**Table S1**. Skeletal specimens of ostriches.

|  |  |  |  |
| --- | --- | --- | --- |
| Specimen | Species/subspecies  or place of origin | Sex | Age and preservation |
| NHMUK 1857.2.24.10 | *australis* | F | adult |
| NHMUK 1846.10.17.7 | *camelus*, Gambia | M | incompletely ossified |
| ISEA A/2506/72 | *camelus,* captive | F | adult |
| NHMUK 1846.10-17.8 | *?camelus*, ?Gambiaa | F | ?adult |
| ZMB 35192 | *massaicus* | M | ?adult |
| NHMUK 1915.3.30.1 | *massaicus* | M | ?immature |
| SAPM 18 | *molybdophanes* | F | adult |
| SAPM 19 | *molybdophanes* | F | adult |
| SAPM 20 | *molybdophanes* | F | adult |
| USNM 319455 | *molybdophanes,* captive | M | ?adult, pathological |
| ZMB 36879 | *spatzi* | M | ?adult |
| NHMUK 1923.6.10.1 | *syriacus* | M | incompletely ossified**b** |
| NHMUK 1924.4.8.1; | *syriacus* | M | adult, damaged, ?composite**c** |
| No subspecies identification | | | |
| IRSNB 53848 | unknown | M | adult**d** |
| USNM 343621 | US National Zoo | M | ?adult |
| SAM 56122 | Oudtshoorn farm (a dump), SA | F | adult |
| SAM ZOT788 | Oudtshoorn farm, SA | M | adult |
| SAM ZO58259 | World of Birds, Hout Bay, SA | M | ?adult |
| OUM2525 | unknown | ? | ?adult |

a Donated by Earl of Derby in the same batch as NHMUK 1846.10.17.7; b Designated twice as juv. and once as ad. by Lowe (1931) c Designated twice as ad., once as ad?, and once as juv. by Lowe (1931).

d Seven free and two fused caudal vertebrae.

**Table S2.** Shoulder girdle and wing skeleton measurements (in mm) and statistics in the ostriches (*Struthio*). Specimens in the descending order of humerus length. Abbreviations: CMC, carpometacarpus; LT, total length; Lv, ventral length; WSt, sternal width; WIs, interspinal width; WPc, postcostal width; Wd,distal width; II/1 manual digit II phalanx 1.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Scapulocoracoid | | Sternum | | Humerus | | Ulna  LT | Radius  LT | CMC  LT | II/1  LT |
| LT | WSt | WIs | WPc | Lv | Wd |
| **Females** | | | | | | | | | | |
| *S. c. camelus* ISEA A/2506/72 | 273.2 | 77.0 | 241.6 | 146.6 | 388.0 | 37.5 | 141.8 | 134.1 | 102.0 | 46.0 |
| *S. c. camelus*  NHMUK356.B 1846.10-17.8 | 263.0 | 82.0 | 221.0 | 137.0 | 383.0 | 38.0 | 130.0 | 121.0 | 94.5 | ---- |
| *S. molybdophanes*  SAPM 20 | 278.0 | 85.3 | --- | --- | 373.7 | 38.35 | 127.6 | 118.5 | 92.35 | 38.7 |
| *S. molybdophanes* SAPM 19 | 275.0 | 86.0 | 242.0 | 173.0 | 369.0 | 37.2 | 124.0 | 117.0 | 95.0 | 41.1 |
| *S. camelus* ssp. SAM56122 | 259.0 | 76.0 | 232.0 | 147.0 | 365.0 | 37.0 | 120.0 | 110.5 | 90.0 | 38.5 |
| *S. molybdophanes* SAPM 18 | 261.0 | 81.0 | 251.3 | 162.5 | 361.0 | 40.7 | 124.5 | 114.6 | 94.85 | 42.35 |
| *S. c. australis*  NHMUK 1857.2.24.10 | 253.4 | 73.3 | 209.0 | 135.5 | 359.4 | 33.8 | 116.5 | 110.4 | 91.3 | 40.0 |
| N | 7 | 7 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 6 |
| **Median** | **263.0** | **81.0** | **236.8** | **146.8** | **369.0** | **37.5** | **124.5** | **117.0** | **94.5** | **40.55** |
| Minimum | 253.4 | 73.3 | 209.0 | 135.5 | 359.4 | 33.8 | 116.5 | 110.4 | 90.0 | 38.5 |
| Maximum | 278.0 | 86.0 | 251.3 | 173.0 | 388.0 | 40.7 | 141.8 | 134.1 | 102.0 | 46.0 |
| Mean | 266.1 | 80.1 | 232.8 | 150.3 | 371.3 | 37.5 | 126.3 | 118.0 | 94.3 | 41.0 |
| SD | 9.3 | 4.8 | 15.6 | 14.7 | 10.9 | 2.1 | 8.2 | 8.1 | 3.9 | 2.8 |
| **Males1** | | | | | | | | | | |
| *S. c. massaicus*  ZMB35192 | ----- | 74.0 | 220.0 | ---- | 368.0 | 36.6 | 127.0 | (120) | 99.0 | 45.0 |
| *S. c. camelus*  NHMUK 1846.10.17.7 | 237.6 | 78.5 | 232.5 | 151.0 | 366.7 | 36.0 | 123.0 | 115.1 | 95.5**2** | 40.5 |
| *S. camelus* ssp.SAM ZOT788 | 265.5 | 81.0 | ---- | ---- | 362.0 | 36.3 | 123.5 | 112.0 | 89.5 | 38.6 |
| *S. camelus* ssp.USNM343621 | 273.0 | 79.0 | 230.0 | 156.0 | 357.0 | 33.3 | 121.3 | 114.5 | 89.5 | ----- |
| *S. molybdophanes*  USNM 319455 | 250.5 | 73.5 | 208.0 | 136.0 | pathol. | ---- | ---- | ----- | ---- | ----- |
| *S. c. massaicus*  NHMUK 1915.3.30.1 | 245.0 | 78.0 | 204.0 | 137.0 | 350.0 | 34.9 | 123.0 | 115.5 | 92.5 | ----- |
| *Struthio* sp. IRSNB53848 | 243.0 | 81.0 | 222.0 | 136.0 | 347 | 36.6 | 122.0 | 113.0 | 95.5 | 40.5 |
| N | 6 | 7 | 6 | 5 | 6 | 6 | 6 | 6 | 6 | 4 |
| **Median** | **247.75** | **78.5** | **221.0** | **137.0** | **359.5** | **36.15** | **123.0** | **114.8** | **94.0** | **40.5** |
| Minimum | 237.6 | 73.5 | 204.0 | 136.0 | 347.0 | 33.3 | 121.3 | 112.0 | 89.5 | 38.6 |
| Maximum | 273.0 | 81.0 | 232.5 | 156.0 | 368.0 | 36.6 | 127.0 | 120.0 | 99.0 | 45.0 |
| Mean | 252.4 | 77.9 | 219.4 | 143.2 | 358.5 | 35.6 | 123.3 | 114.0 | 93.6 | 41.2 |
| SD | 13.9 | 3.0 | 11.5 | 9.6 | 8.7 | 1.3 | 2.0 | 1.5 | 3.8 | 2.7 |
| **Mann-Whitney females / males3** | | | | | | | | | | |
| U | 8 | 18 | 8 | 11.5 | 8 | 5 | 14 | 17 | 21 | 12 |
| p | **0.073** | 0.454 | 0.132 | 0.563 | **0.073** | **0.019\*** | 0.346 | 0.628 | 1 | 1 |
| **Statistics for living (sub)species** | | | | | | | | | | |
| N specimens | 9 | 10 | 9 | 8 | 9 | 9 | 9 | 8 | 9 | 8 |
| Mean | 260,7750 | 79,4556 | 227,6750 | 148,9429 | 368,7556 | 37,0056 | 126,3778 | 118,2750 | 95,2267 | 41,9500 |
| SD | 14,63242 | 4,50780 | 16,87456 | 14,36568 | 11,73671 | 2,01904 | 6,91390 | 7,09965 | 3,39235 | 2,67877 |
| CV | 5.6 | 5.7 | 7.4 | 9.6 | 3.2 | 5.5 | 5.5 | 6.0 | 3.6 | 6.4 |
| **Measurements of extinct (sub)species** | | | | | | | | | | |
| *S. c. spatzi* male ZMB36879 | 241.0  95.5% | 81.0  104.0% | 212.0  96.6% | ----- | 325.0  90.7% | 38.2  107.3% | 115.0  93.3% | 106.5  93.4% | 83.0  88.7% | 40.0  97.2% |
| *S. c. syriacus*  male NHMUK 1924.4.8.1 | 191+ | 61+ | 180+ | 111.2  77.65% | ----- | ----- | ----- | ------ | ---- | ----- |
| *S. c. syriacus*  male NHMUK 1923.6.10.1 | 210.8  83.5% | 59.9  76.9% | 193.7  88.3% | 101.3  70.7% | 316.6  88.3% | 26.8  75.3% | 103.7  84.1% | 98.2  86.1% | 86.3  92.2% | 35.2  85.5% |

**1** Exclusive of extinct (sub)species; **2** Unfused distally; **3** Asterisked is a significant and underlined are near significant difference between sexes.

**Table S3.** Synsacrum measurements (in mm) and statistics in the ostriches (*Struthio*). Specimens in the descending order of the total length. Abbreviations: LM midline length; LC midline corpus length; WC corpus width; DT total depth; Wpar the span of parapophyses; Wprz the span of praezygapophyses.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Specimen** | Synsacrum | | Vertebra 1 | | | | Vertebra 2 | Vertebra N-2 | Vertebra N-1 | Vertebra N |
|  | Vertebral count**1** | LM | DT | Wpar | Wprz | WC | WC | LC | LC | LC |
| **Females** | | | | | | | | | | |
| *S. c. camelus* ISEA A/2506/72 | 20+1 | 570.2 | 138.8 | 55.4 | 36.0 | 29.0 | 28.0 | fused | 37.0 | 30.2 |
| *S. molybdophanes* SAPM 20 | 20 | 511.0 | 121.0 | 57.5 | 46.0 | 26.6 | 24.4 | 28.7 | 33.2 | 31.4 |
| *S. molybdophanes* SAPM 18 | 20+1 | 503.0 | 134.8 | 56.3 | 48.4 | 26.4 | 25.4 | 38.2 | 29.3 | 24.0 |
| *S. molybdophanes* SAPM 19 | 20 | 484.0 | 138.0 | 59.3 | 46.0 | 27.0 | n/m | fused | fused | 28.0 |
| *S. c. camelus*  NHMUK356.B 1846.10-17.8 | 19 | 487.0 | 125.0 | 53.1 | 41.7 | 26..0 | 24.8 | fused | fused | 31.0 |
| *S. camelus* ssp. SAM56122 | -------- | 483.0 | 120.0 | 47.0 | 33.5 | 25.8 | ------ | ----- | 37.0 | 32.0 |
| *S. c. australis*  NHMUK 1857.2.24.10 | 19 | 478.0 | 118.0 | 52.3 | 38.0 | 24.7 | 23.8 | fused | fused | fused |
| N | 6 | 7 | 7 | 7 | 7 | 7 | 5 | 2 | 4 | 6 |
| **Median** | -------- | **487.0** | **125.0** | **55.4** | **41.7** | **26.4** | **24.8** | **33.45** | **35.1** | **30.6** |
| Minimum | 19 | 478.0 | 118.0 | 47.0 | 33.5 | 24.7 | 23.8 | 28.7 | 29.3 | 24.0 |
| Maximum | 21 | 570.2 | 138.8 | 59.3 | 48.4 | 29.0 | 28.0 | 38.2 | 37.0 | 32.0 |
| Mean | 20 | 502.3 | 127.9 | 54.4 | 41.4 | 26.5 | 25.3 | 33.5 | 34.1 | 29.4 |
| SD | -------- | 32.194 | 8.989 | 4.1 | 5.7 | 1.3 | 1.6 | 6.718 | 3.682 | 3.002 |
| **Males exclusive of extinct (sub)species** | | | | | | | | | | |
| *S. c. massaicus* ZMB35192 | ------- | 568.0 | --- | 59.8 | 36.2 | 26.9 | 26.6 | (39) | 35.0 | 27.0 |
| *S. c. camelus*  NHMUK 1846.10.17.7 | 18:  15+3(4**2**) | 347.4 +  fused | 133.0 | 53.4 | 47.0 | 30.0 | 28.0 | 37.6 | 37.7 | 38.1 |
| *S. c. massaicus*  NHMUK 1915.3.30.1 | 19.0 | ------- | 124.0 | 51.3 | 35.6 | 22.5 | 22.4 | 39.0 | ------- | -------- |
| *S. camelus* ssp. USNM343621 | ------- | 516.0 | 133.0 | 49.3 | 35.6 | 27.2 | 26.0 | n/m | n/m | n/m |
| *S. camelus* ssp. SAM ZOT788 | -------- | 496.0 | 126.0 | 52.4 | 40.3 | 27.2 | ----- | ----- | 38 fused | 33.0 |
| *Struthio* sp.IRSNB53848 | 17+1 | 495.0 | 120.0 | 45.6 | 39.1 | 25.7 | 27.2 | ----- | 35.0 | 27.5 |
| *S. camelus* ssp. USNM 319455 | (20) | 493.0 | 121 | 52.0 | 41.0 | 28.7 | 26.6 | n/m | n/m | n/m |
| *S. camelus* ssp. SAM ZO58259 | ----- | 435.0 | 104.0 | -------- | 33.3 | 22.4 | ------ | fused | fused | fused |
| N | 4 | 6 | 7 | 7 | 8 | 8 | 6 | 3 | 3 | 4 |
| **Median** |  | **495.5** | **124** | **52.0** | **37.65** | **27.05** | **26.6** | **39** | **35** | **30.25** |
| Minimum | 18 | 435 | 104 | 45.6 | 33.3 | 22.4 | 22.4 | 37.6 | 35 | 27 |
| Maximum | 20 | 568 | 133 | 59.8 | 47 | 30 | 28 | 39 | 37.7 | 38.1 |
| Mean | (18.75) | 500.5 | 123 | 52.0 | 38.5 | 26.5 | 26.6 | 38.5 | 35.9 | 31.4 |
| SD | -------- | 42.880 | 9.866 | 4.3 | 4.3 | 2.6 | 2.1 | 0.808 | 1.559 | 5.229 |
| **Mann-Whitney females/males** | | | | | | | | | | |
| U | ------- | 18 | 19 | 15 | 19 | 25 | 9.5 | ------ | 4 | 10 |
| p | ------- | 0.731 | 0.518 | 0.259 | 0.321 | 0.755 | 0.353 | ------ | 0.6 | 0.762 |
| **Statistics for extant (sub)sepcies** | | | | | | | | | | |
| N | 10 | 8 | 9 | 10 | 10 | 10 | 9 | 4 | 6 | 8 |
| Mean | 19.5 | 510.5 | 128,178 | 55,040 | 41,590 | 26,780 | 25,557 | 35.9 | 34.9 | 30.2 |
| SD | -------- | 37.785 | **7,989** | 3,087 | 4,989 | 2,172 | 1,907 | 4.818 | 3.191 | 4.162 |
| CV | -------- | 7.401 | **6,233** | 5,609 | 11,995 | 8,112 | 7,46 | 13.429 | 9.152 | 13.775 |
| **Unsexed specimen** | | | | | | | | | | |
| *Struthio* sp. OUM2525 | 20.0 | 463.0 | 112.0 | (48) | 32.3 | 22.0 | 21.3 | 35.0**3** | 29.0**3** | 34.0**3** |
| **Measurements for extinct subspecies4** | | | | | | | | | | |
| *S. c. spatzi* male ZMB36879 | -------- | 520.0  103.3% | ------ | ----- | ------ | 27.7  104.5% | 29.2  109.8% | ------ | 35.0 | 31.0 |
| *S. c. syriacus* male  NHMUK 1924.4.8.1 | 18.0 | 392.0  77.9% | 108.0 | 44.1  84.9% | 35.7  92.7% | 23.5  88.7% | 24.0  90.2% | 29.0 | 32.0 | 31.0 |
| *S. c. syriacus* male  NHMUK 1923.6.10.1 | 16+ | 327+ | 116.0 | 42.5  81.8% | 37.2  96.6% | 26.0  96.1% | 25.0  94.0% | 31.0 | ------ | ------ |

**1**Separated by plus (+) are incompletely fused caudal synsacral vertebrae, with a partly open suture; **2**Intermediate to caudals, 34.1 mm long;

**3**Fused with visible traces of obliterated sutures; **4** With percentages of the above male medians.

**Table S4.** Pelvis measurements (in mm) and statistics in the ostriches (*Struthio*). Specimens in the descending order of the postangular length. Abbreviations: LL lateral length; LPA preangular length; LPO postangular length; WPrA preacetabular width; WAnt antitrochanteric width; WAng angular width; WPoA postacetabular width; WInt interischiadic width; DPrA preacetabular depth; ΔTA transacetabular distance; ØAc acetabular diameter.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Length | | | Width | | | | | **DPrA** | **ØAc** | **ΔTA** |
| **LPa** | **LPo** | **LL** | **WPrA** | **WAnt** | **WAng** | **WPoA** | **WInt** |
| **Females** | | | | | | | | | | | |
| *S. c. cameIus* ISEA A/2506/72 | 261.8 | 344.0 | 606.0 | 70.0 | 197.0 | 126.4 | 55.0 | 48.2 | 122.5 | 57.6 | 131.9 |
| *S. molybdophanes* SAPM19 | 238.0 | 342.0 | ----- | 75.0 | 207.5 | 146.0 | 50.5 | (80) | 115.0 | 57.0 | 127.0 |
| *S. molybdophanes* SAPM20 | 240.0 | 324.0 | ---- | 76.2 | 204.3 | 125.0 | 48.1 | 83.8 | 114.0 | 59.6 | 127.0 |
| *S. molybdophanes* SAPM18 | 235.0 | 326.0 | 555.5 | 66.6 | 196.0 | 132.1 | 48.2 | 78.0 | 116.4 | 60.5 | 124.2 |
| *S. c. cameIus* NHMUK1846.10-17.8 |  | (306) | ------ | 69.0 | 183.5 | 121.0 | 55.1 | 53.0 | 105.5 | ------ | (120) |
| *S. c. australis* NHMUK1857.2.24.10 | 223.0 | 333.0 | 540.0 | 73.0 | 178.0 | 120.5 | 56.2 | 78.3 | 105.0 | 50.0  (48) | 112.0 |
| *S. c. s*sp.SAM56122 | 240.0 | 300.0 | ----- | 63.0 | 174.0 | 124.7 | 50.8 | 58.0 | 100 | ------ | 116.0 |
| N | 6 | 6 | 3 | 7 | 7 | 7 | 7 | 6 | 7 | 5 | 6 |
| **Median** | **239.0** | **329.5** | **555.5** | **70.0** | **196.0** | **125.0** | **50.8** | **68.0** | **114.0** | **57.6** | **125.6** |
| Minimum | 223.0 | 300.0 | 540.0 | 63.0 | 174.0 | 120.5 | 48.1 | 48.2 | 100.0 | 50.0 | 112.0 |
| Maximum | 261.8 | 344.0 | 606.0 | 76.2 | 207.5 | 146.0 | 56.2 | 83.8 | 122.5 | 60.5 | 131.9 |
| Mean | 239.6 | 328.2 | ----- | 70.4 | 191.5 | 128.0 | 52.0 | 66.5 | 111.2 | ----- | 123.0 |
| SD | 12.6 | 16.0 | ----- | 4.7 | 13.1 | 8.8 | 3.4 | 15.2 | 7.9 | ----- | 7.5 |
| **Males** **(exclusive of extinct (sub)species)** | | | | | | | | | | | |
| *S. c. cameIus* NHMUK1846.10.17.7 | 235 (+) | 290(+) | 525+ | 72.8 | 195.4(+) | 140.5 | 58.1 | 60.5 | ----- | ----- | 126.0 |
| *S. c. massaicus* ZMB35192 | 265.0 | 338.0 | ------ | 70.7 | 191.7 | 128.0 | 54.5 | 54.5 | 103.5 | 50x57 | 120.0 |
| *S. c. massaicus* NHMUK1915.3.30.1 | --------- | 330.0**2** | ------ | 70.0 | 180.3 | 105.0 | 51.5 | 57.0 | 113.5 | ------ | 119.0 |
| *S. molybdophanes* USNM319455 | 252.0 | 328.0 | ----- | 62.5 | n/m | 109.0 | 43.0 | 67.0 | 103.0 | 55x58 | n/m |
| *S. c.* ssp. USNM343621 | 238.0 | 319.0 | ----- | 64.0 | 179.0 | 116.0 | 48.5 | 59.0 | 105.0 | 53.5**2** | 113.0 |
| *Struthio* sp. IRSNB53848 | 237.0 | 311.0 | ------ | 65.0 | -------- | 123.0 | 51.7 | 65.0 | 105.0 | 53.6 | 116.0 |
| N | 4 | 4 | ----- | 6 | 3 | 6 | 6 | 6 | 5 | ------ | 5 |
| **Median** | **245.0** | **323.5** | **-----** | **67.5** | **180.3** | **119.5** | **51.6** | **59.75** | **105.0** | ------ | **119.0** |
| Minimum | 237.0 | 311.0 | ----- | 62.5 | 179.0 | 105.0 | 43.0 | 54.5 | 103.0 | ------ | 113.0 |
| Maximum | 265.0 | 338.0 | ----- | 72.8 | 191.7 | 140.5 | 58.1 | 67.0 | 113.5 | ------ | 126.0 |
| Mean | 246.6 | 321.8 | ----- | 65.8 | 182.9 | 117.8 | 50.6 | 60.7 | 104.5 | ------ | 116.6 |
| SD | 11.9 | 12.5 |  | 3.6 | 5.9 | 9.4 | 4.35 | 4.8 | 5.3 |  | 2.9 |
| **Mann-Whitney females / males** | | | | | | | | | | | |
| **U** | 8.5 | 9 | ----- | 13.5 | 7 | 13 | 21 | 16 | 8 | ------ | 9.5 |
| **p** | 0.533 | 0.61 | ----- | 0.312 | 0.517 | 0.295 | 1.0 | 0.818 | 0.146 | ------ | 0.361 |
| **Unsexed specimen** | | | | | | | | | | | |
| *S. c. cameIus* OUMNH2525 | 233.0 | 310.0 | ----- | (59) | 172.0 | 118.2 | 51.3 | 73.5 | 95.0 | 40x39 | 113.0 |
| **Statistics for extant (sub)species** | | | | | | | | | | | |
| N | 7 | 8 | ----- | 10 | 8 | 10 | 10 | 9 | 9 | ----- | 8 |
| Mean | 243,7 | 328,3 | ----- | 70,6 | 192,6 | 125,4 | 52,0 | 64,5 | 111,0 | ----- | 123,4 |
| SD | 14,5 | 16,0 | ----- | 4,0 | 10,3 | 12,6 | 4,6 | 12,9 | 6,5 | ----- | 6,2 |
| CV | 6.0 | 4.9 | ----- | 5.7 | 5.3 | 10.1 | 8.9 | 19.9 | 5.85 | ------- | 5.0 |
| **Measurements of extinct (sub)species3** | | | | | | | | | | | |
| *S. c. spatzi* male ZMB36879 | 241.0  97.7% | 305.0  94.8% | ----- | 62.7  95.3% | 180.5  98.7% | 126.0  107.0% | 54.5  107.7% | 61.5  101.3% | 97.0  92.8% | 55x55 | 115.0  98.6% |
| *S. c. syriacus* male NHMUK1924.4.8.1; | 207.8  84.3% | 252.5  78.5% | 449.0 | 57.6  87.5% | 147+ | 110.7  94.0% | 48.0  94.8% | n/m | 95.0  90.9% | 50.5 | 112.0  96.05% |
| *S. c. syriacus* male NHMUK1923.6.10.1 | 208.0  84.35% | 236.0  73.3% | 433.0 | 55.4  84.2% | 150.8  82.4% | 106.0  90.0% | 43.5  85.9% | ------ | 94.5  90.4% | 49.0 | 108.0  92.6% |

**1** Based on male NHMUK1916.3.20.1; **2**For the shorter diameter; **3** With percentages of the above male medians.

**Table S5.** Femur measurements (in mm) and statistics in the ostriches (*Struthio*). Specimens in the descending order of the length. Abbreviations: LT total length; LM medial length; LL lateral length; ØH head diameter; ØC corpus least diameter; WDdistal width; WP proximal width; ØCM medial condyle diameter.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Length | | | **ØH** | **ØC** | Width | | **ØCM** |
| **LT** | **LM** | **LL** | **WP** | **WD** |
| **Females** | | | | | | | | |
| *S. c. camelus* ISEA A/2506/72 | 335.3 | 312.7 | 337.9 | 52.7 | 40.3 | 120.4 | 112,4 | 99.1 |
| *S. camelus* ssp. SAM56122 | 316.0 | 277.0 | 320.5 | 51.9 | 39.7 | 113.3 | 107.0 | 95.4 |
| *S. molybdophanes* SAPM 18 | 315.5 | 283.0 | 314.25 | 52.85 | 35.4 | 120.0 | 110.0 | 93.25 |
| *S. c. camelus* NHMUK 1846.10-17.8 | 302.0 | 290.0 | 305.0 | 50.0 | 36.0 | 116.1 | 115.1 | 93.1 |
| *S. molybdophanes* SAPM 20 | 322.4 | 288.4 | 322.25 | 52.5 | 35.7 | 122.0 | 111.15 | 90.75 |
| *S. molybdophanes* SAPM 19 | 322.0 | 286.0 | 322.0 | 52.8 | 36.5 | 123.5 | 111.8 | 89.5 |
| *S. c. australis* NHMUK1857.2.24.10 | 290.5 | 269.0 | 293.7 | 47.3 | 36.2 | 106.0 | 97.1 | 89.4 |
| N | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| **Median** | **316.0** | **286.0** | **320.5** | **52.5** | **36.2** | **120.0** | **111.15** | **93.1** |
| Minimum | 290.5 | 269.0 | 293.7 | 47.3 | 35.4 | 106.0 | 97.1 | 89.4 |
| Maximum | 335.3 | 312.7 | 337.9 | 52.85 | 40.3 | 123.5 | 115.1 | 99.1 |
| Mean | 314.8 | 286.6 | 316.5 | 51.4 | 37.1 | 117.3 | 109.2 | 92.9 |
| SD | 14.6 | 13.6 | 14.1 | 2.1 | 2.0 | 6.1 | 5.9 | 3.5 |
| **Males(exclusive of extinct (sub)species)** | | | | | | | | |
| *S. c. massaicus* ZMB35192 | 326.0 | 306.5 | 328.0 | 51.2 | 39.9 | 115.5 | 101.0 | 99.8 |
| *S. c. massaicus* NHMUK1915.3.30.1 | 302.0 | 284.0 | 300.0 | 52.6 | 35.0 | 111.5 | 107.0 | 96.3 |
| *S. molybdophanes* USNM319455 | 304.0 | 283.0 | 303.5 | 50.0 | 38.1 | 102.0 | 102.0 | 88.3 |
| *S. c. camelus* NHMUK1846.10.17.7 | 303.0 | 278.9 | 303.1 | 48.0 | 37.5 | 110.7 | 103.0 | 88.2 |
| *Struthio camelus* ssp. USNM343621 | 296.0 | 275.0 | 298.5 | 48.7 | 39.8 | 100.0 | 97.5 | 88.0 |
| *S. camelus* ssp. ZOT788 | 297.0 | 287.0 | 302.0 | 47.9 | 35.7 | 109.5 | 99.8 | 87.2 |
| *Struthio* sp.IRSNB53848 | 297.0 | 277.0 | 298.0 | 48.2 | 37.6 | 109.0 | 103.0 | ------ |
| N | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 |
| **Median** | **302.0** | **283.0** | **302.0** | **48.7** | **37.6** | **109.5** | **102.0** | **88.25** |
| Minimum | 296.0 | 275.0 | 298.0 | 47.9 | 35.0 | 100.0 | 97.5 | 87.2 |
| Maximum | 326.0 | 306.5 | 328.0 | 52.6 | 39.9 | 115.5 | 107.0 | 99.8 |
| Mean | 303.6 | 284.5 | 304.7 | 49.5 | 37.7 | 108.3 | 101,9 | 91,3 |
| SD | 10.4 | 10.6 | 10.5 | 1.8 | 1.9 | 5.45 | 3,0 | 5.4 |
| **Mann-Whitney females / males1** | | | | | | | | |
| U | 14.5 | 20 | 12 | 11.5 | 20.5 | 6 | 7.5 | 13 |
| p | 0.22 | 0.598 | 0.128 | 0.105 | 0.646 | **0.017\*** | **0.028\*** | 0.295 |
| **Statistics for extant (sub)species** | | | | | | | | |
| N | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Mean | 312,2700 | 288,1500 | 312,9700 | 50,9950 | 37,0600 | 114,7700 | 107,0550 | 92,7700 |
| SD | 14,00722 | 12,78056 | 14,16912 | 2,08413 | 1,85185 | 7,12648 | 5,95364 | 4,33700 |
| **C**V | 4.5 | 4.4 | 4.5 | 4.1 | 5.0 | 6.2 | 5.6 | 4.7 |
| **Measurements of extinct (sub)species2** | | | | | | | | |
| *S. c. spatzi* male ZMB36879 | 288.5  95.0% | 264.5  93.0% | 290.5  95.3% | 48.0  97.0% | 32.4  86.0% | 98.5  91% | 111.0  108.9% | 92.3  101.1% |
| *S. c. syriacus* male NHMUK 1924.4.8.1 | 272.4  89.7% | 246.5  86.6% | 271.0  88.9% | 41.0  82.8% | 31.4  83.4% | 96.5  89.1% | 92.3  90.6% | 76.6  83.9% |
| *S. c. syriacus* male NHMUK 1923.6.10.1 | 270.8  89.2% | 242.5  85.2% | 270.5  88.8% | 40.9  82.6% | 32.5  86.3% | 95.4  88.1% | 90.0  88.3% | 77.4  84.8% |

**1** Asterisked are significant differences between sexes. **2** With percentages of the above male medians.

**Table S6.** Tibiotarsus measurements (in mm) and statistics in the ostriches (*Struthio*). Specimens in the descending order of the length. Abbreviations: LIA interarticular length; WC corpus minimum width; DC corpus depth; WP, proximal width; DP  proximal depth; WD, distal width; DMD medial distal depth; DLD lateral distal depth.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **LIA** | Corpus | | Proximal end | | Distal end | | |
| **WC** | **DC** | **WP** | **DP** | **WD** | **DMD** | **DLD** |
| **Females** | | | | | | | | |
| *S. molybdophanes* SAPM 19 | 568.0 | 35.0 | 28.3 | 92.0 | 143.0 | 79.3 | 71.2 | 67.3 |
| *S. c. camelus* ISEA A/2506/72 | 563.3 | 36.8 | 29.3 | 90.8 | 139.2 | 75.1 | 72.7 | 67.6 |
| *S. c. camelus* NHMUK 1846.10-17.8 | 555.0 | 34.3 | 28.9 | 83.5 | 136 | 77.0 | 72.0 | 68.1 |
| *S. molybdophanes* SAPM 20 | 540.0 | 36.4 | 28.8 | 93.0 | 142.8 | 78.25 | 70.15 | 62.2 |
| *S. molybdophanes* SAPM 18 | 535.7 | 33.8 | 28.75 | 88.65 | 139.8 | 76.6 | 71.9 | 67.75 |
| *S. c. australis* NHMUK 1857.2.24.10 | 531.4 | 31.9 | 25.4 | 80.8 | 129.7 | 67.8 | 64.8 | 62.5 |
| *S. camelus* ssp. SAM 56122 | 511.5 | 34.5 | 25.8 | 85.2 | 138.8 | 70.8 | 65.7 | 60.5 |
| N | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| **Median** | **540** | **34.5** | **28.75** | **88.65** | **139.2** | **76.6** | **71.2** | **67.3** |
| Minimum | 511.5 | 31.9 | 25.4 | 80.8 | 129.7 | 67.8 | 64.8 | 60.5 |
| Maximum | 568 | 36.8 | 29.3 | 93 | 143 | 79.3 | 72.7 | 68.1 |
| Mean | 543.6 | 34.7 | 27.9 | 87.7 | 138.5 | 75.0 | 69.8 | 65.1 |
| SD | 19.9 | 1.6 | 1.6 | 4.6 | 4.6 | 4.2 | 3.2 | 3.25 |
| **Males(exclusive of extinct (sub)species)** | | | | | | | | |
| *S. c. camelus* NHMUK1846.10.17.7 | 574.2 | 34.9 | 27.5 | 83.4 | [138]**1** | 76.0 | 69.7 | 66.4 |
| *S. c. massaicus* ZMB35192 | 571.0 | 35.0 | 27.7 | 89.6 | ----- | 75.0 | 64.3 | 64.0 |
| *S. c. massaicus* NHMUK1915.3.30.1 | 547.0 | 31.8 | 27.3 | 85.5 | 135.0 | 72.0 | 70.0 | 65.0 |
| *Struthio sp.* IRSNB53848 | 539.0 | 33.2 | 26.7 | (84) | ----- | 73.5 | 64.5 | 62.5 |
| *S. camelus* ssp*.* SAM ZOT788 | 530.5 | 32.4 | 26.5 | 83.8 | 142.5 | 68.2 | 59.7 | 56.6 |
| *Struthio sp.* USNM343621 | 515.0 | 34.4 | 26.8 | 82.0 | 135.0 | 71.0 | 64.0 | 63.5 |
| N | 6 | 6 | 6 | 5 | 3 | 6 | 6 | 6 |
| **Median** | **543** | **33.8** | **27.05** | **83.8** | **135** | **72.75** | **64.4** | **63.75** |
| Minimum | 515 | 31.8 | 26.5 | 82 | 135 | 68.2 | 59.7 | 56.6 |
| Maximum | 574.2 | 35 | 27.7 | 89.6 | 142.5 | 76 | 70 | 66.4 |
| Mean | 546.1 | 33.6 | 27.1 | 84.9 | 137.5 | 72.6 | 65.4 | 63.0 |
| SD | 23.1 | 1.4 | 0.5 | 2.9 | 4.3 | 2.8 | 3.9 | 3.4 |
| **Mann-Whitney females / males2** | | | | | | | | |
| U | 19.0 | 13.5 | 12.0 | 11.0 | 7.0 | 12.0 | 4.0 | 14.5 |
| p | 0.836 | 0.312 | 0.234 | 0.343 | 0.475 | 0.234 | **0.014\*** | 0.387 |
| **Statistics for extant (sub)species** | | | | | | | | |
| N | 9 | 9 | 9 | 9 | 7 | 9 | 9 | 9 |
| Mean | 553,9556 | 34,4333 | 27,9944 | 87,4722 | 137,9286 | 75,2278 | 69,6389 | 65,6500 |
| SD | 16,09022 | 1,73566 | 1,19280 | 4,31300 | 4,73593 | 3,48202 | 3,05796 | 2,30407 |
| CV | 2.9 | 5.0 | 4.3 | 4.9 | 3.4 | 4.6 | 4.4 | 3.5 |
| **Measurements of extinct (sub)species3** | | | | | | | | |
| *S. c. spatzi* ZMB36879 | 500.0  91.6% | 32.0  95.2% | 24.1  89.0% | 82.4  97.1% | ------- | 65.7  90.5% | 62.5  95.6% | 60.6  96.2% |
| *S. c. syriacus* NHMUK1924.4.8.1 | 474.0  86.8% | 28.6  85.1% | 21.4  79.0% | 73.9  87.1% | 114.4  83.2% | 64.9  89.4% | 61.9  94.6% | 55.6  88.25% |
| *S. c. syriacus* NHMUK1923.6.10.1 | 474.0  86.8% | 30.3  90.2% | 21.7  80.1% | 72.9  85.9% | 109.8  79.85% | 64.4  88.7% | 58.8  89.9% | 53.7  85.2% |

**1** Ossification unfinished;  **2** Asterisked are significant differences between sexes. **3** With percentages of the above males medians.

**Table S7**. Fibula measurements (in mm) and statistics in the ostriches (*Struthio*). Specimens in the descending order of the head diameter. Abbreviations: **DC** corpus depth; **DH** head depth; **WC** corpus width.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **DH** | Corpus | |
| **WC** | **ØC** |
| **Females** | | | |
| *S. c. camelus* ISEA A/2506/72 | 50.5 | 11.4 | 20.5 |
| *S. molybdophanes* SAPM 20 | 49.5 | 13.2 | 21.4 |
| *S. c. camelus* NHMUK 1846.10-17.8 | 46.5 | 12.5 | 19.2 |
| *S. molybdophanes* SAPM 18 | 46.3 | 11.6 | 20.0 |
| *S. molybdophanes* SAPM 19 | ----- | 11.3 | ----- |
| *S. c. australis* NHMUK 1857.2.24.10 | 44.0 | 10.2 | 18.1 |
| N | 5 | 6 | 5 |
| **Median** | **46.5** | **11.5** | **20.0** |
| Minimum | 44 | 10.2 | 18.1 |
| Maximum | 50.5 | 13.2 | 21.4 |
| Mean | 47.36 | 11.70 | 19.84 |
| **Males (exclusive of extinct (sub)species)** | | | |
| *S. massaicus* ZMB35192 | 49.0 | ------ | ------ |
| *Struthio* sp. IRSNB53848 | 46.4 | 10.7 | ------ |
| *S. c. camelus* NHMUK 1846.10.17.7 | 46.0 | 10.4 | 18.1 |
| *S. c. massaicus* NHMUK 1915.3.30.1 | 44.0 | 11.0 | 19,1 |
| *Struthio* sp. USNM343621 | ------ | 12,6 | 19,6 |
| N | 4 | 4 | 3 |
| **Median** | **46.2** | **10.85** | **19.1** |
| Minimum | 44 | 10.4 | 18.1 |
| Maximum | 49 | 12.6 | 19.6 |
| Mean | 46.35 | 11.2 | 18.9 |
| **Mann-Whitney females / males** | | | |
| **U** | 6.5 | 8 | 3.5 |
| **p** | 0.452 | 0.476 | 0.268 |
| **Statistics for specimens assigned to extant (sub)species** | | | |
| N | 8 | 8 | 7 |
| Mean | 47,0 | 11,45 | 19,5 |
| SD | 2,5 | 1,0 | 1,2 |
| CV | 5.2 | 8.8 | 6.3 |
| **Measurements of extinct (sub)species1** | | | |
| *Struthio c. spatzi* ZMB36879 | 46.0  99.2% | ------ | ------ |
| *Struthio c. syriacus* NHMUK1924.4.8.1 | 37.1  80.0% | 8.3  74.3% | 15.6  82.4% |
| *Struthio c. syriacus* NHMUK1923.6.10.1 | 37.4  80.7% | 8.7  77.85% | 13.6  71.8% |

**1** With percentages of the above male medians.

**Table S8.** Tarsometatarsus measurements (in mm) and statistics in the ostriches (*Struthio*). Specimens in the descending order of the length. Abbreviations: LT total length; WC corpus minimum width; DC corpus depth; WP proximal width; DMP medial proximal depth; DLP lateral proximal depth; ΔIFA dorsal interforaminal distance; ΔIFP plantar interforaminal distance; WTD trochlea III distal width; ØTL trochlea III lateral labrum diameter.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **LT** | Corpus | | Proximal end | | | Interforaminal | | Trochlea III | |
| **WC** | **DC** | **WP** | **DMP** | **DLP** | **ΔIFA** | **ΔIFP** | **WTD** | **QTL** |
| **Females** | | | | | | | | | | |
| *S. c. camelus* ISEA A/2506/72 | 500.7 | ------ | 21.0 | 83.4 | 44.0 | 43.8 | 12.3 | 21.7 | 41.7 | 45.3 |
| *S. c. camelus* NHMUK356.B 1846.10-17.8 | 493.0 | 29.5 | 20.2 | 82.8 | 45.0 | 46.4 | 14 | 22.7 | 41.0 | 42.8 |
| *S. molybdophanes* SAPM 19 | 485.0 | 29.4 | 21.1 | 85.2 | 45.5 | 45.0 | 12.8 | 23.2 | 42.8 | 45.8 |
| *S. molybdophanes* SAPM 18 | 483.0 | ------ | 20.9 | 83.2 | 41.5 | 37.15 | 12.3 | 22.8 | 41.5 | 46.2 |
| *S. c. australis* NHMUK 1857.2.24.10 | 481.1 | 27.1 | 18.2 | 73.7 | 41.3 | 41.5 | 12.0 | 17.2 | 36.2 | 41.8 |
| *S. molybdophanes* SAPM 20 | 459.9 | ------ | 22.1 | 83.1 | 43.7 | 41.7 | 14.5 | 20.9 | 44.8 | 43.4 |
| *S. camelus* ssp. SAM56122 | 443.9 | 32.5 | 18.3 | 77.0 | 43.0 | 39.8 | 10.7 | 18.8 | 39.2 | 40.9 |
| N | 7 | 4 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| **Median** | **483** | **29.45** | **20.9** | **83.1** | **43.7** | **41.7** | **12.3** | **21.7** | **41.5** | **43.4** |
| Minimum | 443.9 | 27.1 | 18.2 | 73.7 | 41.3 | 37.15 | 10.7 | 17.2 | 36.2 | 40.9 |
| Maximum | 500.7 | 32.5 | 22.1 | 85.2 | 45.5 | 46.4 | 14.5 | 23.2 | 44.8 | 46.2 |
| Mean | 478.1 | 29.6 | 20.3 | 81.2 | 43.4 | 42.2 | 12.7 | 21.0 | 41.0 | 43.7 |
| SD | 19.6 | 2.2 | 1.5 | 4.2 | 1.6 | 3.2 | 1.3 | 2.3 | 2.7 | 2,1 |
| **Males (exclusive of extinct (sub)species)** | | | | | | | | | | |
| *S. c. camelus* NHMUK 1846.10.17.7 | 510.5 | 30.4 | 19.9 | 81.6 | 46.9 | 44.3 | 13.3 | 19.3 | 40.7 | 41.6 |
| *S. molybdophanes* USNM319455 | 503.5 | (26.6) | 17,7 | 78.4 | ----- | 40.7 | 11.2 | 20.3 | 38.0 | ----- |
| *S. c. massaicus* ZMB35192 | 486.0 | 30.6 | 19.0 | 81.3 | 45.8 | 45.2 | (13.9) | 16.2 | 39.9 | 44.7 |
| *S. c. massaicus* NHMUK 1915.3.30.1 | 470.0 | 28.2 | 17.1 | 78 | 43.3 | 41.5 | 14 | 18.3 | 41.3 | 41.8 |
| *Struthio* sp. USNM343621 | 468.0 | (27.9) | 18.0 | 78.2 | 44.1 | 38.1 | 13.1 | 15.5 | 39.4 | 39.9 |
| *S. camelus* ssp. SAM ZOT788 | 456.5 | 29.5 | 18.1 | 71.8 | 37.9 | 37.3 | 13.2 | 17.7 | 37.7 | 37.8 |
| *Struthio* sp.IRSNB53848 | ------ | 28.3 | 18.1 | 79.0 | 40.8 | 41.0 | 13.6 | 18.1 | ------ | ----- |
| N | **6** | **5** | **7** | **7** | **6** | **7** | **6** | **7** | **6** | 5 |
| **Median** | **478** | **29.5** | **18.1** | **78.4** | **43.7** | **41** | **13.25** | **18.1** | **39.65** | **41.6** |
| Minimum | 456.5 | 28.2 | 17.1 | 71.8 | 37.9 | 37.3 | 11.2 | 15.5 | 37.7 | 37.8 |
| Maximum | 510.5 | 30.6 | 19.9 | 81.6 | 46.9 | 45.2 | 14 | 20.3 | 41.3 | 44.7 |
| Mean | 482.4 | 29.4 | 18.3 | 78.3 | 43.1 | 41.2 | 13.1 | 17.9 | 39.5 | 41.2 |
| SD | 21.4 | 1.1 | 0.9 | 3.2 | 3.3 | 2.9 | 1.0 | 1.7 | 1.4 | 2.6 |
| **Mann-Whitney females / males1** | | | | | | | | | | |
| U | 18 | 9.5 | 4 | 12 | 20 | 19.5 | 15.5 | 7 | 11 | 6.5 |
| **p** | 0.73 | 1 | **0.006\*\*** | 0.128 | 0.945 | 0.555 | 0.464 | **0.026\*** | 0.181 | 0.082 |
| **Statistics for extant (sub)species** | | | | | | | | | | |
| N | 10 | 6 | 10 | 10 | 9 | 10 | 9 | 10 | 10 | 9 |
| Mean | 487,3 | 29,2 | 19,7 | 81,1 | 44,1 | 42,7 | 12,9 | 20,3 | 40,8 | 43,7 |
| SD | 15,4 | 1,3 | 1,65 | 3,4 | 1,9 | 2,7 | 1,1 | 2,45 | 2,4 | 1,8 |
| CV | 3,15 | 4,6 | 8,4 | 4,2 | 4,3 | 6,4 | 8,45 | 12,1 | 5,9 | 4,2 |
| **Measurements of extinct (sub)species2** | | | | | | | | | | |
| *S. c. syriacus* male NHMUK1924.4.8.1 | 426.0  88.3% | 22.6  76.9% | 15.8  86.5% | 68.7  87.7% | 40.7  94.4% | 35.8  87.0% | 12.0  91.8% | 17.2  96.0% | 33.9  85.8% | 36.1  87.7% |
| *S. c. spatzi* male ZMB36879 | 425.0  88.1% | 25.3  86.05% | 16.9  92.5% | 71.8  91.7% | 41.5  96.3% | 40.7  98.9% | (13.2) | 16.5  92.1% | 36.6  92.7% | 40.1  97.4% |
| *S. c. syriacus* male NHMUK1923.6.10.1 | 419.7  87.0% | 23.6  80.3% | 15.2  83.2% | 68.5  87.45% | 39.7  92.1% | 36.2  87.9% | 12.0  91.8% | 14.7  82.1% | 32.1  81.3% | 34.4  83.6% |

**1** Asterisked are significant differences between sexes. **2** With percentages of the above male medians.

**Table S9**. Pedal digit III phalanx 1 measurements (in mm) and statistics in the ostriches (*Struthio*). Specimens in the descending order of the total length (**LT**). Abbreviations: LT total length; LD dorsal length; LM medial length; LL lateral length; WC corpus width; DC corpus depth; WP proximal width; DP proximal depth; WT trochlear width; DT trochlear mid-depth; DMT medial trochlear depth.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **LT** | **LD** | **LM** | **LL** | **WC** | **DC** | **WP** | **DP** | **WT** | **DT** | **DMT** |
| **Females** | | | | | | | | | | | |
| *S. c. camelus* ISEA A/2506/72 | 107.5 | 103.5 | 101.8 | 100.0 | 25.9 | 19.4 | 45.8 | 44,5 | 42.4 | 25.2 | 33.2 |
| *S. c. molybdophanes* SAPM 19 | 97.0 | 94.5 | 90.0 | 88.2 | 23.5 | 19.3 | 46.6 | 47.9 | 40.5 | 25.1 | 31.8 |
| *S. c. molybdophanes* SAPM 20 | 95.5 | 91.8 | 90.3 | 85.1 | 22.8 | 20.5 | 46.6 | 49.4 | 38.9 | 25,7 | 33.0 |
| *S. c. molybdophanes* SAPM 18 | 94.6 | 91.5 | 87.7 | 86.2 | 23.6 | 19.3 | 44.2 | 45.7 | 39.6 | 23.2 | 31.5 |
| *S. c. australis* NHMUK 1857.2.24.10 | (93) | 90.7 | 85.7 | 85.6 | 23.3 | 17.2 | 37.9 | 41.8 | 38.7 | 24.2 | 30.7 |
| *S. camelus* ssp. SAM56122 | (92) | 91.8 | 83.8 | 82.2 | 24.8 | 18.8 | 41.1 | 43.5 | 38.5 | 22.9 | 29.5 |
| *Struthio* sp. NMG9959**1** | 90.0 | 89.5 | 84.1 | 83.5 | 23.7 | 16.6 | 40.8 | 41.8 | 37.4 | 25.1 | 26.2 |
| N | 5 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| **Median** | **95.5** | **91.8** | **87.7** | **85.6** | **23.6** | **19.3** | **44.2** | **44.5** | **38.9** | **25.1** | **31.5** |
| Minimum | 90 | 89.5 | 83.8 | 82.2 | 22.8 | 16.6 | 37.9 | 41.8 | 37.4 | 22.9 | 26.2 |
| Maximum | 107.5 | 103.5 | 101.8 | 100 | 25.9 | 20.5 | 46.6 | 49.4 | 42.4 | 25.7 | 33.2 |
| Mean | 96.9 | 93.3 | 89.1 | 87.3 | 23.9 | 18.7 | 43.3 | 44.9 | 39.4 | 24.5 | 30.8 |
| SD | 6.5 | 4.7 | 6.2 | 5.9 | 1.1 | 1.4 | 3.4 | 2.9 | 1.6 | 1.1 | 2.4 |
| **Males(exclusive of extinct (sub)species)** | | | | | | | | | | | |
| *S. c. camelus* NHMUK1846.10.17.7 | 103.3 | 99.3 | 94.0 | 93.5 | 25.9 | 19.7 | 41.0 | 47.0 | 40.4 | 25.0 | 31.0 |
| *S. c. massaicus* ZMB35192 | 99.0 | 99.1 | 92.8 | 92.6 | 23,9 | 19.1 | 44.1 | 45.3 | 39.7 | 24.0 | 31.0 |
| *S. c. molybdophanes* USNM319455 | 93.7 | 93.2 | 87.0 | 85.7 | 22.8 | 18.5 | 41.6 | 42.5 | 37.5 | 24.1 | 30.1 |
| *S. camelus* ssp. SAM ZO58259 | (85.5) | 85.3 | 78.5 | 78.8 | 22.8 | 18.3 | 36.8 | 42.5 | 34.7 | 20.5 | 27.4 |
| *Struthio* sp.USNM343621 | 83.4 | 83.1 | 75.9 | 76.5 | 23.8 | 19.4 | 40.9 | 41.8 | 39.5 | 23.0 | 30.7 |
| *S. camelus* ssp. SAM ZOT788 | (82) | 80.8 | 76.2 | 75.8 | 23.2 | 18.1 | 38.8 | 40.4 | 36.2 | 22.0 | 27.6 |
| N | 4 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| **Median** | **96.35** | **89.25** | **82.75** | **82.25** | **23.5** | **18.8** | **40.95** | **42.5** | **38.5** | **23.5** | **30.4** |
| Minimum | 83.4 | 80.8 | 75.9 | 75.8 | 22.8 | 18.1 | 36.8 | 40.4 | 34.7 | 20.5 | 27.4 |
| Maximum | 103.3 | 99.3 | 94 | 93.5 | 25.9 | 19.7 | 44.1 | 47 | 40.4 | 25 | 31 |
| Mean | 94.4 | 90.2 | 84.3 | 84.0 | 23.5 | 18.7 | 40.7 | 43.5 | 37.7 | 23.2 | 29.8 |
| SD | 7.5 | 7.5 | 7.6 | 7.3 | 1.3 | 0.8 | 2.35 | 2.35 | 2.2 | 1.5 | 1.6 |
| **Mann-Whitney females / males2** | | | | | | | | | | | |
| U | 9 | 17 | 15 | 16 | 18.5 | 21.5 | 11 | 14 | 15 | 8 | 12.5 |
| p | 0.905 | 0.601 | 0.445 | 0.534 | 0.762 | 1.0 | 0.171 | 0.34 | 0.445 | **0.068** | 0.247 |
| **Statistics for extant (sub)species** | | | | | | | | | | | |
| N | 8 | 7 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Mean | 95,45000 | 98,65714 | 91,16250 | 89,61250 | 23,96250 | 19,12500 | 43,47500 | 45,51250 | 39,71250 | 24,56250 | 31,53750 |
| SD | 4,635269 | 5,059927 | 5,142800 | 5,309678 | 1,253495 | 0,960283 | 3,083945 | 2,590884 | 1,459391 | 0,819298 | 1,090134 |
| CV | 4.9 | 5.1 | 5.6 | 5.9 | 5.2 | 5.0 | 7.1 | 5.7 | 3.7 | 3.3 | 3.5 |
| **Measurements of extinct (sub)species3** | | | | | | | | | | | |
| *S. c. spatzi* male ZMB36879 | 92.5  98.0% | 90.4  102.55% | 85.9  101.9% | 85.2  101.4% | 21.9  93.3% | 17.5  93.8% | 42.0  103.1% | 45.3  104.0% | 36.0  95.5% | 23.7  102.2% | 30.8  103.4% |
| *S. c. syriacus* male NHMUK1924.4.8.1 | 81.9  86.8% | 78.8  87.4% | 75.1  89.05% | 74.2  88.3 | 19.1  81.4% | 15.1  80.9% | 34.7  85.2% | 36.3  83.4% | 32.5  86.2% | 18.3  78.9% | 24.4  81.9% |
| *S. c. syriacus* male NHMUK1923.6.10.1 | 80.5  85.3% | 76.9  85.3% | 74.7  88.6% | 72.9  86.8% | 20.2  86.1% | 15.0  80.3% | 32.0  78.5% | 35.6  81.8% | 32.2  85.4% | 18,1  78.1% | 24.0  80.5% |

**1** Sauer EGF.1979. A Miocene ostrich from Anatolia. *Ibis* 121(4): 494-501. (NMG – Naturhistoriska Museet Gothenburg).

**2** Underlined is a significant difference between sexes. **3** With percentages of the above medians for males.

**Table S10.** Pedal digit III phalanx 2 measurements (in mm) and statistics in the ostriches (*Struthio*). Specimens in the descending order of the length values. Abbreviations: LT total length; LD dorsal length; LM medial length; LL lateral length; WC corpus width, minimum; DC corpus depth; WP proximal width; DP proximal depth; WA apical width; WF foveal width; WT trochlear width; DT trochlear mid-depth.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **LT** | **LD** | **LM** | **LL** | **WC** | **DC** | **WP** | **DP** | **WT** | **WA** | **WF** | **DT** |
| **Females** | | | | | | | | | | | | |
| *S. c. camelus* ISEA A/2506/72 | 67.7 | 65.1 | 58.7 | 57.7 | 25.35 | 17.55 | 38.5 | 33.4 | 37.2 | 31.9 | 24.5 | 18.1 |
| *S. c. molybdophanes* SAPM 18 | 62.3 | 61.8 | 54.6 | 52.5 | 22.9 | 15.45 | 38.4 | 31.9 | 36.8 | 31.8 | 23.9 | 17.3 |
| *S. c. molybdophanes* SAPM 20 | 62.0 | 60.2 | 52.7 | 49.7 | 24.4 | 16.1 | 40.0 | 32.0 | 36.4 | 32.3 | 25.5 | 18.6 |
| *S. c. molybdophanes* SAPM 19 | 62.0 | 59.2 | 53.6 | 53.0 | 24.4 | 15.3 | 41.8 | 31.7 | 38.0 | 36.9 | 27.4 | 18.6 |
| *S. c. australis* NHMUK1857.2.24.10 | 59.7 | 58.4 | 53.0 | 51.0 | 24.5 | 15.0 | 35.9 | 30.1 | 37.8 | 29.8 | 24.5 | 16.7 |
| *S. camelus* ssp. SAM56122 | 57.0 | 55.3 | 47.9 | 46.5 | 27.1 | 16.6 | 36.5 | 30.1 | 34.9 | ------- | 22.8 | 15.1 |
| N | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 6 | 6 |
| **Median** | **62.0** | **59.7** | **53.3** | **51.75** | **24.45** | **15.78** | **38.45** | **31.8** | **37.0** | **31.9** | **24.5** | **17.7** |
| Minimum | 57.0 | 55.3 | 47.9 | 46.5 | 22.9 | 15.0 | 35.9 | 30.1 | 34.9 | 29.8 | 22.8 | 15.1 |
| Maximum | 67.7 | 65.1 | 58.7 | 57.7 | 27.1 | 17.55 | 41.8 | 33.4 | 38.0 | 36.9 | 27.4 | 18.6 |
| Mean | 61.8 | 60.0 | 53.4 | 51.7 | 24.8 | 16.0 | 38.5 | 31.5 | 36.85 | 32.5 | 24.8 | 17.4 |
| SD | 3.5 | 3.3 | 3.5 | 3.7 | 1,4 | 1.0 | 2.2 | 1.3 | 1.1 | 2.6 | 1.6 | 1.35 |
| **Males(exclusive of extinct (sub)species)** | | | | | | | | | | | | |
| *S. c. camelus* NHMUK1846.10.17.7 | 65.6 | 61.8 | 55.9 | 54.5 | 29.9 | 16.8 | 42.0 | 31.4 | 41.2 | 32.9 | 25.0 | 17.8 |
| *S. c. massaicus* ZMB35192 | 64.0 | 60.3 | 55.8 | 54.2 | 22.8 | 15.7 | 38.7 | 31.7 | 36.0 | (32.2) | 22.7 | (18.1) |
| *S. c. molybdophanes* USNM319455 | 62.5 | 58.8 | 54.4 | 52.2 | 23.6 | 15.4 | 35.8 | 28.8 | 35.6 | 30.8 | 21.7 | 15.1 |
| *S. camelus* ssp. SAM ZOT788 | 57.4 | 52.0 | 46.1 | 44.1 | 26.0 | 16.1 | 34.7 | 28.0 | 33.1 | ------- | 22.2 | 14.9 |
| *Struthio* sp.USNM343621 | 53.5 | 52.2 | 46.1 | 45.0 | 25.0 | 15,8 | 38.0 | 29.6 | 37.6 | 33.1 | 24.2 | 16.7 |
| N | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | 5 | 4 |
| **Median** | **62.5** | **58.8** | **54.4** | **52.2** | **25** | **15.8** | **38** | **29.6** | **36** | **32.9** | **22.7** | **15.9** |
| Minimum | 53.5 | 52 | 46.1 | 44.1 | 22.8 | 15.4 | 34.7 | 28 | 33.1 | 30.8 | 21.7 | 14.9 |
| Maximum | 65.6 | 61.8 | 55.9 | 54.5 | 29.9 | 16.8 | 42 | 31.7 | 41.2 | 33.1 | 25 | 17.8 |
| Mean | 60.5 | 57.6 | 52.0 | 50.5 | 25.2 | 15.9 | 37.4 | 30.1 | 36.7 | 3.3 | 22.9 | 16.1 |
| SD | 4.5 | 4.3 | 4.65 | 4.7 | 2.6 | 0.5 | 2.8 | 1.5 | 2.7 | 1.3 | 1.4 | 1.4 |
| **Mann-Whitney females / males1** | | | | | | | | | | | | |
| U | 14 | 10.5 | 14 | 13 | 14 | 13.5 | 12 | 4.5 | 12 | 6 | 6 | 5 |
| p | 0.892 | 0.459 | 0.881 | 0.792 | 0.894 | 0.829 | 0.662 | **0.065** | 0.662 | 0.786 | 0.113 | 0.157 |
| **Statistics for extant (sub)species** | | | | | | | | | | | | |
| N | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 | 8 | 7 |
| Mean | 63,22500 | 60,70000 | 54,83750 | 53,10000 | 24,73750 | 15,91250 | 38,88750 | 31,37500 | 37,37500 | 32,34286 | 24,40000 | 17,45714 |
| SD | 2,480639 | 2,182397 | 1,952974 | 2,434279 | 2,261439 | 0,864684 | 2,338765 | 1,375032 | 1,754789 | 2,251560 | 1,732875 | 1,244799 |
| CV | 3.9 | 3.6 | 3.6 | 4.6 | 9.1 | 5.4 | 6.0 | 4.4 | 4.7 | 7.0 | 7.1 | 7.1 |
| **Measurements of extinct (sub)species2** | | | | | | | | | | | | |
| *S. c. spatzi* male ZMB36879 | 60.0  99.2% | 60.3  104.7% | 53.8  103.4% | 53.0  104.95% | 23.8  94.5% | 15.7  98.7% | 35.0  93.6% | 31.0  103.1% | 36.6  99.8% | (31.4) | 21.6  94.3% | (16.9) |
| *S. c. syriacus* male NHMUK1924.4.8.1 | 51.5  85.1% | 47.7  82.9% | 43.8  84.2% | 41.5  82.2% | 20.6  81.8% | 12.5  78.5% | 31.6  84.6% | 23,8  79.1% | 32.6  88.9% | 28.3  87.7% | 19.2  83.8 | 13.4  83.1% |
| *S. c. syriacus* male NHMUK1923.6.10.1 | 49.8  82.3% | 47.0  81.6% | ---- | ---- | 21.4  85.0% | 11.9  74.75% | 30.1  80.55% | 23.5  78.1% | 32.1  87.5% | 24.5  75.9% | 19.0  83.0% | 13.6  84.3% |

**1** Underlined is a significant difference between sexes. **2** With percentages of the above medians for males.

**Table S11.** Pedal digit III phalanx 3 measurements (in mm) and statistics in the ostriches (*Struthio*). Specimens in the descending order of the length (LT). Abbreviations: LT total length; LD dorsal length; LM medial length; LL lateral length; WP proximal width; DP proximal depth; WT trochlear width; WA apical width; WF foveal width; DT trochlear mid-depth.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **LT** | **LD** | **LM** | **LL** | **WP** | **DP** | **WT** | **WA** | **WF** | **DT** |
| **Females** | | | | | | | | | | |
| *S. c. camelus* ISEA A/2506/72 | 42.1 | 38.8 | 32.4 | 32.6 | 31.2 | 26.2 | 36.2 | 23.7 | 20.0 | 14.0 |
| *S. molybdophanes* SAPM 20 | 39.7 | 36.2 | 31.3 | 32.0 | 32.6 | 25.1 | 34.7 | 24.1 | 17.1 | 14.3 |
| *S. molybdophanes* SAPM 18 | 39.3 | 37.3 | 31.9 | 31.6 | 30.4 | 24.2 | 34.6 | 23.3 | 15.9 | 13.5 |
| *S. c. australis* NHMUK1857.2.24.10 | 38.5 | 36.1 | 31.6 | 30.8 | 30.9 | 22.9 | 33.9 | 24.3 | 16.1 | 14.2 |
| *S. camelus* ssp*.* SAM56122 | 33.8 | 31.2 | 25.6 | (25) | 29.9 | 23.5 | 32.4 | 24.0 | 15.6 | 12.3 |
| N | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 |
| **Median** | **39.3** | **36.2** | **31.6** | **31.8** | **30.9** | **24.2** | **34.6** | **24** | **16.1** | **14** |
| Minimum | 33.8 | 31.2 | 25.6 | 30.8 | 29.9 | 22.9 | 32.4 | 23.3 | 15.6 | 12.3 |
| Maximum | 42.1 | 38.8 | 32.4 | 32.6 | 32.6 | 26.2 | 36.2 | 24.3 | 20 | 14.3 |
| Mean for females | 38.7 | 35.9 | 30.6 | 31.75 | 31.0 | 24.4 | 34.4 | 23.9 | 16.9 | 13.7 |
| SD | 3.0 | 2.85 | 2.8 | 0.75 | 1.0 | 1.3 | 1.4 | 0.4 | 1.8 | 0.8 |
| **Males(exclusive of extinct (sub)species)** | | | | | | | | | | |
| *S. c. camelus* NHMUK1846.10.17.7 | 38.5 | 35.5 | 29.9 | 29.0 | (32.1) | 25.2 | 36.4 | 24.7 | 17.4 | 14.6 |
| *Struthio* sp. USNM343621 | 34.9 | 32.0 | 26.5 | 27.7 | 28.9 | 24.1 | 32.8 | 23.7 | 160 | 12.8 |
| *S. camelus* ssp.SAM ZOT788 | 34.4 | 31.3 | 26.8 | 27.0 | 27.4 | 22.9 | 31.9 | 23.2 | 15.5 | 12.4 |
| N | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 |
| **Median** | **34.9** | **32** | **26.8** | **27.7** | **28.15** | **24.1** | **32.8** | **23.7** | **16** | **12.8** |
| Minimum | 34.4 | 31.3 | 26.5 | 27 | 27.4 | 22.9 | 31.9 | 23.2 | 15.5 | 12.4 |
| Maximum | 38.5 | 35.5 | 29.9 | 29 | 28.9 | 25.2 | 36.4 | 24.7 | 17.4 | 14.6 |
| Mean for males | 35.9 | 32.9 | 27.7 | 27.9 | 28.15 | 24.1 | 33.7 | 23.9 | 16.3 | 13.3 |
| SD | 2.2 | 2.25 | 1.9 | 1.0 | 1.1 | 1.15 | 2.4 | 0.8 | 1.0 | 1.2 |
| **Mann-Whitney females / males1** | | | | | | | | | | |
| **U** | 3.5 | 3 | 3 | 0 | ------- | 6.5 | 6 | 6.5 | 6 | 8 |
| **p** | 0.286 | 0.25 | 0.25 | **0.057** | ------- | 0.875 | 0.786 | 0.839 | 0.786 | 1 |
| **Statistics for extant (sub)species** | | | | | | | | | | |
| N | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 |
| Mean | 39,62000 | 36,78000 | 31,42000 | 31,20000 | 31,27500 | 24,72000 | 35,16000 | 24,02000 | 17,30000 | 14,12000 |
| SD | 1,480540 | 1,302690 | 0,941807 | 1,392839 | 0,942956 | 1,239758 | 1,087658 | 0,540370 | 1,638597 | 0,408656 |
| CV | 3.7 | 3.5 | 3.0 | 4.5 | 3.0 | 5. | 3.1 | 2.25 | 9.5 | 2.9 |
| **Measurements of extinct (sub)species2** | | | | | | | | | | |
| *S. c. syriacus* male NHMUK1924.4.8.1 | 32.1  89.4% | 28.7  87.3% | 24.1  87.0% | 25.9  92.8% | 26.4  93.8% | 19.0  78.9% | 27.3  81.0% | (21.5) | 11.9  73.0% | 10.7  80.6% |

**1** Underlined is a significant difference between sexes. **2** With percentages of the above medians for males.

**Table S12.** Pedal digit IV phalanx 1 measurements **(**in mm) and statistics in the ostriches (*Struthio*). Specimens on the descending order of the total length (**LT**). Abbreviations: LT total length; LD dorsal length; LM medial length; LL lateral length; WC corpus width; DC corpus depth; WP proximal width; DP proximal depth; WT trochlear width; DMT medial trochlear depth; DLT lateral trochlear depth; DT trochlear mid-depth.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **LT** | **LD** | **LM** | **LL** | **WC** | **DC** | **WP** | **DP** | **WT** | **DMT** | **DLT** | **DT** |
| **Females** | | | | | | | | | | | | |
| *S. c. camelus* ISEA A/2506/72 | 86.7 | 85.5 | 85.5 | 84.2 | 13.3 | 14.3 | 23.0 | 27.3 | 17.5 | 18.6 | 22.3 | 22.3 |
| *S. molybdophanes* SAPM 18 | 81.7 | 78.5 | 76.3 | 79.9 | 11.65 | 12.9 | 22.6 | 30.2 | 15.8 | 18.35 | 21.95 | 20.75 |
| *S. molybdophanes* SAPM 20 | 76.1 | 73.4 | 72.7 | 74.0 | 11.8 | 13.3 | 23.0 | 28.5 | 16.2 | 18.55 | 22.65 | 21.1 |
| *S. c. australis* NHMUK1857.2.24.10 | 76.0 | (72) | 74.3 | 73.4 | 12.4 | 12.5 | 22.0 | 25.6 | 16.9 | 22.0 | 21.4 | 19.2 |
| *S. camelus* ssp. SAM56122 | 75.5 | 74.6 | 73.5 | 73.7 | 12.3 | 13.0 | 19.6 | 26.0 | 16.5 | 16.2 | 20.5 | 20,0 |
| N | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| **Median** | **76.1** | **76.55** | **74.3** | **74** | **12.3** | **13** | **22.6** | **27.3** | **16.5** | **18.55** | **21.95** | **20.75** |
| Minimum | 75.5 | 73.4 | 72.7 | 73.4 | 11.65 | 12.5 | 19.6 | 25.6 | 15.8 | 16.2 | 20.5 | 19.2 |
| Maximum | 86.7 | 85.5 | 85.5 | 84.2 | 13.3 | 14.3 | 23 | 30.2 | 17.5 | 22 | 22.65 | 22.3 |
| Mean | 79.2 | 78.0 | 76.5 | 77.0 | 12.3 | 13.2 | 22.0 | 27.5 | 16.6 | 18.7 | 21.8 | 20.7 |
| SD | 4.9 | 5.45 | 5.2 | 4.8 | 0.65 | 0.7 | 1.4 | 1.9 | 0.65 | 2.1 | 0.8 | 1.2 |
| **Males(exclusive of extinct (sub)species)** | | | | | | | | | | | | |
| *S. c. camelus* NHMUK1846.10.17.7 | 87.2 | 83.9 | 85.3 | 83.1 | 12.2 | 14.1 | 23.1 | 28.2 | 17.5 | 21.1 | 20.2 | 17.8 |
| *S. molybdophanes* USNM319455 | 77.6 | 76.7 | 75.3 | n/a | 12.1 | 13.3 | 21.8 | 27.7 | 15.8 | ---- | ---- | ---- |
| *Struthio* sp. USNM343621 | 67.3 | 67.5 | 65.5 | 68.3 | 13,5 | 13,9 | 21.3 | 28.5 | 16.9 | 21.4 | 20.9 | 18.0 |
| *S. camelus* ssp. SAM ZOT788 | 69.7 | 67.5 | 66.5 | 67.5 | 12.9 | 12.2 | 19.5 | 25.6 | 15.2 | 16.1 | 19.8 | 18.7 |
| N | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| **Median** | **73.65** | **72.1** | **70.9** | **68.3** | **12.55** | **13.6** | **21.55** | **27.95** | **16.35** | **21.1** | **20.2** | **18** |
| Minimum | 67.3 | 67.5 | 65.5 | 67.5 | 12.1 | 12.2 | 19.5 | 25.6 | 15.2 | 16.1 | 19.8 | 17.8 |
| Maximum | 87.2 | 83.9 | 85.3 | 83.1 | 13.5 | 14.1 | 23.1 | 28.5 | 17.5 | 21.4 | 20.9 | 18.7 |
| Mean | 75.45 | 73.9 | 73.15 | 73.0 | 12.7 | 13.4 | 21.4 | 27.5 | 16.35 | 19.5 | 20.3 | 18.2 |
| SD | 9.0 | 7.95 | 9.2 | 8.8 | 0.7 | 0.85 | 1.5 | 1.3 | 1.0 | 3.0 | 0.6 | 0.5 |
| **Mann-Whitney females / males1** | | | | | | | | | | | | |
|  | 8 | 5 | 7 | 4 | 7 | 8.5 | 7 | 10 | 8.5 | 7 | 1 | 0 |
|  | 0.73 | 0.429 | 0.556 | 0.393 | 0.556 | 0.778 | 0.508 | 1 | 0.817 | 1 | **0.071** | **0.036\*** |
| **Statistics for extant (sub)species** | | | | | | | | | | | | |
| N | 6 | 5 | 6 | 5 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 |
| Mean | 80,883 | 79,600 | 78,233 | 78,920 | 12,242 | 13,400 | 22,583 | 27,917 | 16,617 | 19,720 | 21,700 | 20,230 |
| SD | 5,136 | 5,034 | 5,678 | 5,025 | 0,585 | 0,69 | 0,56 | 1,512 | 0,794 | 1,703 | 0,957 | 1,752 |
| CV | 6,35 | 6,324 | 7,257 | 6,367 | 4,78 | 5,149 | 2,48 | 5,416 | 4,778 | 8,637 | 4,411 | 8,66 |
| **Measurements of extinct (sub)species2** | | | | | | | | | | | | |
| *S. c. syriacus* NHMUK1924.4.8.1 | 65.6  86.9% | 63.8  86.3% | 64.7  88.4% | 64.5  88.4% | 10.5  82.8% | 11.0  82.2% | 19.2  89.6% | 22.9  83.3% | 14.1  86.2% | 16.8  86.0% | 15.9  78.3% | 14.4  79.25% |

**1** Asterisked is a significant and underlined is a near-significant difference between sexes; **2** With percentages of the above medians for males.

# Table S13. Pedal digit IV phalanx 2 measurements (in mm) and statistics in the ostriches (*Struthio*). Specimens in the descending order of the total length (LT). Abbreviations: LT total length; LD dorsal length; LM medial length; LL lateral length; WP proximal width; DP proximal depth; WT trochlear width; WA apical width; WF foveal width; DT trochlear mid-depth.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **LT** | **LD** | **LM** | **LL** | **WP** | **DP** | **WT** | **WA** | **WF** | **DT** |
| **Females** | | | | | | | | | | |
| *S. c. camelus* ISEA A/2506/72 | 35.6 | 31.3 | 27.1 | 26.8 | 17.5 | 22.6 | 18.1 | 14.0 | 10.2 | 12.1 |
| *S. molybdophanes* SAPM 18 | 33.7 | 32.65 | 27.35 | 28.1 | 16.6 | 20.5 | 18.75 | 14.3 | 10.3 | 12.65 |
| *S. c. australis* NHMUK1857.2.24.10 | 33.0 | 30.6 | 26.9 | 27.5 | 18.1 | 21.0 | 20.4 | 13,5 | 10.5 | 11.6 |
| *S. camelus* ssp. SAM56122 | 32.5 | 27.8 | 23.9 | 24.4 | 17.5 | 20.6 | 16.6 | 13.6 | 9.2 | 9.5 |
| *S. molybdophanes* SAPM 20 | 32.35 | 30.5 | 25.7 | 26.15 | 18.15 | 20.6 | 19.4 | 12.15 | 10.4 | 12.2 |
| N | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| **Median** | **33.0** | **30.6** | **26.9** | **26.8** | **17.5** | **20.6** | **18.75** | **13.6** | **10.3** | **12.1** |
| Minimum | 32.35 | 27.8 | 23.9 | 24.4 | 16.6 | 20.5 | 16.6 | 12.15 | 9.2 | 9.5 |
| Maximum | 35.6 | 32.65 | 27.35 | 28.1 | 18.15 | 22.6 | 20.4 | 14.3 | 10.5 | 12.65 |
| Mean | 33.4 | 30.6 | 26.2 | 26.6 | 17.6 | 21.0 | 18.65 | 13.5 | 10.1 | 11.6 |
| SD | 1.3 | 1.8 | 1.4 | 1.4 | 0.6 | 0.9 | 1.4 | 0.8 | 0.5 | 1.2 |
| **Males** | | | | | | | | | | |
| *S. c. camelus* NHMUK1846.10.17.7 | 35.9 | 32.5 | 28.2 | 28.2 | 18.7 | 21.9 | 19.2 | 14.5 | 9.7 | 11.4 |
| *Struthio sp.* USNM343621 | 32.2 | 26.6 | 23.6 | 24.8 | 17.0 | 20.4 | 19.8 | 14.6 | 10.3 | 11.7 |
| *S. camelus* ssp. SAM ZOT788 | 31.1 | 28.4 | 24.1 | 24.6 | 16.7 | 19.4 | 17.2 | 12.6 | 9.6 | 10.6 |
| N | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| **Median** | **32.2** | **28.4** | **24.1** | **24.8** | **17.0** | **20.4** | **19.2** | **14.5** | **9.7** | **11.4** |
| Minimum | 31.1 | 26.6 | 23.6 | 24.6 | 16.7 | 19.4 | 17.2 | 12.6 | 9.6 | 10.6 |
| Maximum | 35.9 | 32.5 | 28.2 | 28.2 | 18.7 | 21.9 | 19.8 | 14.6 | 10.3 | 11.7 |
| Mean | 33.1 | 29.2 | 25.3 | 25.9 | 17.5 | 20.6 | 18.7 | 13.9 | 9.7 | 11.2 |
| SD | 2.5 | 3.0 | 2.5 | 2.0 | 1.1 | 1.3 | 1.4 | 1.1 | 0.4 | 0.6 |
| **Mann-Whitney females / males** | | | | | | | | | | |
| U | 5 | 5 | 6 | 8 | 8 | 4 | 7 | 4 | 4.5 | 4 |
| p | 0.571 | 0.571 | 0.786 | 1.0 | 1.0 | 0.393 | 1.0 | 0.393 | 0.464 | 0.393 |
| **Statistics for extant (sub)species** | | | | | | | | | | |
| N | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Mean | 34,11 | 31,51 | 27,05 | 27,35 | 17,81 | 21,32 | 19,17 | 13,69 | 10,22 | 11,99 |
| SD | 1,575 | 1,021 | 0,903 | 0,873 | 0,799 | 0,904 | 0,85 | 0,94 | 0,311 | 0,498 |
| CV | 4,617 | 3,241 | 3,337 | 3,193 | 4,485 | 4,24 | 4,432 | 6,864 | 3,047 | 4,153 |

**Table S14.** Pedal digit IV phalanx 3 measurements (in mm) and statistics in the ostriches (*Struthio*). Specimens in the descending order of the total length (LT). Abbreviations: LT total length; LD dorsal length; LM medial length; LL lateral length; WP proximal width; DP proximal depth; WT trochlear width; WA apical width; WF foveal width; DT trochlear mid-depth.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **LT** | **LD** | **LM** | **LL** | **WP** | **DP** | **WT** | **WA** | **WF** | **DT** |
| *S. molybdophanes* female SAPM 18 | 22.35 | 18.5 | 14.2 | 17.2 | 14.7 | 15.3 | 17.6 | (11.2) | 7.5 | 9.0 |
| *S. c. camelus* female ISEA A/2506/72 | 21.8 | 17.3 | 13.4 | 15.2 | 14.8 | 15.9 | 16.5 | ------ | 8.45 | 7.8 |
| *S. molybdophanes* female SAPM 20 | 21.45 | 18.4 | 11.6 | 15.6 | 14.4 | 16.0 | 15.25 | (11.1) | 7.8 | 9.4 |
| *S. camelus* ssp*.* male SAM ZOT788 | 20.0 | 17.5 | 12.5 | 14.6 | 13.9 | 15.4 | 15.3 | 10.2 | 8.0 | 7.8 |
| *S. camelus* ssp. female SAM56122 | 19.5 | 16.7 | 10.1 | 13.9 | 14.1 | 14.9 | 13.2 | 10.2 | 6.7 | 7.8 |
| N | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 |
| **Median** | **21.45** | **17.5** | **12.5** | **15.2** | **14.4** | **15.4** | **15.3** | **(10.65)** | **7.8** | **7.8** |
| Minimum | 19.5 | 16.7 | 10.1 | 13.9 | 14.1 | 14.9 | 13.2 | 10.2 | 6.7 | 7.8 |
| Maximum | 22.35 | 18.5 | 14.2 | 17.2 | 14.8 | 16.0 | 17.6 | 11.2 | 8.45 | 9.4 |
| Mean | 21.02 | 17.68 | 12.36 | 15.3 | 14.38 | 15.5 | 15.57 | (10.675) | 7.69 | 8.36 |
| SD | 1.216 | 0.763 | 1.595 | 1.241 | 0.383 | 0.453 | 1.641 | (0.55) | 0.652 | 0.78 |

**Table S15.** Pedal digit IV phalanx 4 measurements (in mm) in the ostriches (*Struthio*). Specimens in the descending order of the total length (LT). Abbreviations: LT total length; LD dorsal length; LM medial length; LL lateral length; WP proximal width; DP proximal depth; WT trochlear width; WA apical width; WF foveal width; DT trochlear mid-depth.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Length | | | | Basal articulation | | D**T** |
| L**D** | L**T** | L**M** | L**L** | WP | D**P** |
| *S. camelus* ssp. female SAM56122 | 11.0 | 13.6 | (7.7) | (10.0) | 9.7 | 10.5 | 4.5 |
| *S. molybdophanes* female SAPM 20 | 11.3 | 12.6 | 9.0 | 9.35 | 10.0 | 10.2 | 5.6 |
| *S. camelus* ssp. male SAM ZOT788 | 12.1 | (12.6) | (7.7) | (10.5) | 9.8 | 10.8 | (5.0) |

**Table S16**.Digit III phalanx 4 (ungual) measurements (in mm) in the ostriches (*Struthio*). Specimens in the descending order of the ventral length (LV). Abbreviations: LD dorsal length; LV ventral length (measured as the total length in other phalanges); WP proximal width; DP proximal depth.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Length | | Basal articulation | |
| L**D** | L**T** | WP | D**P** |
| *S. c. camelus* female ISEA A/2506/72 | 63 est. | 53,5 est. | 29,3 | 24,1 |
| *S. molybdophanes* female SAPM 18 | 65,5 | 53,2 | 32,6 | 23,8 |
| *S. molybdophanes* female SAPM 20 | 60,6 | 50,4 | 33,1 | 24,3 |

**Table S17.** Lengths of segments used for the Simpson’s diagram in Figure 1.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | SC | H | P | F | TT | TM | III/1 | III/2 | III/3 |
| *S. molybdophanes* (mean, N=3) | 268 | 369 | 327 | 318,1 | 540 | 484 | 92,5 | 59,7 | 36,8 |
| *S. camelus*, living ssp. (mean, N=6 | 253,4 | 367,35 | 335,5 | 304,1 | 559,2 | 489,5 | 99,2 | 61,1 | 36,1 |
| *S. spatzi* ZMB36879 | 241 | 325 | 305 | 290,5 | 500 | 425 | 90,4 | 60,3 | ----- |
| *S. c. syriacus* NHMUK1924.4.8.1 | ------- | ------ | 252,5 | 271 | 474 | 426 | 78,8 | 47,7 | 28,7 |
| *S. c. syriacus* NHMUK1923.6.10.1 | 210,8 | 316,6 | 236 | 270,5 | 474 | 419,7 | 76,9 | 47 | ----- |

**Table S18.** LOG values of segment lengths in all taxa minus the respective LOG value for the living S. camelus subspecies, as used for Figure 1.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | SC | H | P | F | TT | TM | III/1 | III/2 | III/3 |
| *S. molybdophanes* (N=3) | 0,024328183 | 0,001946322 | -0,011144772 | 0,019547249 | -0,015173403 | -0,004907334 | -0,030369939 | -0,010066879 | 0,008340617 |
| *S. camelus* living ssp. (N=6) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *S. spatzi* ZMB36879 | -0,021789568 | -0,053196683 | -0,041392685 | -0,019870283 | -0,048597158 | -0,061363766 | -0,040343242 | -0,005723898 |  |
| *S. c. syriacus* NHMUK1924.4.8.1 |  |  | -0,123431142 | -0,050047129 | -0,071788821 | -0,060343097 | -0,099985455 | -0,107522831 | -0,099625305 |
| *S. c. syriacus* NHMUK1923.6.10.1 | -0,079936004 | -0,064569134 | -0,152780522 | -0,050849151 | -0,071788821 | -0,066813727 | -0,110585332 | -0,113943352 |  |

**Table S19.** Ternary ratios (in %) of femur (F) : tibiotarsus (TT) : tarsometatarsus (TM) in the living ratites and moas as used for ternary digrams in Figure 2A. . Data for *Struthio* from the present work and for other ratites from Dickison (2007).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | F | TT | TM |
| *Struthio spatzi* | Ss | 23,90 | 41,14 | 34,97 |
| *Struthio c. syriacus* | Scs | 23,19 | 40,60 | 36,22 |
| *S. camelus* living ssp. + *Struthio molybdophanes* (means) | Sc+Sm | 23,35 | 40,62 | 36,04 |
| *Rhea americana + R. (P.) pennata* (mean) | Rh | 25,31 | 38,55 | 36,14 |
| *Apteryx australis + A. oweni + A. mantelli* (means) | Ap | 32,08 | 44,03 | 23,90 |
| *Casuarius casuarius + C. unappendiculatus + C. bennetti* (means) | Ca | 26,20 | 41,24 | 32,56 |
| *Dromaius novaehollandiae* | Dr | 22,51 | 40,39 | 37,10 |
| *Anomalopteryx didiformis* | An | 30,96 | 46,19 | 22,84 |
| *Megalapteryx didinus* | Me | 32,19 | 45,26 | 22,55 |
| *Emeus crassus* | Em | 28,65 | 47,87 | 23,48 |
| *Euryapteryx curtus* (incl. *gravis-geranoides*) | Eu | 29,55 | 47,32 | 23,12 |
| *Pachyornis geranoides-mappini+australis+elephantopus* (means) | Pa | 27,80 | 49,98 | 22,22 |
| *Dinornis robustus+novaezealandiae* (means) | Di | 24,82 | 48,80 | 26,38 |

**Table S20.** Ternary ratios (in %) of tibiotarsus (TT) : tarsometatarsus (TM) : pedal phalanx III/1 in the living ratites and moas as used for ternary digrams in Figure 2B. Data for *Struthio* from the present work; for other ratites fromDickison (2007) for TT and TMT, and Farlow *et al.* (2013) for the phalanges.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | TT | TM | III/1 |
| *Struthio spatzi* | Ss | 49,24 | 41,86 | 8,90 |
| *S. c. syriacus* | Scs | 48,63 | 43,38 | 7,99 |
| *S. camelus* living ssp. + *S. molybdophanes* | Sc+Sm | 48,67 | 43,19 | 8,14 |
| *Rhea americana + R. (P.) pennata* | Rh | 48,74 | 45,69 | 5,57 |
| *Apteryx australis + A. oweni + A. mantelli* | Ap | 59,73 | 32,42 | 7,85 |
| *Casuarius casuarius + C. unappendiculatus + C. bennetti* | Ca | 51,85 | 40,94 | 7,21 |
| *Dromaius novaehollandiae* | Dr | 48,54 | 44,58 | 6,88 |
| *Anomalopteryx didiformis* | An | 61,26 | 30,29 | 8,45 |
| *Megalapteryx didinus* | Me | 59,21 | 29,50 | 11,29 |
| *Emeus crassus* | Em | 61,07 | 29,96 | 8,97 |
| *Euryapteryx curtus (incl. gravis-geranoides)* | Eu | 60,87 | 29,74 | 9,39 |
| *Pachyornis geranoides-mappini + P. australis + P. elephantopus* | Pa | 62,91 | 27,97 | 9,11 |
| *Dinornis robustus + D. novaezealandiae* | Di | 59,71 | 32,28 | 8,01 |

**Table S21.** Ternary ratios (in %) of tarsometatarsus (TM) : pedal phalanx III/1 : pedal phalanx III/2 in the living ratites and moas as used for ternary digrams in Figure 2C. Data for *Struthio* from the present work; for other ratites fromDickison (2007) for TMT, and Farlow *et al.* (2013) for the phalanges.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | TM | III/1 | III/2 |
| *Struthio spatzi* | Ss | 73,82 | 15,70 | 10,47 |
| *Struthio c. syriacus* | Scs | 77,16 | 14,20 | 8,64 |
| *S. camelus* living ssp.+ *S. molybdophanes* (means) | Sc+Sm | 76,24 | 14,36 | 9,40 |
| *Rhea americana + R. (P.)pennata* (means) | Rh | 83,38 | 10,16 | 6,46 |
| *Apteryx australis + A. oweni + A. mantelli* (means) | Ap | 70,37 | 17,04 | 12,59 |
| *Casuarius casuarius + C. unappendiculatus + C. bennetti* (means) | Ca | 77,09 | 13,58 | 9,33 |
| *Dromaius novaehollandiae* | Dr | 79,83 | 12,32 | 7,85 |
| *Anomalopteryx didiformis* | An | 69,15 | 19,29 | 11,56 |
| *Megalapteryx didinus* | Me | 61,18 | 23,42 | 15,40 |
| *Emeus crassus* | Em | 68,43 | 20,50 | 11,07 |
| *Euryapteryx curtus (incl. gravis-geranoides)* | Eu | 67,62 | 21,35 | 11,03 |
| *Pachyornis geranoides-mappini + P. australis + P. elephantopus* (means) | Pa | 66,35 | 21,62 | 12,03 |
| *Dinornis robustus + D. novaezealandiae* (means) | Di | 72,61 | 18,01 | 9,38 |