MASS ESTIMATES - DINOSAURS ETC
(largely based on models)

taxon k model femur length* model volume ml x specific gravity = model mass g
specimen (modeled 1st):**kilograms**:femur(or other long bone length)usually in decameters

kg = femur(or other long bone)length(usually in decameters)^3 x k

k = model volume in ml x specific gravity(usually for whole model) then divided/model femur(or other long bone)length^3 (in most models femur in decameters is $0.525^3 = 0.145$)

In sauropods the neck is assigned a distinct specific gravity; in dinosaurs with large feathers their mass is added separately; in dinosaurs with flight ablity the mass of the fight muscles is calculated separately as a range of possiblities

SAUROPODS	k	femur	trunk & legs	neck & head	tail	total	neck x 0.6 rest x0.9

super titanosaur femur:~**55000-60000**:~25:00

Argentinosaurus ~4
PVPH-1:~**55000**:~24.00

Futalognkosaurus ~3.5-4
MUCPv-323:~**25000**:19.80 (note:downsize correction since 2nd edition)

Dreadnoughtus	~3.8	"	~520	~75	50	~645	0.45+.513=.558

MPM-PV 1156:**~26000**:19.10

Giraffatitan	3.45	.525	480	75	25	580	.045+.455=.500

HMN MB.R.2181:**31500**(neck **2800**):~20.90 "XV2":~**45000**:~23.50

Brachiosaurus	~4.15	"	~590	~75	~25	~700	" +.554=~.600

FMNH P25107:~**35000**:20.30

Europasaurus	~3.2	"	~465	~39	~23	~527	.023+.440=~.463

composite:**~760**:~6.20

Camarasaurus	4.0	"	542	51	55	648	.041+.537=.578

CMNH 11393:**14200**(neck **1000**):15.25 AMNH 5761:~**23000**:18.00

juv	3.5	"	486	40	55	581	.024+.487=.511

CMNH 11338:**640**:5.67

Chuanjiesaurus	~4.1	"	~550	~105	~38	~693	.063+.530=.593

Lfch 1001:~**10700**:13.75

M. sinocanadorum?	~4.9	"	~655	~154	~32	~841	.092+.618=.710
IVPP V10603:**75000?**:~25.00?							
M. hochuanensis	5.6	"	709	200	60	969	.120+.692=.812
IVPP 3:**13800**(neck **2000**):13.50)							
M. youngi	4.3	"	555	130	~45	730	.078+.540=.618
ZDM 0083:**6700**:11.60							
"Omeisaurus"tianfuensis	3.7	"	484	94	53	631	.056+.483=.539
ZDM T5701:**8400**(neck **870**):13.10							
Bellusaurus (=*Klameli*..)	~3.5	"	~495	~78	~46	~619	.047+.487=.511
IVVP V9492:~**6000**:12.00							
Tazoudasaurus	~2.4	"	~320	~40	~36	396	.024+.320=.344
CPSGM:**3700**:11.50							
Spinophorosaurus	3.7	"	520	42	46	608	.025+.509=.534
GCP-CV-4229:**6600**:12:15							
Shunosaurus	1.7	"	230	14	38	282	.008+.241=.250
ZDM 5402:**2980**:12.00							
juv	2.2	"	302	22	40	364	.013+.309=.321
ZDM 5401:**1130**:8.05							
Datousaurus	2.5	"	360	33	25	418	.020+.347=.367
IVPP V7262/3:**4300**:12.00							
Barapasaurus	~2.5	"	~343	~29	~48	420	.017+.352=.369
IRIS:**6400**:13.65							
Cetiosaurus	~2.6	"	~350	38	~45	~433	.023+.356=.379
OUMNH large spec:~**11000**:16.15							
Patagosaurus	3.35	"	410	38	105	553	.023+.464=.487
PVL 4170:**8450**:13.60							
Haplocanthosaurus	2.4	"	~340	21	~30	391	.012+.333=.345
CMNH 10380:~**12800**:17.45 CM 572:~**5000**:12.75							
Jobaria	2.8	"	405	26	32	463	.016+.393=.409
MNN TIG3:**16300**:18.00							
robust basal diplodocid	3.2	"	405	70	65	540	.042+.423=.465
DQ-EN:**13100**:~16.00							

Brontosaurus louisae 3.1 " 380 70 70 520 .042+.405=.447
CMNH 3018:**17500**(neck **1600**,tail **2700**):17.85
Brontosaurus excelsus 2.9 “ 360 60 67 487 .036+.384=.420
YPM 1980:**14900**:17.25
Brontosaurus? *parvus* 2.7 “ 350 58 48 456 .035+.358=.393
UWGM 15556:**13500**:17.10

Apatosaurus sp 2.6 “ 330 51 ~440 .036+.343=.380
FMNH P25112:**15900**:18.30
Apatosaurus sp 2.45 ” 305 72 40 423 .043+.311=.354
NSMT 20375:**7780**:14.70 YPM 1860:~**20000**:~20.00

Supersaurus ~2.75 “ ~350 ~100 ~30 ~480 .061+.340=.400
BYU 9025:~**37000**:~23.80 ?BYU 9024:~**40000**:~25.00

Barosaurus 3.3 " 380 125 ~75 580 .075+.410=.485
AMNH 6341:**11600**:~15.20 ?BYU 9024:~ **25000**:~20.00

Basal gracile diplodocid 2.85 “ 365 40 70 475 .024+.392=.416
DQ-BS:**7990**:14.10

Diplodocus carnegie 3.1 " 340 65 115 490 .039+.410=.449
CMNH 84:**11400**(tail **2800**):15.42
D. hallorum ~4
NMMNH 3690:~**23000**:~18.00
2.45 “ 296 ~45 70 411 .027+.330=.357
USNM 10865:**10000**:16.00

Dicraeosaurus 2.75 " 350 37 65 452 .022+.374=.396
HMN m:**4960**:12.20

Amargasaurus 3.3 " 405 42 100 547 .025+.455=.480
MACN-N 15:**3830**:10.50

Nigersaurus ~1.9 “ ~255 ~12 ~35 ~302 .007+.261=.268
MNN composite:~**1900**:~10.00

Rebbachisaurus ~2.5 “ ~330 ~30 ~45 ~405 .018+.338=.356
MUCPv-205:~**7400**:14.40

Euhelopus ~3.9 " 506 96 ~48 650 .068+.499=.567
PMU R233(B):~**3400**:9.55 PMU R232(A):~**2850**:~9.00

Huabeisaurus 2.6 “ 346 60 38 444 .036+346=.382

HBV 2000:**8600**:14.90

Rapetosaurus juv ~2.8 " 370 75 30 475 .045+.360=.405
FMNH PR2209:~**800**:6.57

Alamosaurus ~3.9 " 550 60 45 655 .036+.536=.572
TMM 43621-1:~**1100**:~6.50 41541:~**16300**:16.10

Opisthocoelicaudia 3.1 " 445 ~30 36 511 .018+.433=.451
ZPAL MgD 1/48:~**8400**:13.95

Saltasaurus 3.7 " 550 24 37 611 .014+.528=.542
PVL 4017-79:**2480**:8.75

PROSAUROPODS k femur body tail total x 0.95

Pantydraco ~1.4 " ~210 ~.200
NHMUK P24:**2.5**:~1.20

Pampadromeus 2.2 " ~340 ~.320
ULBRA-PUT016:~**3.8**:~1.20

Lufengosaurus 2.6 " 340 55 395 .375
GSC V15 LVP:**1650**:8.60

Massospondylus 2.6 " 330 60 390 .371
QG 1159:**93**:3.30 BPI 3054:**190**:4.17
Embryo 4.75 " 655 ~70 725 .689
BP/1/5347A:0.006:0.11

Plateosaurus gracilis 2.35 " ~295 ~65 ~360 ~.342
SMNS 5175:**~260**:4.80
~2.2 " ~290 ~50 ~340 ~.323
SMNS 11838:**~230**:4.70
P. longiceps 2.5 " 310 70 380 .361
HMN XXV:**440**:5.60 VT 13200:~**780**:6.80 MB Rv1.1:**1300**:8.10
P. engelhardti ~2.3 " ~303 ~52 ~355 ~.337
BSP XLVI:~**1850**:9.30

Yunnanosaurus 2.6 " ~345 ~55 ~400 ~.380
IVP AS V20:~**230**:4.45

Jingshanosaurus 2.6 " 345 55 400 .380

MLD LV003:**1600**:8.50

Anchisaurus YPM 1883:~**20**:1.96	~2.7	"	350	~60	410	.390
Riojasaurus PVL 3808:**820**:6.00	3.8	"	510	70	580	.551
Gongxianosaurus NA:**2970**:10.60 As EJ	~2.5	"	323	62	385	.366

BASOORNITHISCHIANS	k	femur	trunk & legs	neck & head	tail	total	x 0.95
Lesothosaurus ZDUC B.17:**2.4**:1.04	2.15	.525	270	21	36	327	.311
Scutellosaurus MNA 175:~**3**:0.93 MNA 1752:~**5**:1.14	~3.5	"				~530	.505
Scelidosaurus NHMUK R1111:**275**:4.06	4.1	.352	159	8	21	188	.179

STEGOSAURS

Huayangosaurus ZDM T7001:**475**:4.90	4.1	.352	158	9	20	187	.178
Tuojiangosaurus CV 00209:**2750**:8.75	4.1	"	168	5	15	188	.179
Gigantspinosaurus ZDM 0019:**680**:6.20	2.85	"	352	83		435	.413
Kentrosaurus HMN MTD:**670**:6.35	2.6	.525	330	70		400	.380
Hesperosaurus SMA M04:**2290**:10.20	2.16	"	282	48		330	.314
Stegosaurus stenops	1.95	"	245	50		295	.280

USNM 4934 & DMSN 2818:**2240**:10.50 & 10.70
?USNM 4937:**3200**-**4000**:~12.00
S. ungulatus 1.45 " 180 40 220 .209
YPM 1853:**3830**:13.82

ANKYLOSAURS

Gastonia ~9 .31 ~260 ~7 ~14 ~281 ~.267
CEUM:~**1850**:5.90

Pinacosaurus 11.8 .31 276 64 35 375 .356
MIG 100/1305:**760**:4.00
14.8 .31 408 19 37 464 .441
PIN 614:**950**:4.00 ~**1850**:~5.00

Scolosaurus 11 .31 302 20 31 353 .335
NHMUK 5161:**2150**:5.80
Euoplocephalus 11.9 .31 324 22 33 379 .360
AMNH 5404:**1950**:5.47

Ankylosaurus ~13 .31 ~415 ~.395
AMNH 5214:~**3900**:6.70 CMN 8880:~**6000**:~7.80

Hungarosaurus ~8.7 .31 ~250 ~10 ~18 ~278 ~.264
MTM 2007.25.1:~**1020**:4.90

Europelta ~10.4 .31 ~298 ~21 ~15 ~331 ~.315
AR-1/31:~**1320**:5.02

Sauropelta 5.8 .31 159 8 16 183 .174
AMNH 3030:**1990**:7.00

Edmontonia 6.6 .31 189 14 ~11 214 .203
AMNH 5665 & USNM 11868:**3070**:~7.75

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HETERODONTOSAURS

Heterodontosaurus 2.75 .525 330 38 56 424 .403
SAM K1332:**3.4**:1.12

PACHYCEPHALOSAURS

Prenocephale	3.5	.352	136	19	9	164	.156
GI SPS 100/51:**36**:2.18							
Pachycephalosaurus	~1.95	.352	58	10	4.5	72.5	.69
NA:~**190**:4.61 AMNH 1696:~**450**:~6.20							

PSITTACOSAURS

Psittacosaurus neimongol.	3.6	.525	403	77	~65	545	.518
IVPP 12-0888-2:**7.9**: 1.30							
P. mongoliensis	3.35	.525	390	55	65	510	.485
AMNH 6254:**14.2**:1.62							

CERATOPSIANS	k	femur	trunk & legs	head	neck	tail	total	x 0.95
Archaeoceratops	~3.6	.525	397	101	28	22	~548	~.521
IVPP 11114:~**9**:~1.35								
Leptoceratops	4.7	"	460	190	34	30	714	.678
CMN 8889:**93**:2.70								
Montanoceratops	4.1	"	437	115	30	48	630	.599
AMNH 5464:**170**:3.46								
Protoceratops	4.0	"	410	130	32	36	608	.578
AMNH 6466:**164**:~3.45								
Albertaceratops	~3.25	"	~392	~62	~22	~21	~497	~.472
Composite:~**3800**:~10.50								
Centrosaurus apertus	3.0	"	361	60	22	~20	463	.440
YPM 2015:**1470** :7.89								
C. nasicornis	3.6	"	420	70	24	34	548	.521
AMNH 5351:**1460**:7.40								
C. sp. juv	3.6	"	415	70	23	38	546	.519
USNM 7953:**138**:3.37								
C. (Styracosaurus)	3.7	"	440	75	22	25	562	.534
AMNH 5372:**1830**:7.90								
unnamed	3.6	"	440	65	37	10	552	.524
CMN 8547:**1180**:6.90								

Chasmosaurus belli	3.3	"	386	78	21	25	510	.485
ROM 843:**2060**:8.55								
juv	~3.8	"					~580	.550
UALVP 52613:**65**:~2.60								
C. russelli	~3.5	"	~424	60	25	~17	~526	.500
CMN 2280:**1550**:~7.60								
C. (Pentaceratops)	3.7	"	443	76	28	17	565	.537
PMU R268:**2520**:8.80								
*Titanoceratop*s	~3.7							
OMNH 10165:~**4700**:10.80								
Triceratops horridus	4.25	"	516	90	24	~16	646	.614
TCM 2001.93.1:**5650**:11.00 USNM 4842:**6420**:11.50 BYU:~**9000**?								
USNM 4276:~**9300**:~13.00 YPM 1834:~**3000**:8.90								

ORNITHOPODS	k	femur	trunk & legs	neck & head	tail	total	total x 0.95
Agilisaurus	1.9	"	235	16	38	291	.276
ZDM T6001:**7.5**:1.58							
Kulindadromeus	~2						
INREC composite:**2**:~1.00							
Othnielosaurus	2.1	"	271	18	35	324	.308
BYU ESM 163:**9**:1.62 YPM 1882:~**31**:2.44							
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Hypsilophodon	2.55	"	300	30	62	392	.372
NHMUK R196:**8.8**:1.50 R5829:~**21**:2.00							
Haya	2.5	"	295	24	~60	379	.361
IGM 100/2015:**5.6**:1.31 IGM 100/2013:**10**:1.60							
Orodromeus	~2.2	"				~334	.317
BYU 623:**4.1:**1.23 473:**5.4**:1.35							
Parksosaurus	2.2	.525	275	18	40	333	.316
ROM 804:**43**:2.70							
Thescelosaurus	1.95	"	255	8	32	295	.280
USNM 7757:**86**:3.55							

Gasparinisaura	~2.4	"				~375	~.355
MUCPv-208:~**1.75**:0.90 MUCPv-213:~**3**:~1.10 MUCPv-215:~**13**:~1.80							
Talenkauen	2.46	"	310	16	50	376	.357
MPM 10001:**308**: 5.00							
Tenontosaurus tilletti	3.15	"	355	20	105	480	.456
OU 11:**597**:5.75							
T. dossi	~3.3	"	369	24	110	503	.478
FWMSH 93B1:**570**:5.57							
Rhabdodon	2.93	"	360	52	35	447	.425
composite:**108**:3.33							
Dryosaurus	2.35	"	290	15	55	360	.342
HMN dy I:**45**:2.68 HMN dy 36:**79**:3.23 YPM 1876:**103**:3.53							
Camptosaurus dispar	2.65	"	349	18	31	400	.380
USNM 5818:**513**:5.80 YPM 1877:~**474**:5.65							
juv	~2.5	"	338	17	27	382	.363
USNM 2210:~**43**:2.58							
C. aphanoecetes juv	2.27	"	301	17	~29	347	.330
CM 11337:**140**:3.95 ?P84.15.5:~**1700**:8.60							
Muttaburrasaurus	~2.7	"	~356	~20	~31	~407	.387
QM F6140:~**2800**:10.15							
Iguanodon	3.0	"				455	.432
IRSNB 1534:**3230**:10.25							
unnamed genus *galvensis* juv	~1.45	"				224	.210
composite:~**1**:0.87							
Dollodon	2.45	"				370	.351
IRSNB 1551:**1070**:7.60							
Mantellisaurus	2.4	"				365	.347
NHMUK R5764:**750**:6.78							
Jinzhousaurus yangi	2.48	"				376	.357
IVPP V12691:**666**:6.45							
Ouranosaurus	2.65	"				400	.380
MNHM GDF 300:**2220**:9.45							

Probactrosaurus	~2.4	"	~363	.345
PIN 2232/10-9:~**1000**:7.50				
Bactrosaurus	2.3	"	350	.333
AMNH 6553:**1180**:8.00				
Tethyshadros	4.0	"	606	.576
SC 57021:**300**:4.20				
Shantungosaurus	2.2	"	338	.320
PMNH 5:**9900**:16.50 1:~**13000**:18.05				
Edmontosaurus regalis male?	1.93	"	294	.280
ROM 5167:**3670**:12.40				
female?	2.1	"	320	.304
CMN 8399:**2935**:11.18				
E. annectens immature	2.2	"	336	.319
DMNH 1493:**2400**:10.30				
adult	2.15	"	330	.314
AMNH 5730:**3170**:11.35				
Saurolophus (Prosaurol.)	2.05	"	310	.298
ROM 787:**2020**:9.97 AMNH 5386:**5000**:~13.60				
S. osborni	1.95	"	298	.283
AMNH 5220:**2970**:11.50				
S. angustirostris	1.9	"	290	.276
PIN 551-8:**3280**:12.00 PIN 551-357:~**11000**:~17:80				
Brachylophosaurus	2.05	"	313	.297
ROM 794:**4150**:12.65 JRDI-1028:**6800**:14.91				
Maiasaura	1.95	"	300	.285
ROM 44770:**2250**:~10.50				
nestling	2.1	"	323	.307
MOR:**4.1**:1.25				
Kritosaurus incurvimimus	1.95	"	300	.285
ROM 764:**2220**:10.41				
Tsintaosaurus	2.25	"	345	.327
PMNH V725:**2530**:10.40				
Parasaurolophus	2.5	"	380	.361
ROM 768:**2615**:10.15				

Olorotitan ~2.3 " ~350 ~.333
AEHM 2/845**:~3100**:11.00

Hypacrosaurus (C.) intermed. 2.14 " 327 .310
ROM 845:**2510**:10.55
H. (Corythosaurus) casuarius 2.25 " 340 .323
AMNH 5240:**2810**:10.80
H. altispinus 2.13 " 325 .309
CMN 8501:**2640**:10.74 AMNH 5272:**3370**:~11.65
H. stebingeri 2.18 " 333 .316
MOR 549:**1390**:8.60
embryo/hatchling 1.35 " 206 .196
TMP:**0.8**:0.84
?juv 2.06 " 315 .300
AMNH 5340:**260**:5.00
H. (Lambeosaurus) lambei 2.0 " 305 .290
ROM 1218:**2430**:10.67
H. (L.) magnicristatus ~2.1 " ~320 ~.305
TMP 66.04.01:~**2500**:10.55
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PREDATORY DINOSAURS x0.95,0.90,0.85 sometimes x 1.06 feathers

Marasuchus 1.05 .525 126 16 20 162 .154
PVL 3870:**0.09**:0.44 PVL 3871:~**0.18**:0.55

Lewisuchus ~1.5 ~160 ~32 ~40 232 .220
MLP XI-14-14:**1.7**:1.05 PVL 4629:**2.3**:1.15

Silesaurus 1.16 " 140 17 ~20 ~177 .168
ZPAL Ab 111/361:**9**:2.00

Eoraptor 1.33 " 145 18 ~40 203 .193
PVSJ 512:**4.7**:~1.52

Staurikosaurus 1.0 " 110 ~19 21 150 .143
MCZ 1669:**12**:2.29

Herrerasaurus 1.18 " 130 20 30 180 .171
PVL 2566:**124**:4.73 UNSJ:**210**:5.60

Eodromaeus ~1.3 " ~138 ~20 ~40 ~198 ~.188
PVSJ 562:~**5.3**:1.60

Tawa GR 24?:**14**:2.15	~1.4	"	~160	~30	~35	~225	~.203
Coelophysis bauri gracile AMNH 7223:**13.5**/**15.3**:2.10	1.65	"	174	36	40	250	.213/.239
robust AMNH 7224:**17.8**/**19.9**:2.10 GR 143:**26**?:2.30	2.15	"	238	36	54	328	.278/.313
juv composite:**2.4**:1.25	1.24	"	153	15	32	200	.180
C. rhodesiensis QG 1:**11.6**/**13**:2.08	1.45	"	160	25	35	220	.187/.210
Panguraptor LFGT-0103:**5.7**:1.64	~1.3	"	~145	~25	~40	~210	.179/.189
Liliensternus HMN R1291:**127**:4.40	1.5	"	172	28	40	240	.216
Dilophosaurus UCMP 37302:**283**:5.50	1.7	"	188	56	30	274	.247
Elaphrosaurus HMN dd:~**210**:5.29	~1.45	"				~230	~.207
Limusaurus IVPP V15923:~**10**:2.08 IVPP V15924:~**15**:~2.40	~1.1	"				~180	~1.62
Ceratosaurus USNM 4735:**524**:6.20	2.2	"	260	36	58	354	.319
Majungasaurus Composite:**670**:6.00	3.1	"				~502	~.452
Skorpiovenator MMCH-PV 48:**~1600**:~9.30	2.0	"	~258	~39	~30	~327	~.294
Abelisaurus MCF-PVPH-236:**~690**:~7.00	2.0	"	~262	~37	~24	~323	~.291
Carnotaurus MACN-CH 894:**2070**:10.30	1.9	"	250	25	~30	305	.275
Masiakasaurus	~1.8	"	~218	~46	~25	~289	~.260

FMNH PR2481:~**11**:~1.85

Sinosaurus	1.7	“	190	59	25?	274	~.247
KMV 8701:**310**:5.65							
Chilesaurus	~1.7	“				~280	~.250
SNGM-1935:~**5**:1.42 SNGM-1888:~**16**:~2.10							
Monolophosaurus	1.95	“	239	54	~40	~333	.283
IVPP 84019:**475**:~6.25							
Eustreptospondylus	1.55	"	192	32	26	250	.225
OUM J13558:**218**:5.20							
Piatnitzkysaurus	1.65	"	206	30	32	268	.241
PVL 4073:**275**:5.50							
megalosaur	~2.1	“				~333	~.300
composite:~**1600**:~9.20							
Baryonyx	~2.1	“				~340	~.305
NHMUK R9951:**~1200**:8.30							
Baryonyx (Suchomimus)	~2.3	“				~380	~.340
MNN GDF500:**~2500**:10.75							
Spinosaurus	~2.2						
IPHG:**~5000** MSNM V4047: **~10000**							
Yangchuanosaurus shangyu.	1.95	"	242	36	38	316	.284
CV 00215:**1330**:8.80							
	2.1	“	255	40	38	333	.300
ZDM 0024:**1975**:9.80 CV 00216:~**2800**:~11.00							
Y. dongi	2.0	"	250	38	~38	~326	.293
IVPP 10600:**1340**:8.76							
Allosaurus fragilis	2.2	"	274	46	58	378	.321
USNM 4734:**1010**:7.70							
juv?	1.85	"	220	46	46	295	.265
DINO 11541:**460**:6.33							
A. sp.	2.05	"	256	44	50	350	.298
DINO 2560:**1300**:8.60 3694:~**1520**:9.05							
A. maximus	~2.2?						
OMNH 01708:**3000**:11.10							

Concavenator	1.8	“	210	41	34	285	.257
MCCM-LH 6666:**320**:5.60							
Acrocanthosaurus	2.1	“	252	52	50	354	.300
NCSM 14345:**4400**:~12.80							
Giganotosaurus	2.35	"	275	70	55	400	.340
MUCPv-CH-1:**6850**:14.30 MUCPv-95:~**8700**:15.50?							
□□□□□□□□□□*Guanlong*			~2.1		“		355 .300
IVPP V14531:~**100**:~3.60							
Dilong	1.1	“	~150	26	~13	189	.161
IVPP V14243:**6**:1.81							
Yutyrannus	~1.8	“	~ 245	~42	~24	~311	~.264
ZCDM 5000:~**500**:6.50 ZCDM 5001:~**1100**:8.50							
Albertosaurus libratus	2.15	"	275	65	30	370	.315
AMNH 5458:**2340**:10.25							
juv	2.0	"	275	40	30	345	.293
AMNH 5664:**694**:7.00							
A. sarcophagus	~2.35	“				~400	~.340
ROM 807:~**2500**:10:20							
Daspletosaurus	2.4	"	290	80	40	410	.348
AMNH 5438:**2400**:10.00							
Raptorex? juv	1.7	“	224	33	~30	287	.244
LH PV18:**66**:3.38							
T. bataar	2.3	“				392	.333
PIN 551-1:~**4000**:~12.00							
subadult	2.35	"				401	.341
PIN 551-3:**2144**:9.70							
juv	2.2	"				375	.319
MgD-1/3:**755**:7.00							
juv	1.95	“				335	.285
PIN 552-2:**510**:6.40							
Tyrannosaurus	2.7	"	345	86	30	461	.392
FMNH PR2081:**6140**:13.15							
	2.6	"	320	80	40	440	.374
AMNH 5027 (& CM 9380):**5670**:~13.00							
	2.65	“	340	77	40	457	.388

BHI 3033:**5620**:12.85	2.28	"	285	62	42	389	.331
MOR 555:**4725**:5.12.75 juv or *Nanotyrannus*	1.23	"	154	23	32	209	.178
BMRP 2002.41:**610**:7.90							
Ornitholestes	~1.34	"	~188	8	~32	~228	.194
AMNH 619:~**11.9**:2.07							
Scipionyx juv	~1.95	"	190	110	~33	~333	.283
SAS:**0.1**:0.37							
Compsognathus	1.8	"	232	30	46	308	.262
BSP 1563:**0.54**:0.67 MNHN CNJ 79:~**2.4**:1.10							
Juravenator juv.	1.8	"	217	52	~40	309	.263
JME Sch 200:**0.25**:0.52							
Sinosauropteryx prima	1.58	"	203	35	31	269	.229
GMV 2123:**0.23**:0.53 NIGP 127587:~**1**:0.86							
Sinosauropteryx?	1.0	"	140	20	11	171	.145
GMV 2124:**1.1**:1.03							
Sinocalliopteryx	1.14	"	156	24	14	194	.165
JMP-V—05-8-01:**18**:2.52							
Huaxiagnathus	1.48	"	189	27	~36	252	.214
CAGS-IG01-301:~**5.2**:~1.52							
Deinocheirus	2.14	"	330	36		366	.311
MPC-D 100/128: ~**2000**:9.80 MPC-D 100/18:~**4000**:~12.40 MPC-D100/127:**4920** :13.20							
Sinornithomimus	1.36	"	212	20		232	.197
IVPP 11797-10:**46**:3.23							
Gallimimus	1.5	"	225	35		260	.221
DSP 100/11:**438**:6.60 juv	1.4	"	215	25		240	.204
MgD-1/94:26.8:2.67							
Struthiomimus sp.	1.4	"	210	25		235	.200
AMNH 5339:**153**:4.80 *S. edmontonicus*	1.35	"	205	25		230	.196
ROM 851:**111**:4.35							

	1.4	"	217	20	237	.202	
CMN 12228:**144**:4.68							
Haplocheirus	1.8	“	280	27	307	.260	
IVPP V15988:**18**:2.14							
Mononykus	1.31	“	210	13	223	.190	
MGI 107/6:**3.4**:1.38							
Scansoriopteryx juv.	1.53	“	129	98	20	247	.208
IVPP V12653:**0.0034**:0.130	CAGS 607:**0.0068**:0.165						
Yi	~1.65	“	“	“	“	“	“
STM 31-2:~**0.25**:0.47							
Epidexipteryx	1.65	“	198	82	1	281	239
IVPP V15471:**0.22**:0.51							
Anchiornis	0.9	“	102	44	6	152	.129
LPM-B00169:**0.26**:0.66							
Aurornis	~0.9	“	~105	~42	~7	~154	.131
YFGP-T5198:~**0.26**:0.66							
Eosinopteryx	0.91	“	104	46	6	156	.133
YFGP-T5197:**0.1**:0.49							
Zhenyuanlong	~1.04	“	106	55	~17	178	.151
UPM-0008:**7.5**:1.93							
Tianyuraptor	~1.2	“	~125	~60	~20	~205	~.174
STMI-3:~**10**:~2.00							
Buitreraptor	1.06	“	98	58	~25	181	.154
MOCA 24.5:**3.2**:1.44							
Bambiraptor juv	1.23	"	110	85	15	210	.179
FIP 001:**2.1**:1.19	FIP 002:~**6**:1.70						
Tsaagan	~1.5					~254	~.216
IVPP V 16923:~**18**:2.30							
Deinonychus	~1.95	"	~208	94	32	~334	~.284
YPM 5210:~**60**:~3.10							
Velociraptor	1.77	"	182	86	34	302	.257

MIG 100/25:**11:**1.85 100/986:~**24**:2.38 AMNH 6515:~**6**

Sinornithoides	0.91	"	102	41	13	156	.133
IVPP V9612:**2.5**:1.40							
Jinfengopteryx	1.06	"	112	60	10	182	.155
CAGS IG 04 0801:**0.43**:0.74							
Mei	0.81	"	88	43	7	138	.117
IVPPV12733:**0.43**:0.81							
Gobivenator	1.12	"	120	50	20	190	.162
MPC-D 100/86:**9**:2.00							
Stenonychosaurus?	~1.5	"				~260	~.220
MOR 7.24.8.64:**65**:~3.50							
MOR:~**33**:2.80 GI 100/1:~**25**: AMNH 6516:~**12**:~2.00							
Protarchaeopteryx	~0.9	"				~1.5	~1.30
GMV 2125:**1.6**:1.20							
Caudiptyeryx	0.66	"	110		3	113	.96
GMV 97-9-A:**2.2**:1.49							
Avimimus	~1.4	"				~236	~.201
PIN 3907-1:~**12**:2.05							
Anzu	~1.58	"				~270	.230
composite:~**230**:5.25							
Gigantoraptor	~1.5	"				~260	~.220
LH V0011:~**2000**:11.00							
Oviraptor	~1.25	"				~210	~.180
AMNH 6517:~**22**:~2.60							
Citipati	1.72	"	282		12	294	.250
IGM 100/42:~**74**:~3.50							
juv	1.46	"	242		8	250	.213
MIG 100/1127 & 1002:?**4.5**:?1.45							
Conchoraptor	1.24	"	180		24	204	.173
MIG 100/30:**17**:2.40							

THERIZINOSAURS

Falcarius ~2.42 “ ~412 .350
UMNH:**100**:3.45

Jianchangosaurus ~2.5 “ ~424 ~.360
41HIII-0308A:~**22**:2.07

Beipiaosaurus ~2.2 “ ~375 ~.320
IVPP V11559:**40**:2.65

Alxasaurus ~2.5 “ ~425 ~.360
IVPP 88402L:~**400**:555

Nothronychus ~2.3 “ ~390 ~.332
UMNH VP16420:~**850**:~7.15

Nanshiungosaurus ~3.3 “ ~560 ~.480
Type:~**600**:~5.70

Therizinosaurus
MHP100/15:~**3000**:~9.75

FLIGHT CAPABLE	k		main body	flight muscles	total	
Archaeopteryx	1.41-1.48	"	211	17-27	228-238	.205-.214
HMN 1880:**0.204-0.214**:0.525						
	1.34-1.40	"	199	16-26	215-225	.194-.203
NHMUK 37001:**0.297-0.310**:0.605						
	1.10-1.15	"	164	13-21	177-185	.160-.167
JM 2257:**0.056-0.058**:0.37 □□						
Sinornithosaurus	0.89-0.93	“78/39/13=	130	13-20	143-150	.129-.135
IVPP V12 811:**2.9-3**:1.48						
Microraptor	0.62-0.66	“	91	9-13.5	100-105	.9-.95
IVPP V13352:**0.57-0.6**:0.97 LVH 0026: :1.10						
Jeholornis	1.76	“	246	38	284	.256
IVPP V13274:**0.75**:0.75						
Sapeornis	1.68	“	251	39	270	.243
IVPP V12698 & CAGS IG 02 609:**0.9**:0.81						

Confuciusornis	1.53	“	212	36	248	.233
0.17:0.48						
Sinornis	1.5	“	207	35	242	.218
BPV 538:**0.014**:0.21 IVPP V9769:**0.018**:0.23						
MOAS		tibia				
Emeus	0.82	.75			384	.346
CM viiic:**87**:4.73						
Dinornis	0.39	”			182	.165
CM 1.2.15:**252**:8.65 NHMUK A608:~**274**:8.89 :~**380**:9.90						
Aepyornis	0.7	“			330	.297
MP:**320**:7.70 MP:~**370**:8.10						
Dromornis	~0.8	“			~375	~.338
~**380**:7.80						

THECODONTS & CROCODILIANS	k	femur	trunk & legs	neck & head	tail	total	x 0.95
Proterosuchus	5.7	.018	75	22	15	112	.106
NM C3016:**19**:~1.50							
Chanaresuchus	2.9	"	36	11	10	57	.054
MCZ 4035:**6.1**:1.28 4036:~**10**:1.51							
Parasuchus	4.2	"	57	13	12	82	.078
ISI R42:**58**:2.40							
Euparkeria	4.3	"	59	15	10.5	84.5	.080
SAM 5867:**0.75**:0.558 6047:~**1.0**:0.616							
Vjushkovia	4.0	"	56	15	8	79	.075
IVPP V3239 composite:**103**:~2.95							
Erythrosuchus	6.0	“	66	41	12	119	.113
NHMUK R3592:**660**:4.80							
Gargainia	5.6	“	69	34	7	111	.105
SSU 951:**95**:~2.57							

Shansisuchus IVPP 2501:**185**:~3.33	5.0	"	65	24	19	98	.093
Turfanosuchus IVPP 3237:**7**:1.25	3.5	"	50	13	7	70	.067
Batrachotomus SMNS 80260:**190**:~3.60	4.1	"	57	13	12	82	.078
Ticanosuchus PMUZ 42:**50**:2.35	3.7	"	48	11	11	70	.067
Saurosuchus composite:**850**:6.80	2.7	"	37	8	8	53	.050
Postosuchus TTU 9000:**310**:5.05	2.4	"	32	8	7	47	.045
Riojasuchus PVL 3828:**26**:1.80	4.4	"	58	14	14	86	.082
Stagonolepis EM 46R:**116**:3.15 (based on Walker 1961 skel rest)	3.7	"	56	3	14	73	.069
Lotosaurus IVPP 4880:**210**:3.91	3.5	"	60	3	3	66	.063
Shuvosaurus inexpectus TTUP 9001:**55**:2.50	3.4	"	57	2	5	64	.061
Effigia okeeffeae AMNH 30587:**18**:1.95	2.4	"	35	5	6	46	.044
Gracilisuchus LPM 62-XI-14-11:**0.84**:0.59	4.1	"	55	19.5	7	81.5	.077
Terrestrisuchus P. 47/21:**0.13**:0.57	0.7	"	8.4	2.8	2.5	13.7	.013
Psuedohesperosuchus PVL 3830:**2.8**:~1.55	0.75	"	9.3	2.7	3	15	.014

REPTILES

Megalania
~**1000** (based on scaling from modern monitors, and cross comparison of body part volumes with thecodonts)

THERAPSIDS	k	femur	total	x 0.95
Thrinaxodon	4.1	.265	80	.076

AMMM 5265/SAM 1395:**1.41**:0.70 (based on Brink 1956 skel rest)

MAMMALS	femur	body	head	total	x 0.95
Rhinoceros	9.5	.395		610	.580

USNM:**1050** (predicted 800-1100 [1.41 m shoulder height]):4.80

Brontops	6.0	.525	820	90	910	.865

YPM 12048:**3300**:8.20

Indricotherium	3.65	"	36	56	558	.530

AMNH 26387:**7770**:12.85 AMNH 26175:**16500**:16.50

Loxodonta	3.15	"	400	80	480	.456

AMNH 3283:**6300** (predicted 4800-6800 [3.18 shoulder height]):12.60
USNM 163318:~**6000**:12.20 USNM 304615**:~7500**:13.30

Elephas recki	3.18	"		486	.462

~**14000**:~16:30

Mammuthus	3.07	"		472	.447

DMNH 1359:**7900**:13.70 Zhal IIIetc:~**9000**:14:15

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