Table S1 Sizes (in mm) of skulls for two species of steppe elephants, *Mammuthus trogontherii* *trogontherii* and *Mammuthus trogontherii chosaricus*.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Measurements (mm) and indices (%) | *M. trogontherii trogontherii* |  | *M. trogontherii chosaricus* |
| Ust-Tarka (IAE 18) (Shpansky et al. 2015) | Azov 1(AMZ KP-21081) (Baigusheva and Garutt 1987) | Gelsenkirchen (Siegfried 1956) |  | Orya River (OF-909) (Garutt 1972) | Cherny Yar (PIN PM KP 4874 (Dubrovo 1966) | Krasny Yar (IAE 3705) (Vasiliev 2005) | Krasny Yar (IAE 2111) (Vasiliev 2005) | Asino (TOKM 10300/3) (Shpansky 2000) |
| 1 | Skull length: distance from anterior orbital border to occipital condyles inclusive | 840 | 695 | 780 |  | 600 | 680 | ⎯ | ⎯ | 775? |
| 2 | Parietal length: from apex to anterior edge of premaxillae | 1450 | ca. 1910 | 1220 |  | 1190 | 1390 | 1440 | 1280 | 1390 |
| 3 | Condylobasal length: from upper (posterior) edge of occipital condyles to lower (anterior) edge of premaxillae | 1140 | 1440 |  |  | 1020 | 1100 | 1128 | 1035 | 1061 |
| 4 | Forehead length: from apex to lower edge of nasals (in projection on midline) | 670 | ⎯ | ⎯ |  | ⎯ | ⎯ | 575 | ⎯ | ⎯ |
| 5 | Forehead length along with nares: from apex to lower edge of nares | 700 | 965 | 533 |  | С580 | 570 | 635 | 555 | 580 |
| 6 | Length of premaxillae: from lower edge of nares to lower end of premaxillae | 850 | 962 | 750 |  | ⎯ | 870 | 880 | 750 | 812 |
| 7 | Nares (greatest width × greatest height) | 630 × 158 | ca. 700 | 504 × 144 |  | 470 × 160 | 532 × 155 | 520 × 170 | 410 × 165 | 445 × 159 |
| 8 | Zygomatic width: greatest skull width at zygomatic arches | 790 | 1050 | ⎯ |  | 700 | 785 | 751 | 730 | ⎯ |
| 9 | Greatest occipital width | 835 | 1056 | 780 |  | 676 | 805 | 780 | 745 | ca. 760 |
| 10 | Width of premaxillae, upper: at level of lower edge of infraorbital foramina (along with processes of maxillae) | 495 | 640 | 420 |  | 430 | 456 | 385 | 372 | 350 |
| 11 | Greatest occipital width at lower edge: between external edges of tusk alveoli at lower rostrum end | ⎯ | 731 | 670 |  | 464 | 530 | 495 | 475 | ca. 560 |
| 12 | Minimum forehead width: minimum distance between crests bordering temporal fossae | 430 | 640? | 360 |  | 310 | ⎯ | 368 | 375 | 310 |
| 13 | Tusk diameter at alveolar edge (internal alveolar diameter) | 270 | 215 × 174 | 160 |  | (146) | 191 | 239 × 175 | 230 × 175 | 173 × 157 |
| 14 | Distance from skull apex to masticatory molar surface along perpendicular to this surface | 1050 | ca. 1100 | 850 |  | 790 | 996 | 990 | 900 | 1020? |
| 15 | Occipital depth: from uppermost point of occiput to lower side condyle | 680 | ca. 670 | ⎯ |  | 480 | 598 | 615 | 675 | 645 |
| 16 | Position of condyle: distance from upper condylar edge to posterior edge of masticatory surface of upper molar along edge | 565 | ⎯ | ⎯ |  | ⎯ | ⎯ | 480 | 430 | 515 |
| 17 | Minimum depth of the zygomatic | 54 | ⎯ | ⎯ |  | 83 | 71 | 61 | 60 | 56.5 |
| 18 | Length of zygomatic arch | 300 | ca. 580 | ⎯ |  | 402 | 446 | 465 | 400 | 480 |
| 19 | Anterior palatal width: distance between molar alveoli at anterior edges | ca. 97 | ⎯ | ⎯ |  | ⎯ | ⎯ | 90 | 60 | 54 |
| 20 | Posterior palatal width: distance between molar alveoli at posterior edges | ca. 150 | ⎯ | ⎯ |  | ⎯ | ⎯ | 115 | 130 | 119 |
| 21 | Skull width at supraorbital processes | 870 | 1040 | 820 |  | 730 | 880 | 794 | 658 | 680 |
| 22 | Width of occipital condyles | 284 | 225 | ⎯ |  | 208 | 226 | 223 | 235 | 267 |
| 23 | Diameters of foramen magnum, height × width | ⎯ | 100 × 72 | ⎯ |  | 90 × 82 | 78 × 83 | ⎯ | ⎯ | 59 × 83 |
| 24 | Angle between crest bordering anteriorly lower part of temporal fossa and skull midline | 38 | 55 | 45 |  | ⎯ | ⎯ | 40 | 35 | 43 |
| 25 | Angle of divergence of tusk alveoli | 15 | 22 | 23 |  | ⎯ | ⎯ | 32 | 20 | 15 |
| 26 | Height (14) to length (1) ratio of skull | 80.0 | 63.2 | 91.8 |  | 76.0 | 68.3 | ⎯ | ⎯ | 75.9 |
| 27 | Depth (15) to width (9) ratio of occiput | 122.8 | 157.6 |  |  | 140.8 | 134.6 | 126.8 | 110.4 | 117.8 |
| 28 | Ratio of skull width at supraorbital processes (21) to occipital width (9) | 96.0 | 101.5 | 95.1 |  | 92.6 | 91.5 | 98.2 | 113.2 | 111.8 |
| 29 | Ratio of minimum forehead width (12) to greatest forehead length (5) | 61.4 | 66.3 | 67.5 |  | 53.4 | ⎯ | 57.95 | 67.6 | 53.4 |