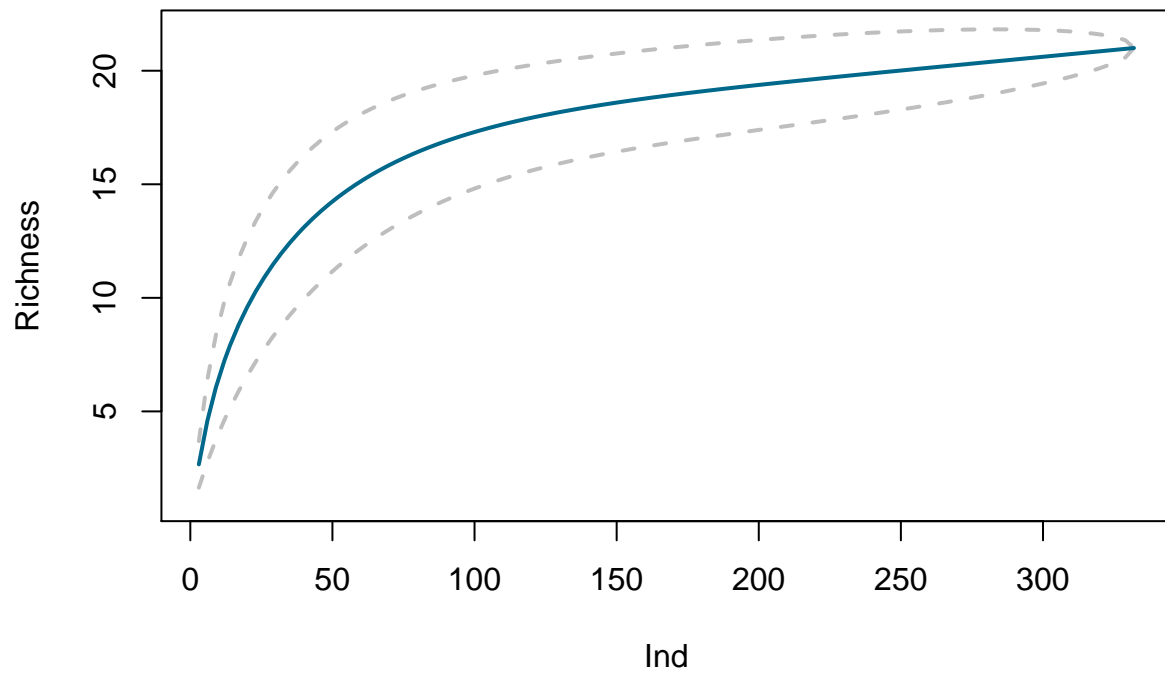
### Fossil species, CL, per Reference



**Fossil genera, CL, per Locality**



### Fossil genera, CL, per Reference



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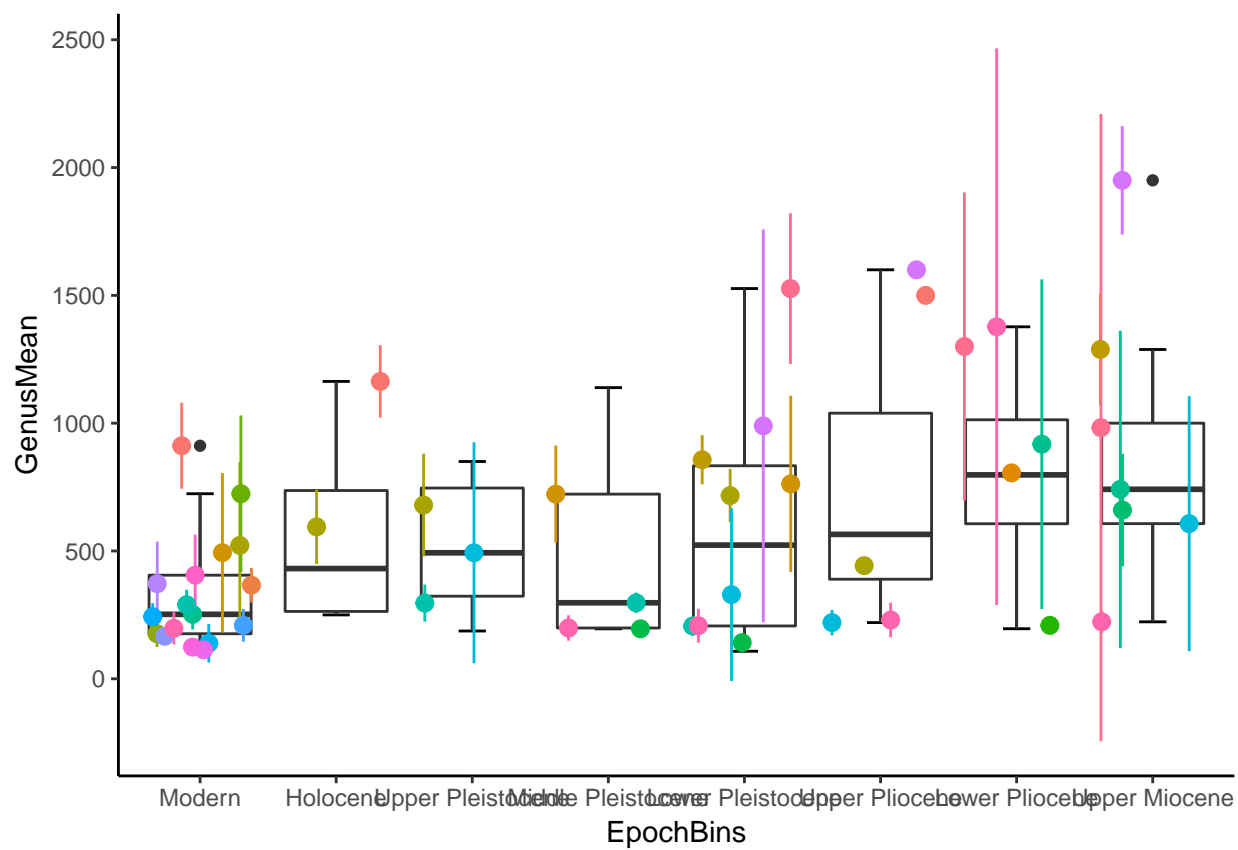


Figure 4: Boxplots of each genus per time bin, for colors see Fig. 4.

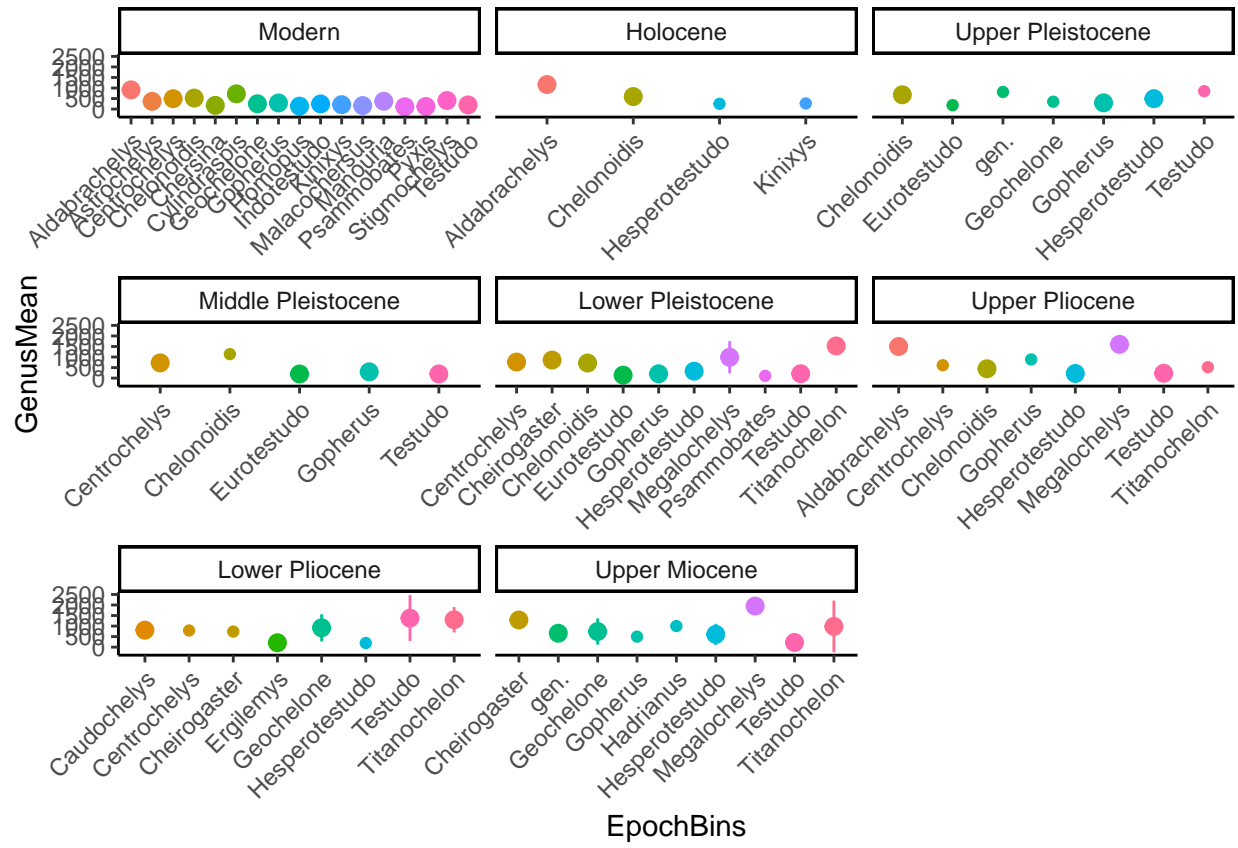


Figure 5: Mean body size and standard deviation per genus in each time bin

# 1 including Island species (n=2215)

Table 2: paleoTS object (mm= mean CL, nn = sample size, vv = variance (CL), tt = Age)

mm	nn	vv	tt
246.8335	1968	2.126636e+09	0.0000005
688.5455	11	1.245041e+05	0.0058500
447.6480	45	8.098707e+04	0.0688500
333.8707	45	3.704545e+04	0.4535000
415.0939	66	1.833202e+05	1.6845000
642.0167	18	2.812598e+05	3.0940000
1004.9909	22	5.319102e+05	4.4660000
582.7750	40	3.097159e+05	8.4700000

##

## Comparing 3 models [n = 7, method = AD]

##

##		logL	K	AICc	Akaike.wt
## GRW		-50.30596	2	107.6119	0.038
## URW		-50.78070	1	104.3614	0.191
## Stasis		-47.28232	2	101.5646	0.772

Table 3: Model-fitting results for testudinidae, individuals, including island species

	logL	K	AICc	Akaike.wt
GRW	-50.30596	2	107.6119	0.038
URW	-50.78070	1	104.3614	0.191
Stasis	-47.28232	2	101.5646	0.772

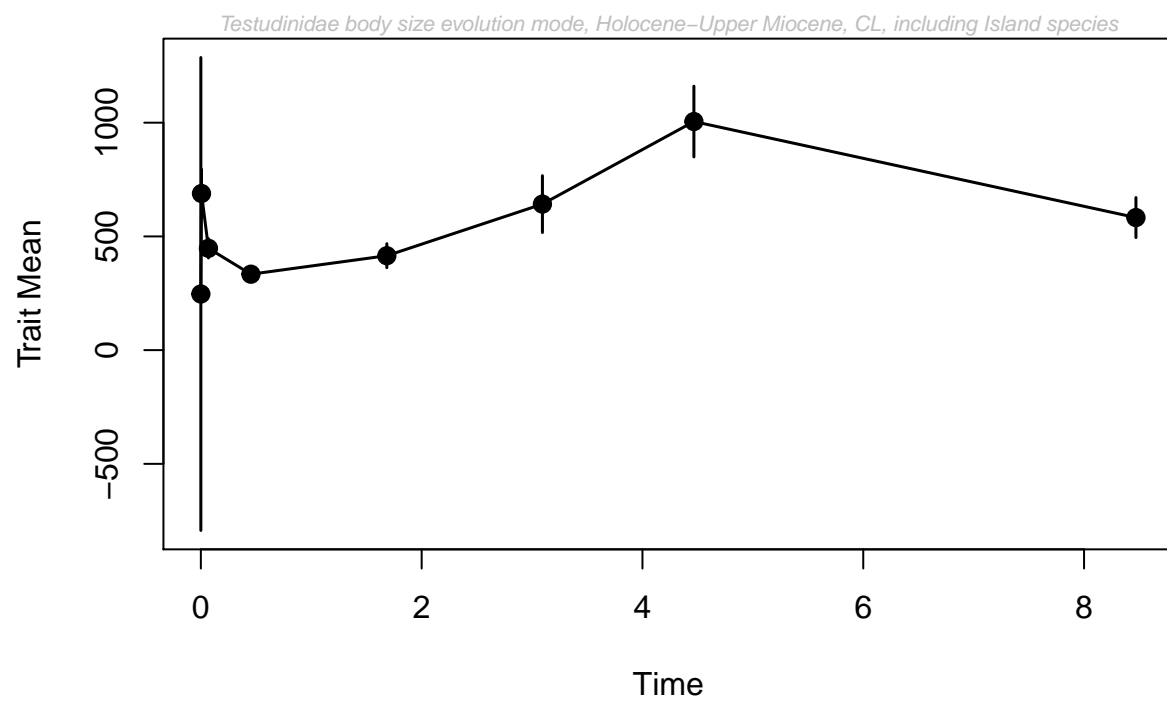


Figure 6: individuals, including island species

## 2 paleoTS plot with species mean, including island species

EpochBins	meanSpeciesCL	nSpecies	MeanBins
Holocene	671.4667	5	0.00585
Upper Pleistocene	521.4533	17	0.06885
Middle Pleistocene	384.8626	10	0.45350
Lower Pleistocene	581.2039	28	1.68450
Upper Pliocene	610.4591	11	3.09400
Lower Pliocene	1009.4738	14	4.46600
Upper Miocene	680.7708	24	8.47000

	tt	mm	vv	nn
0.0000005	400.5972	104321.19	50	
0.0058500	671.4667	195810.92	5	
0.0688500	521.4533	67149.55	17	
0.4535000	384.8626	99603.12	10	
1.6845000	581.2039	319998.46	28	
3.0940000	610.4591	260640.34	11	
4.4660000	1009.4738	437400.60	14	
8.4700000	680.7708	349806.99	24	

##

## Comparing 3 models [n = 7, method = AD]

##

##		logL	K	AICc	Akaike.wt
## GRW		-47.86862	2	102.73724	0.059
## URW		-47.99319	1	98.78638	0.422
## Stasis		-45.68754	2	98.37508	0.519

	logL	K	AICc	Akaike.wt
GRW	-47.86862	2	102.73724	0.059
URW	-47.99319	1	98.78638	0.422

	logL	K	AICc	Akaike.wt
Stasis	-45.68754	2	98.37508	0.519

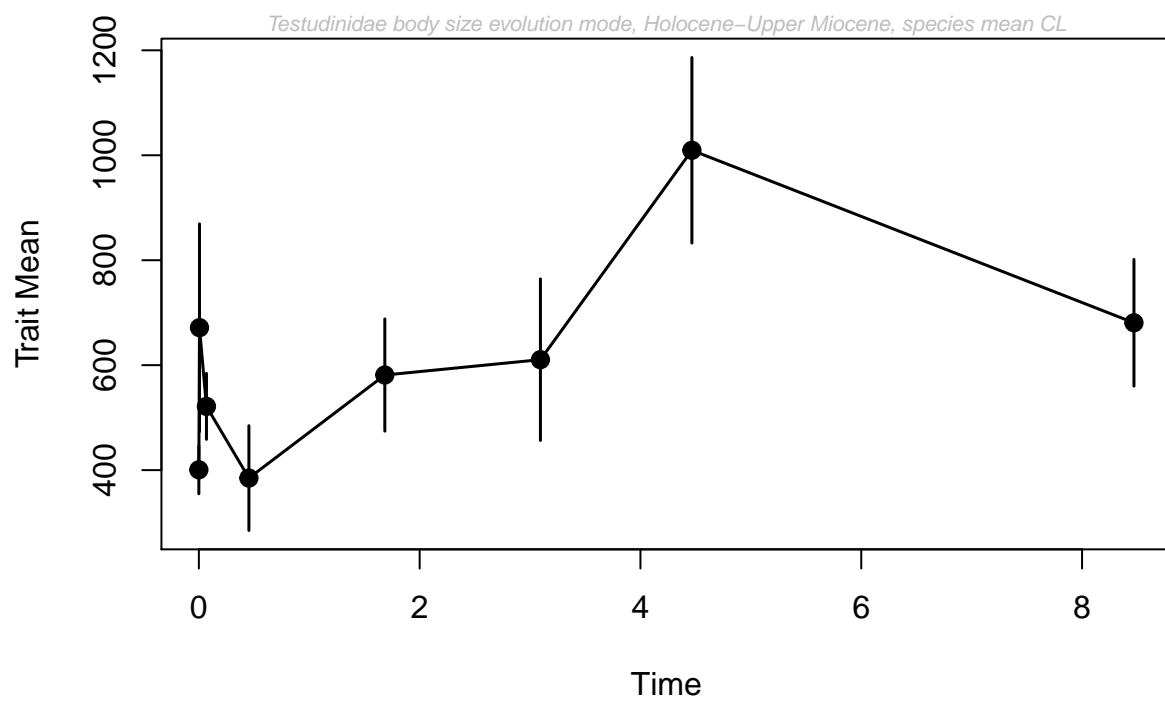


Figure 7: paleoTS plot with species mean, including island species

### 3 paleoTS plot with genus mean

Table 7: Overview over body size means per time bin on genus level.

CL	n	var	tt	Genus
853.3667	120	168501582	5e-07	Aldabrachelys
238.6918	664	372641839	5e-07	Gopherus
361.0260	204	412645499	5e-07	Chelonoidis
140.0327	849	2949618378	5e-07	Testudo
366.2143	14	26286129	5e-07	Astrochelys
493.3333	3	2190400	5e-07	Centrochelys
176.2667	15	6990736	5e-07	Chersina
724.0000	5	13104400	5e-07	Cylindraspis
252.1250	8	4068289	5e-07	Geochelone
139.2857	7	950625	5e-07	Homopus
242.9875	16	15114989	5e-07	Indotestudo
209.1429	14	8573184	5e-07	Kinixys
166.5000	2	110889	5e-07	Malacochersus
372.1250	8	8862529	5e-07	Manouria
113.4118	17	3717184	5e-07	Psammobates
124.1875	16	3948169	5e-07	Pyxis
405.3333	6	5914624	5e-07	Stigmochelys

tt	mm	vv	nn
0.0000005	316.3547	44441.20	17
0.0058500	568.9167	182078.62	4
0.0688500	524.0911	68449.15	7
0.4535000	510.6329	170442.90	5
1.6845000	584.4960	216523.00	10
3.0940000	751.0250	288801.06	8
4.4660000	791.7563	187777.18	8



tt	mm	vv	nn
8.4700000	883.5611	256846.90	9

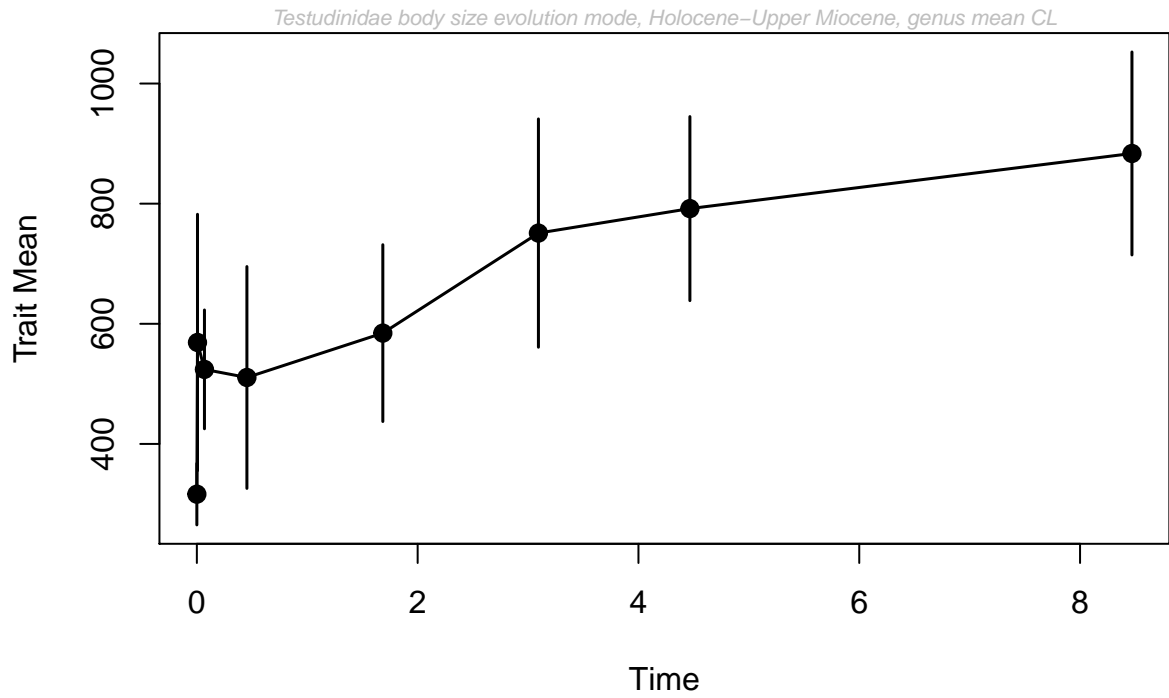


Figure 8: paleoTS plot with genus mean, including island species

```
##
## Comparing 3 models [n = 7, method = AD]
##
##          logL K      AICc Akaike.wt
## GRW      -45.34107 2 97.68214    0.108
## URW      -45.56823 1 93.93647    0.700
## Stasis   -44.76259 2 96.52518    0.192
```

	logL	K	AICc	Akaike.wt
GRW	-45.34107	2	97.68214	0.108
URW	-45.56823	1	93.93647	0.700

	logL	K	AICc	Akaike.wt
Stasis	-44.76259	2	96.52518	0.192

## 4 excluding island species

Table 10: paleoTS object (mm= mean CL, nn = sample size, vv = variance (CL), tt = Age)

mm	nn	vv	tt
199.7807	1771	1.710776e+09	0.0000005
259.0000	2	1.620000e+02	0.0058500
380.0617	35	7.471306e+04	0.0688500
274.8795	40	3.342617e+03	0.4535000
262.7958	48	6.826984e+04	1.6845000
766.3909	11	4.261398e+05	3.0940000
1029.0400	20	5.811355e+05	4.4660000
550.2821	39	2.745233e+05	8.4700000

```
##
## Comparing 3 models [n = 7, method = AD]
##
##           logL K      AICc Akaike.wt
## GRW      -50.08983 2 107.1797    0.330
## URW      -53.48728 1 109.7746    0.090
## Stasis   -49.52770 2 106.0554    0.579
```

Table 11: Model-fitting results for testudinidae, individuals, including island species

	logL	K	AICc	Akaike.wt
GRW	-50.08983	2	107.1797	0.330

	logL	K	AICc	Akaike.wt
URW	-53.48728	1	109.7746	0.090
Stasis	-49.52770	2	106.0554	0.579

logL	K	AICc	Akaike.wt
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## 5 paleoTS plot with species mean, excluding island species

EpochBins	meanSpeciesCL	nSpecies	MeanBins
Holocene	259.0000	2	0.00585
Upper Pleistocene	447.7325	12	0.06885
Middle Pleistocene	248.3908	8	0.45350
Lower Pleistocene	368.7943	16	1.68450
Upper Pliocene	702.4714	7	3.09400
Lower Pliocene	1050.3028	12	4.46600
Upper Miocene	629.9348	23	8.47000

tt	mm	vv	nn
0.0000005	215.4494	9193.970	32
0.0058500	259.0000	162.000	2
0.0688500	447.7325	71037.951	12
0.4535000	248.3908	9244.191	8
1.6845000	368.7943	192142.503	16
3.0940000	702.4714	393708.572	7
4.4660000	1050.3028	504079.900	12
8.4700000	629.9348	300864.767	23

##

## Comparing 3 models [n = 7, method = AD]

##

##		logL	K	AICc	Akaike.wt
## GRW		-48.28945	2	103.5789	0.138
## URW		-48.69437	1	100.1887	0.750

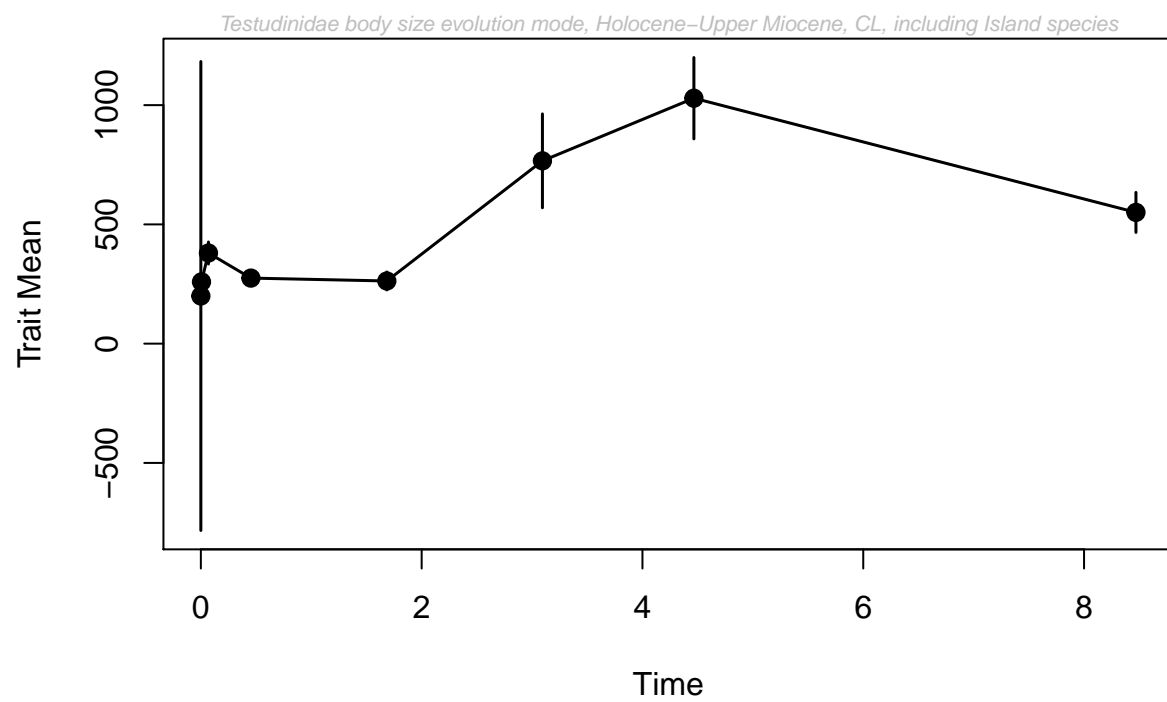


Figure 9: individuals, excluding island species

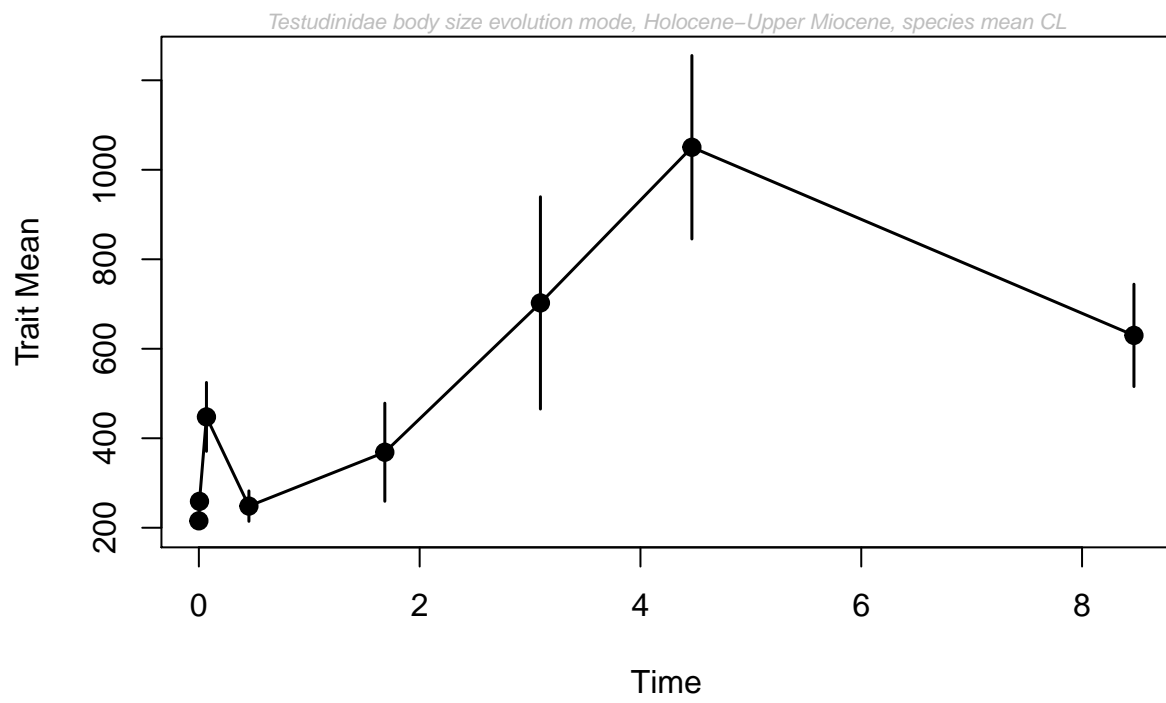


Figure 10: paleoTS plot with species mean, excluding island species

## Stasis -48.49817 2 103.9963 0.112

	logL	K	AICc	Akaike.wt
GRW	-48.28945	2	103.5789	0.138
URW	-48.69437	1	100.1887	0.750
Stasis	-48.49817	2	103.9963	0.112

## 6 paleoTS plot with genus mean

Table 15: Overview over body size means per time bin on genus level, excluding island species.

CL	n	var	tt	Genus
238.4562	661	373850751	5e-07	Gopherus
321.4059	188	368044537	5e-07	Chelonoidis
139.1260	835	2997045249	5e-07	Testudo
493.3333	3	2190400	5e-07	Centrochelys
161.6545	11	3161995	5e-07	Chersina
256.7143	7	3229209	5e-07	Geochelone
139.2857	7	950625	5e-07	Homopus
248.1083	12	8864315	5e-07	Indotestudo
209.1429	14	8573184	5e-07	Kinixys
166.5000	2	110889	5e-07	Malacochersus
372.1250	8	8862529	5e-07	Manouria
113.2500	16	3283344	5e-07	Psammobates
108.0000	1	11664	5e-07	Pyxis
405.3333	6	5914624	5e-07	Stigmochelys

tt	mm	vv	nn
0.0000005	240.8882	14018.014	14
0.0058500	259.0000	162.000	2
0.0688500	426.8276	57540.323	5
0.4535000	230.5548	3353.731	3
1.6845000	395.5642	257838.017	6
3.0940000	887.5900	439366.116	5
4.4660000	800.8417	262231.740	6
8.4700000	787.1722	319006.887	9



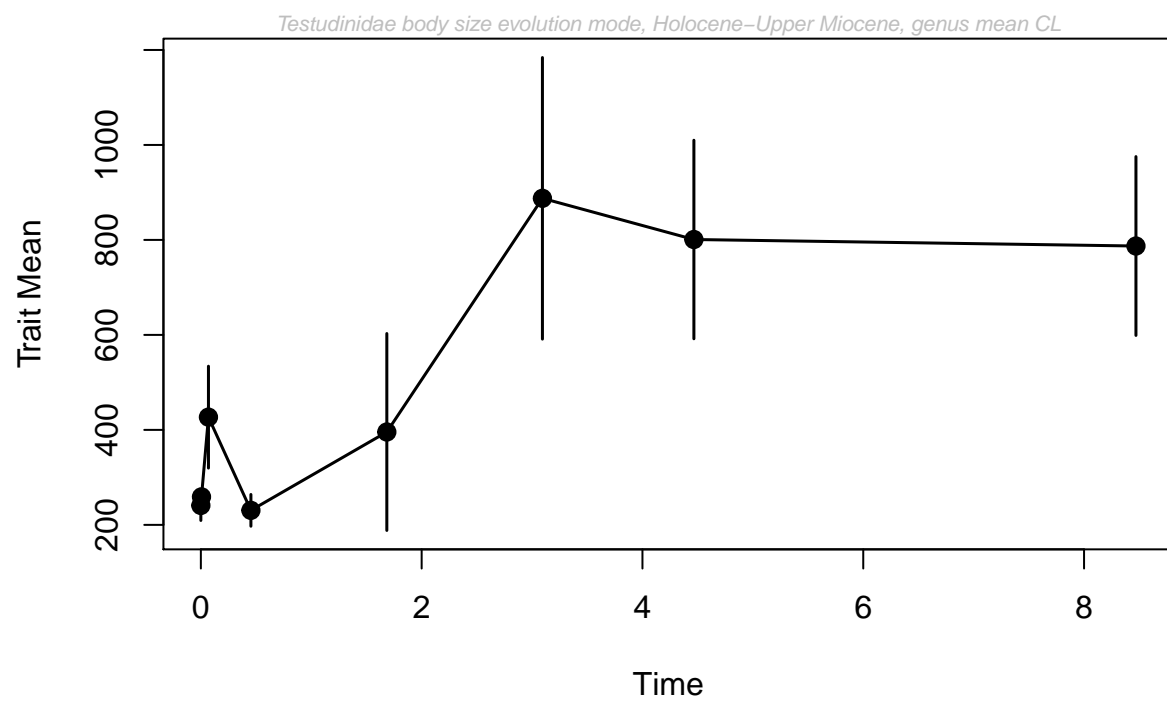


Figure 11: paleoTS plot with genus mean, excluding island species

```
##
## Comparing 3 models [n = 7, method = AD]
##
##           logL K      AICc Akaike.wt
## GRW      -46.23366 2  99.46732    0.110
## URW      -46.25371 1  95.30742    0.880
## Stasis   -48.57439 2 104.14878    0.011
```

	logL	K	AICc	Akaike.wt
GRW	-46.23366	2	99.46732	0.110
URW	-46.25371	1	95.30742	0.880
Stasis	-48.57439	2	104.14878	0.011

## 7 Boxplots (continental (n) vs. Island (y) species)

