

Appendix A2

Birdsell re-analysis – correlation results

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A2.1 BIRDSSELL (1993) MORPHOLOGICAL DATA - CORRELATION RESULTS

key: row 1: r = Pearson correlation coefficient
 row 2: r^2 = estimate of total variance (%)
 row 3: s = significance level:
 * < 0.05 (2-tailed) t^* < 0.05 (1-tailed)
 ** < 0.01 " t^{**} < 0.01 "

variable	data	N ^o tribes	sun- light	mean temp.	min. temp.	max. temp.	relative humidity	rain- fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s)	Tas ± area estimate (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman)	-
<i>Pigmentation</i>											
skin colour 185-189	Birdsell + others area ≈	65 T+ 70%	+0.388 11.4% **	+0.705 49.7% **	+0.656 43.0% **	+0.713 50.8% **	-0.290 8.4% */**	-0.031 0.1% -	-0.322 10.4% **	+0.686 47.1% **	+0.663 44.0% **
oral pigment - area 189-191	Birdsell area ≈	37 T- 30%	-0.550 30.3% **	-0.580 33.6% **	-0.655 42.9% **	-0.660 43.6% **	+0.183 3.4% -	-0.253 6.4% -	+0.292 8.5% -/*	-0.713 50.8% **	-0.622 38.7% **
oral pigment - intensity 191-193	Birdsell area ≈	57 T- 65%	-0.699 48.9% **	-0.401 16.1% **	-0.304 9.2% *	-0.626 39.2% **	+0.822 67.5% **	+0.596 35.5% **	+0.292 8.5% -/*	-0.561 31.4% **	-0.330 10.9% */**
tawny / blonde head hair 193-199	Birdsell + others area ≈	66 T- 90%	+0.254 6.4% *	-0.233 5.4% -/*	-0.277 7.7% *	-0.068 0.5% -	-0.550 30.2% **	-0.569 33.3% **	+0.063 0.4% -	-0.148 2.2% -	-0.312 9.8% */**
eye colour (iris) 199-202	Birdsell area ≈	57 T- 65%	+0.042 0.2% -	+0.097 1.0% -	+0.096 0.9% -	+0.024 0.1% -	+0.083 0.7% -	-0.042 0.2% -	-0.072 0.5% -	+0.022 0.0% -	+0.066 0.4% -
<i>Hair systems</i>											
beard abundance 208-210	Birdsell + others area ≈	65 T- 65%	+0.183 3.3% -	-0.586 34.3% **	-0.648 42.0% **	-0.391 15.3% **	-0.295 8.7% */**	-0.577 33.3% **	+0.163 2.7% -	-0.435 18.9% **	-0.634 40.2% **
body hair quantity 210-211	Birdsell + others area ≈	64 T- 65%	-0.548 30.0% **	-0.499 24.9% **	-0.649 42.1% **	-0.288 8.3% *	-0.422 19.5% **	-0.497 24.7% **	+0.232 5.4% -/*	-0.299 8.9% */**	-0.584 34.2% **
nose tip hair 211-214	Birdsell area ≈	56 T- 65%	-0.288 8.3% *	-0.502 25.2% **	-0.480 23.1% **	-0.477 22.8% **	+0.151 2.3% -	-0.158 2.5% -	+0.154 2.4% -	-0.471 22.2% **	-0.511 26.1% **
nostril (narial) hair 238-240	Birdsell area ≈	24 T- 20%	+0.220 4.8% -	-0.551 30.3% **	-0.224 5.0% -	-0.191 3.7% -	-0.120 1.4% -	-0.369 13.6% -/*	+0.083 0.7% -	-0.158 2.5% -	-0.366 13.4% -/*
ear hair (tragus) 214-216	Birdsell area ≈	37 T- 30%	-0.334 11.2% *	-0.334 11.2% *	-0.382 14.6% */**	-0.182 3.3% -	+0.084 0.7% -	-0.212 4.5% -	+0.202 4.1% -	-0.360 12.9% *	-0.275 7.6% -/*
finger hair 242-245	Birdsell area ≈	57 T- 65%	+0.098 .0% -	-0.225 5.1% -/*	-0.294 8.6% *	-0.080 0.6% -	-0.135 1.8% -	-0.230 5.3% -/*	-0.112 1.3% -	-0.012 0.0% -	-0.243 5.9% -/*

variable	data	N° tribes	sun- light	mean temp.	min. temp.	max. temp.	relative humidity	rain- fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s) area estimate	Tas ± (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman) -	
head hair form (deep wave) 216-219	Birdsell area ≈	57 T+ 75%	-.346 11.9% **	-.129 1.7% -	+.068 0.5% -	-.292 8.5% *	+.425 18.1% **	+.569 32.4% **	+.392 15.3% **	-.237 5.6% -/*	+.016 0.0% -
head hair form (crispness) 219-222	Birdsell area ≈	57 T+ 75%	-.131 1.7% -	-.025 0.1% -	+.144 2.1% -	-.037 0.1% -	+.140 2.0% -	+.333 11.1% */**	+.200 4.0% -	-.059 0.3% -	+.145 2.1% -
grey head hair (age of onset) 222-225	Birdsell area ≈	55 T- 65%	-.127 1.6% -	-.551 30.3% **	-.439 23.9% **	-.421 17.7% **	-.133 1.8% -	-.274 7.5% *	+.313 9.8% */**	-.448 20.1% **	-.587 34.4% **
baldness (age ≥ 50) 225-227	Birdsell area ≈	56 T- 70%	-.174 3.0% -	-.546 29.9% **	-.483 23.3% **	-.428 18.3% **	+.217 4.7% -	-.048 0.2% -	+.266 7.1% *	-.531 28.2% **	-.496 24.6% **
hair whorl (clockwise) 227-231	Birdsell area ≈	37 T- 30%	+.346 12.0% *	+.197 3.9% -	+.369 13.6% *	+.361 13.1% *	+.295 8.7% -/*	+.437 19.1% **	-.388 15.1% **	+.264 7.0% -	+.379 14.4% *
hair whorl (anti-clockwise) 227-231	Birdsell area ≈	37 T- 30%	-.186 3.5% -	-.036 0.1% -	-.172 3.0% -	-.122 1.5% -	-.198 3.9% -	-.214 4.6% -	+.076 0.6% -	-.054 0.3% -	-.177 3.1% -
hair whorl (double) 227-231	Birdsell area ≈	37 T- 30%	-.310 9.6% *	-.280 7.8% -/*	-.370 13.7% *	-.432 18.6% **	-.204 4.2% -	-.420 17.6% **	+.534 28.5% **	-.363 13.2% *	-.382 14.6% */**
frontal hair whorl 236-237	Birdsell area ≈	23 T- 25%	+.300 9.0% -	-.001 0.0% -	-.089 0.8% -	-.050 0.3% -	-.341 11.6% -/*	-.242 5.9% -	+.101 1.0% -	+.153 2.4% -	-.124 1.5% -
frontal hair tract I 231-235	Birdsell area ≈	37 T- 30%	-.169 2.8% -	-.096 0.9% -	-.068 0.5% -	-.126 1.6% -	+.178 3.2% -	+.124 1.5% -	-.132 1.7% -	-.055 0.3% -	-.047 0.2% -
frontal hair tract II 231-235	Birdsell area ≈	37 T- 30%	-.035 0.1% -	-.057 0.3% -	-.191 3.7% -	+.029 0.1% -	-.149 2.2% -	-.113 1.3% -	-.103 1.1% -	-.049 0.2% -	-.118 1.4% -
frontal hair tract III 231-235	Birdsell area ≈	37 T- 30%	+.294 8.6% -/*	+.203 4.1% -	+.299 8.9% -/*	+.162 2.6% -	-.121 1.5% -	-.073 0.5% -	+.327 10.7% *	+.126 1.6% -	+.198 3.9% -
frontal hair tract 1A 231-235	Birdsell area ≈	37 T- 30%	-.025 0.1% -	-.111 1.2% -	-.029 0.1% -	+.041 0.2% -	+.110 1.2% -	-.015 0.0% -	-.091 0.8% -	+.122 1.5% -	-.039 0.2% -
frontal hair tract 1B 231-235	Birdsell area ≈	37 T- 30%	+.332 11.0% -/*	+.064 0.4% -	+.162 2.6% -	+.293 8.6% -	-.124 1.5% -	+.177 3.1% -	-.229 5.2% -	+.196 3.8% -	+.304 9.2% -

variable	data	N° tribes	sun- light	mean temp.	min. temp.	max. temp.	relative humidity	rain- fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s) area estimate (%)	Tas ± (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman) -	
frontal hair tract 1C 231-235	Birdsell area ≈	37 T- 30%	-108 1.2% -	+250 6.3% -	+123 1.5% -	-075 0.6% -	+017 0.0% -	+035 0.1% -	+109 1.2% -	-045 0.2% -	+014 0.0% -
frontal hair tract 1D 231-235	Birdsell area ≈	37 T- 30%	-441 19.4% */**	-701 49.2% **	-789 62.2% **	-540 29.2% **	+063 0.4% -	-435 18.9% **	+245 6.0% -	-682 46.5% **	-720 51.9% **
frontal hair tract 1E 231-235	Birdsell area ≈	37 T- 30%	-133 1.8% -	-484 23.4% **	-390 15.2% *	-387 14.9% *	-192 3.7% -	-444 19.7% */**	+548 30.0% **	-335 11.2% *	-373 13.9% -/*
supra-nasion hair streams 235-236	Birdsell area ≈	37 T- 30%	+518 26.8% **	+360 13.0% -/*	+436 19.0% *	+205 4.2% -	+102 1.0% -	+213 4.5% -	-198 3.9% -	+471 22.2% */**	+255 5.1% -
widow's peak 237-239	Birdsell area ≈	37 T- 30%	+013 0.0% -	+155 2.4% -	+183 3.3% -	+084 0.7% -	+156 2.4% -	+178 3.2% -	-182 3.3% -	+120 1.4% -	+226 5.1% -
eyelid hair (medial) 240-242	Birdsell area ≈	56 T- 65%	+133 1.3% -	-435 18.9% **	-484 23.4% **	-270 7.3% *	-239 5.7% -/*	-453 20.6% **	+323 10.4% */**	-350 12.3% **	-467 21.8% **
<i>Other non-metric variation</i>											
left- handedness 246-248	Birdsell area ≈	56 T- 65%	-027 0.1% -	+054 0.3% -	+112 1.3% -	+046 0.2% -	-152 2.3% -	-047 0.2% -	+290 8.4% *	+078 0.6% -	+036 0.1% -
finger lengths 4th > 2nd 248-249	Birdsell area ≈	37 T- 30%	+016 0.4% -	-193 3.7% -	-145 2.1% -	-314 9.8% -/*	+023 0.1% -	-181 3.3% -	+095 0.9% -	-175 3.1% -	-137 1.9% -
toe lengths 2nd > 1st 249-252	Birdsell + others area ≈	60 T- 65%	+451 20.4% **	-021 0.0% -	-156 2.4% -	+245 6.0% -/*	-605 36.6% **	-629 39.6% **	+015 0.0% -	+114 1.3% -	-128 1.6% -
hammer- toes 252-253	Birdsell area ≈	37 T- 30%	-014 0.0% -	+244 6.0% -	+188 3.5% -	+330 10.9% *	-074 0.5% -	-032 0.1% -	-099 1.0% -	+209 4.4% -	+159 2.5% -
nasal profile 254-258	Birdsell + others area ≈	75 T- 90%	+139 1.9% -	+067 0.5% -	-069 0.5% -	+111 1.2% -	-352 12.4% **	-279 7.8% */**	-059 0.3% -	+127 1.6% -	+009 0.0% -
nasal cartilage 258-260	Birdsell area ≈	37 T- 30%	-034 0.1% -	+204 4.2% -	+217 4.7% -	+200 4.0% -	+001 0.0% -	+207 4.3% -	-152 2.3% -	+222 4.9% -	+276 7.6% -/*
ear pili (preauricular pit) 260-262	Birdsell area ≈	31 T- 20%	+136 1.9% -	-278 7.7% -	-389 15.2% *	-188 3.5% -	-088 0.8% -	-307 9.4% -/*	+646 41.8% **	-263 6.9% -	-113 1.3% -

variable	data	N ^o tribes	sun- light	mean temp.	min. temp.	max. temp.	relative humidity	rain- fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s) area estimate	Tas ± (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman) -	
Darwin's points 262-263	Birdsell area ≈	37 T- 30%	+1.143 2.0% -	-0.042 0.2% -	+0.158 2.5% -	-0.182 3.3% -	+0.122 1.5% -	+0.076 0.6% -	+0.062 0.4% -	-0.118 1.4% -	+0.061 0.4% -
ear protrusion 263-265	Birdsell area ≈	56 T- 65%	+0.399 15.9% **	+0.042 0.2% -	+0.012 0.0% -	+0.258 6.7% -/*	-0.635 40.4% **	-0.553 30.6% **	+0.114 1.3% -	+0.196 3.8% -	-0.026 0.1% -
ear axis (rearward) 265-267	Birdsell area ≈	37 T- 30%	+0.418 17.5% */**	+0.638 40.8% **	+0.684 46.8% **	+0.737 54.3% **	+0.313 9.8% -/*	+0.678 46.0% **	-0.322 10.4% -/*	+0.510 26.0% **	+0.666 44.3% **
ear helix roll 267-268	Birdsell area ≈	56 T- 65%	+0.502 25.2% **	+0.180 3.2% -	+0.111 1.2% -	+0.302 9.2% *	-0.508 33.6% **	-0.487 23.8% **	+0.087 0.8% -	+0.255 6.5% -	+0.111 1.2% -
ear lobe attachment 267-271	Birdsell area ≈	56 T- 30%	-0.419 17.6% **	-0.410 16.8% **	-0.371 13.8% **	-0.509 25.9% **	+0.458 21.0% **	+0.211 4.5% -	+0.022 0.0% -	-0.404 16.3% **	-0.413 17.1% **
ear lobe size 270-272	Birdsell area ≈	56 T- 65%	+0.233 5.5% -/*	+0.001 0.0% -	-0.192 3.7% -	+0.069 0.5% -	-0.175 3.0% -	-0.241 5.8% -/*	+0.090 0.8% -	-0.020 0.0% -	-0.071 0.5% -
eye axis obliquity 271-275	Birdsell area ≈	56 T- 65%	+0.040 0.2% -	-0.100 1.0% -	-0.197 3.9% -	-0.085 0.7% -	+0.078 0.6% -	-0.135 1.8% -	+0.154 2.4% -	-0.200 4.0% -	-0.194 3.7% -
prognathism - total 275-278	Birdsell area ≈	37 T- 30%	-0.335 11.2% *	-0.180 3.2% -	-0.198 3.9% -	-0.262 6.9% -	-0.186 3.5% -	-0.250 6.3% -	-0.114 1.3% -	-0.059 0.4% -	-0.386 13.5% *
prognathism - mid-facial 275-278	Birdsell area ≈	37 T- 30%	-0.231 5.3% -	-0.265 7.0% -	-0.249 6.2% -	-0.253 6.4% -	-0.144 2.1% -	-0.292 8.5% -/*	-0.116 1.3% -	-0.054 0.3% -	-0.391 15.3% */**
prognathism - alveolar 275-278	Birdsell area ≈	37 T- 30%	-0.356 12.7% *	-0.457 20.8% **	-0.463 21.5% **	-0.526 27.7% **	-0.380 14.5% *	-0.617 38.0% **	+0.313 9.8% -/*	-0.337 11.4% *	-0.634 40.2% **
lip proportions (upper > lower) 279-280	Birdsell area ≈	37 T- 30%	+0.207 4.3% -	+0.273 7.4% -	+0.341 11.6% *	+0.191 3.7% -	-0.001 0.0% -	+0.192 3.7% -	-0.217 4.7% -	+0.345 11.9% *	+0.186 3.5% -
bilateral chins 280-282	Birdsell area ≈	56 T- 70%	+0.458 21.0% **	+0.153 2.3% -	+0.044 0.2% -	+0.294 8.7% *	-0.525 27.6% **	-0.462 21.4% **	-0.010 0.0% -	+0.237 5.6% -	+0.021 0.0% -
chin slope (rearward) 282-283	Birdsell area ≈	37 T- 30%	-0.003 0.0% -	-0.435 18.9% **	-0.249 6.2% -	-0.387 14.9% */**	-0.088 0.8% -	-0.253 6.4% -	-0.014 0.0% -	-0.255 6.5% -	-0.326 10.7% *

variable	data	N ^o tribes	sun- light	mean temp.	min. temp.	max. temp.	relative humidity	rain- fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s) area estimate	Tas ± (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman) -	
brow ridge size 283-286	Birdsell area ≈	59 T+ 70%	+287 8.3% *	+332 11.0% */**	+288 8.3% *	+320 10.2% */**	-157 2.5% -	-014 0.0% -	-063 0.5% -	+232 5.4% -/*	+293 8.6% *
brow ridge form (divided) 286-288	Birdsell area ≈	37 T- 30%	+000 0.0% -	+205 4.2% -	+243 5.9% -	+089 0.8% -	+365 13.3% *	+473 22.4% **	-219 4.8% -	+096 0.9% -	+218 4.7% -
forehead slope 288-291	Birdsell area ≈	59 T+ 70%	-030 0.1% -	-043 0.2% -	-207 4.3% -	-068 0.5% -	+106 1.1% -	-007 0.0% -	-036 0.1% -	-184 3.4% -	-123 1.5% -
frontal diam. (height of min.) 291-293	Birdsell area ≈	37 T- 30%	-036 0.1% -	+165 2.7% -	+072 0.5% -	-027 0.1% -	+264 7.0% -	+394 15.6% */**	-245 6.0% -	+050 0.2% -	+095 0.9% -
sagital elev. - parietal 293-295	Birdsell area ≈	37 T- 30%	-467 21.8% **	-429 18.4% **	-537 28.8% **	-619 38.4% **	-387 15.0% */**	-610 37.3% **	+349 12.2% *	-337 11.3% *	-658 43.3% **
sagital elev. - frontal (Metopic) 295-296	Birdsell area ≈	37 T- 30%	-122 1.5% -	+123 1.5% -	+094 0.9% -	-039 0.2% -	-313 9.8% -/*	-134 1.8% -	+096 0.9% -	+061 0.4% -	+086 0.7% -
parietal bosses 296-298	Birdsell area ≈	40 T+ 35%	-260 6.8% -	-125 1.6% -	-187 3.5% -	-330 10.9% *	+448 20.1% **	+510 26.1% **	+119 1.4% -	-238 5.7% -	-111 1.2% -
sagital fossa (interparietal) 298-299	Birdsell area ≈	37 T- 30%	+102 1.0% -	+437 19.1% **	+358 12.8% *	+415 17.2% **	-148 2.2% -	+372 13.8% *	-242 5.9% -	+299 9.0% -/*	+405 16.4% */**
cryptose iris 201-204	Birdsell area ≈	56 T- 65%	+574 33.0% **	+317 10.0% */**	+246 6.0% -/*	+468 21.9% **	-496 24.6% **	-337 11.4% */**	-186 3.4% -	+369 13.6% **	+267 7.1% *
contraction iris furrows (>3) 204-207	Birdsell area ≈	37 T- 30%	-175 3.1% -	-130 1.7% -	-234 5.5% -	-150 2.3% -	+391 15.3% */**	+169 2.9% -	-009 0.0% -	-213 4.5% -	-007 0.0% -
interrupted furrows 204-207	Birdsell area ≈	37 T- 30%	+155 2.4% -	+373 13.9% *	+497 24.7% **	+417 17.4% */**	+159 2.5% *	+367 13.5% *	-276 7.6% -	+270 7.3% -	+463 21.4% **
Gradient ("simple" genetics) 299-302	Birdsell area ≈	34 T- 25%	+119 1.4% -	-077 0.6% -	+005 0.0% -	+037 0.1% -	-244 5.0% -	-404 16.4% */**	+027 0.1% -	+161 2.9% -	+091 0.8% -
Gradient B ("polygenic") 299-302	Birdsell area ≈	34 T- 25%	+033 0.1% -	-435 18.9% */**	-365 13.3% *	-375 14.0% *	-188 3.5% -	-459 21.0% **	+119 1.4% -	-160 2.6% -	-289 8.4% -/*

variable	data	N ^o tribes	sun- light	mean temp.	min. temp.	max. temp.	relative humidity	rain- fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s) area estimate	Tas ± (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman) -	
Gradients A + B 301-303	Birdsell area ≈	34 T- 25%	+0.091 0.8% -	-0.308 9.5% -/*	-0.233 5.0% -	-0.208 4.3% -	-0.259 6.7% -	-0.532 28.3% **	+0.046 0.2% -	+0.024 0.1% -	-0.131 1.7% -
<i>Body metrics</i>											
weight (males, lbs.) 304-308	Birdsell + others area ≈	87 T- 90%	+0.349 12.2% **	-0.002 0.0% -	-0.175 3.1% -	+0.137 1.9% -	-0.389 15.1% **	-0.449 20.1% **	-0.133 1.8% -	+0.136 1.8% -	-0.092 0.8% -
stature (males, cm.) 308-311	Birdsell + others area ≈	93 T+ 95%	+0.509 25.9% **	+0.504 25.4% **	+0.333 11.1% **	+0.543 29.5% **	-0.341 11.7% **	-0.272 7.4% **	-0.462 21.3% **	+0.540 29.1% **	+0.406 16.5% **
thumb extension 311-313	Birdsell area ≈	36 T- 30%	+0.479 23.0% **	+0.641 41.1% **	+0.689 47.5% **	+0.708 50.2% **	+0.142 2.0% -	+0.494 24.4% **	-0.217 4.7% -	+0.574 33.0% **	+0.618 38.2% **
shoulder breadth 422-423	Birdsell + others area ≈	74 T- 90%	+0.383 14.7% **	-0.052 0.3% -	-0.274 7.5% */**	+0.094 0.9% -	-0.243 5.9% *	-0.318 10.1% **	-0.064 0.4% -	+0.054 0.3% -	-0.138 1.9% -
sitting height 422-424	Birdsell area ≈	56 T- 65%	+0.625 39.0% **	+0.546 29.9% **	+0.329 10.8% */**	+0.646 41.7% **	-0.420 17.7% **	-0.317 10.1% */**	-0.412 16.9% **	+0.586 34.3% **	+0.458 21.0% **
<i>Limb metrics</i>											
humeral length 424-425	Birdsell area ≈	57 T- 65%	+0.675 45.6% **	+0.516 26.7% **	+0.259 6.7% -/*	+0.632 39.9% **	-0.492 24.2% **	-0.436 19.0% **	-0.518 26.9% **	+0.578 33.4% **	+0.380 14.4% **
radial length 425-426	Birdsell area ≈	57 T- 65%	+0.684 46.8% **	+0.604 36.5% **	+0.373 13.9% **	+0.730 53.4% **	-0.581 33.8% **	-0.436 19.0% **	-0.528 27.9% **	+0.683 46.7% **	+0.483 23.3% **
femoral length 426-427	Birdsell area ≈	57 t- 65%	+0.599 35.9% **	+0.545 29.7% **	+0.297 8.8% *	+0.607 36.9% **	-0.568 32.3% **	-0.446 19.9% **	-0.493 24.3% **	+0.594 35.3% **	+0.377 14.2% **
tibial length 427-428	Birdsell area ≈	57 T- 65%	+0.726 52.8% **	+0.654 42.7% **	+0.420 17.6% **	+0.738 54.5% **	-0.605 36.6% **	-0.442 19.5% **	-0.491 24.1% **	+0.710 50.4% **	+0.501 25.1% **
calf girth 428-429	Birdsell area ≈	57 T- 65%	+0.219 4.8% -	+0.097 0.9% -	-0.060 0.4% -	+0.113 1.3% -	+0.066 0.4% -	-0.073 0.5% -	-0.167 2.8% -	+0.034 0.1% -	+0.045 0.2% -

variable	data	N ^o tribes	sun- light	mean temp.	min. temp.	max. temp.	relative humidity	rain- fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s) area estimate	Tas ± (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman) -	
<i>Body indices</i>											
ponderal index 313-316	Birdsell + others area ≈	86 T- 90%	+0.268 7.2% **	+0.539 29.0% **	+0.556 30.9% **	+0.463 21.4% **	-0.096 0.9% -	+0.127 1.6% -	-0.303 9.2% **	+0.450 20.3% **	+0.530 28.1% **
rel. shoulder breadth 316-318	Birdsell + others area ≈	75 T- 90%	-0.243 5.9% *	-0.605 36.6% **	-0.551 30.4% **	-0.585 34.2% **	+0.158 2.5% -	+0.024 0.1% -	+0.435 18.9% **	-0.593 35.1% **	-0.541 29.2% **
rel. sitting height 318-321	Birdsell area ≈	56 T- 65%	-0.331 10.9% */**	-0.246 6.0% -/*	-0.041 0.2% -	-0.269 7.2% *	+0.470 22.1% **	+0.449 20.2% **	+0.182 3.3% -	-0.298 8.9% *	-0.024 0.1% -
<i>Limb indices</i>											
radial-humeral index 321-323	Birdsell area ≈	56 T- 65%	-0.026 0.1% -	+0.178 3.2% -	+0.254 6.5% -/*	+0.236 5.6% -/*	-0.189 3.6% -	+0.016 0.0% -	+0.035 0.1% -	+0.252 6.4% -/*	+0.228 5.2% -/*
tibial-femoral index 323-325	Birdsell area ≈	56 T- 65%	+0.506 25.6% **	+0.486 23.6% **	+0.351 12.3% **	+0.579 33.6% **	-0.417 17.4% **	-0.296 8.7% *	-0.161 2.6% -	+0.516 26.6% **	+0.409 16.7% **
intermembral index 325-326	Birdsell area ≈	56 T- 65%	-0.237 5.6% -/*	-0.585 34.2% **	-0.457 20.9% **	-0.497 20.9% **	+0.378 14.3% **	+0.124 1.5% -	+0.356 12.7% **	-0.575 33.1% **	-0.419 17.5% **
calf-tibial index 336-338	Birdsell area ≈	56 T- 65%	-0.375 14.1% **	-0.420 17.6% **	-0.334 11.1% */**	-0.495 24.5% **	+0.583 34.0% **	+0.368 13.6% **	+0.223 5.0% -/*	-0.532 28.3% **	-0.307 9.4% *
<i>Limb-body indices</i>											
humeral - sitting height 326-328	Birdsell area ≈	56 T- 65%	+0.328 10.7% */**	-0.087 0.8% -	-0.329 10.8% */**	-0.003 0.0% -	-0.305 9.3% *	-0.512 26.3% **	-0.131 1.7% -	-0.031 0.1% -	-0.284 8.0% *
radial - sitting height 329-330	Birdsell area ≈	56 T- 65%	+0.326 10.6% */**	+0.005 3.1% -	+0.334 0.0% -	-0.514 11.2% */**	-0.455 26.4% **	-0.131 20.7% **	+0.292 1.7% -	+0.062 8.5% *	0.4% - -
femoral - sitting height 330-333	Birdsell area ≈	56 T- 65%	+0.172 2.9% -	+0.211 4.5% -	+0.034 0.1% -	+0.220 4.8% -	-0.399 16.0% **	-0.325 10.5% */**	-0.302 9.1% *	+0.262 6.2% -/*	+0.013 0.0% -
tibial - sitting height 333-335	Birdsell area ≈	56 T- 65%	+0.541 29.2% **	+0.445 19.8% **	+0.203 4.1% -	+0.511 26.1% **	-0.571 32.6% **	-0.480 23.0% **	-0.249 6.2% -/*	+0.518 26.8% **	+0.230 5.3% -/*

variable	data	N ^o tribes	sun- light	mean temp.	min. temp.	max. temp.	relative humidity	rain- fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s) area estimate	Tas ± (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman) -	
<i>Head metrics</i>											
head length	Birdsell	99	-.139	-.445	-.541	-.343	-.307	-.467	+.115	-.284	-.480
	+ others	T+	1.9%	19.8%	29.2%	11.7%	9.4%	21.8%	1.3%	8.1%	23.0%
338-341	area ≈	95%	-	**	**	**	**	**	-	**	**
head breadth (maximum)	Birdsell	102	-.368	-.422	-.454	-.420	+.175	-.083	+.207	-.348	-.441
	+ others	T+	13.5%	17.8%	20.6%	17.6%	3.1%	0.7%	4.3%	12.1%	19.4%
341-344	area ≈	95%	**	**	**	**	-	-	*	**	**
basal head breadth	Birdsell	59	+.460	-.102	-.288	+.093	-.513	-.704	-.119	+.068	-.217
	+ others	T+	21.2%	1.0%	8.3%	0.9%	26.3%	49.5%	1.4%	0.5%	4.7%
344-346	area ≈	70%	**	-	*	-	**	**	-	-	-/*
head height (auricular)	Birdsell	85	-.132	-.154	-.115	-.185	+.194	+.048	+.083	-.125	-.095
	+ others	T+	1.8%	2.4%	1.3%	3.4%	3.8%	0.2%	0.7%	1.6%	0.9%
346-349	area ≈	75%	-	-	-	-	-	-	-	-	-
frontal diam. (minimum)	Birdsell	77	+.218	+.024	-.074	+.160	-.338	-.300	+.048	+.133	+.006
	+ others	T+	4.7%	0.1%	0.6%	2.6%	11.5%	9.0%	0.2%	1.8%	0.0%
349-352	area ≈	95%	-/*	-	-	-	**	**	-	-	-
glabellar protrusion	Birdsell	63	+.394	+.386	+.288	+.404	-.095	-.016	-.184	+.305	+.365
	+ others	T+	15.5%	14.9%	8.3%	16.3%	0.9%	0.0%	3.4%	9.3%	13.4%
352-354	area ≈	75%	**	**	*	**	-	-	-	*/**	**
nasion depression	Birdsell	62	+.299	+.175	+.203	+.283	-.451	-.175	-.014	+.244	+.192
	+ Howells	T+	9.0%	3.1%	4.1%	8.0%	20.4%	3.1%	0.0%	5.9%	3.7%
354-356	area ≈	70%	*/**	-	-	*	**	-	-	-/*	-
bizygomatic diameter	Birdsell	98	+.265	+.228	+.106	+.282	-.415	-.345	-.224	+.300	+.159
	+ others	T+	7.0%	5.2%	1.1%	8.0%	17.3%	11.9%	5.0%	9.0%	2.5%
356-359	area ≈	95%	**	*	-	**	**	**	*	**	-
bigonial diameter	Birdsell	72	+.472	+.171	+.013	+.272	-.353	-.370	-.166	+.281	+.135
	+ others	T-	22.3%	2.9%	0.0%	7.4%	12.5%	13.7%	2.7%	7.9%	1.8%
359-361	area ≈	80%	**	-	-	*	**	**	-	*/**	-
<i>Facial metrics</i>											
facial height (total)	Birdsell	93	-.195	-.220	-.279	-.268	+.265	+.010	-.059	-.190	-.209
	+ others	T+	3.8%	4.8%	7.8%	7.2%	7.0%	0.0%	0.4%	3.6%	4.4%
361-364	area ≈	90%	-	*	**	**	**	-	-	-/*	*
upper facial height	Birdsell	83	+.057	-.040	-.087	-.073	+.041	-.067	-.078	-.077	-.063
	+ others	T+	0.3%	0.2%	0.8%	0.5%	0.2%	0.4%	0.6%	0.6%	0.4%
364-367	area ≈	85%	-	-	-	-	-	-	-	-	-
nose height	Birdsell	59	+.340	+.150	-.043	+.172	-.033	-.107	-.304	+.120	+.111
	& Sharp	T-	11.6%	2.3%	0.2%	3.0%	0.1%	1.1%	9.2%	1.4%	1.2%
368-369	area ≈	65%	**	-	-	-	-	-	*/**	-	-

variable	data	N ^o tribes	sun- light	mean temp.	min. temp.	max. temp.	relative humidity	rain- fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s) area estimate	Tas ± (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman) -	
nose breadth 369-372	Birdsell + others area ≈	75 T- 90%	+327 10.7% **	+308 9.5% **	+135 1.8% -	+525 27.5% **	-483 23.3% **	-315 9.9% **	-122 1.5% -	+456 20.8% **	+278 7.7% */**
nose depth 372-374	Birdsell area ≈	56 T- 65%	+111 1.2% -	-194 3.8% -	-392 15.4% **	-118 1.4% -	-042 0.2% -	-295 8.7% *	-035 0.1% -	-188 3.5% -	-310 9.6% *
mandibular depth 374-377	Birdsell area ≈	56 T- 65%	+178 3.2% -	+281 7.9% *	+078 0.6% -	+266 7.1% *	+050 0.3% -	-022 0.0% -	-202 4.1% -	+222 4.9% -/*	+243 5.9% -/*
lip thickness 377-378	Birdsell area ≈	56 T- 65%	-218 4.7% -	-130 1.7% -	-017 0.0% -	-227 5.2% -/*	+324 10.5% **	+367 13.5% **	+070 0.5% -	-157 2.5% -	-035 0.1% -
mouth breadth 379-380	Birdsell area ≈	56 T- 65%	+577 33.3% **	+292 8.5% *	+065 0.4% -	+443 19.6% **	-695 48.2% **	-622 38.7% **	-226 5.1% -/*	+391 15.3% **	+156 2.4% -
<i>Head indices</i>											
cranial module 380-383	Birdsell + others area ≈	93 T+ 85%	-138 1.9% -	-438 19.2% **	-504 25.4% **	-355 12.6% **	-113 1.3% -	-351 12.3% **	+173 3.0% -/*	-320 10.3% **	-437 19.1% **
cephalic index 383-386	Birdsell + others area ≈	109 T+ 95%	-315 9.9% **	-292 8.5% **	-303 9.2% **	-310 9.6% **	+211 4.4% *	+030 0.1% -	+283 8.0% **	-300 9.0% **	-312 9.7% **
basal breadth index 386-388	Birdsell area ≈	59 T+ 75%	+603 36.4% **	+219 4.8% -	+051 0.3% -	+413 17.1% **	-693 48.1% **	-576 33.1% **	-243 5.9% -/*	+417 17.4% **	+108 1.2% -
height-length index 388-390	Birdsell + others area ≈	85 T+ 75%	-102 1.0% -	+131 1.7% -	+241 5.8% *	+042 0.2% -	+347 12.0% **	+354 12.5% **	+048 0.2% -	+213 4.5% -/*	+213 4.5% -/*
height- breadth index 390-394	Birdsell + others area ≈	87 T+ 75%	-334 11.2% **	-333 11.1% **	-263 6.9% */**	-416 17.3% **	+381 14.5% **	+089 0.8% -	+180 3.3% -	-442 19.5% **	-265 7.0% */**
cephalo-facial index 394-397	Birdsell + others area ≈	104 T+ 95%	+535 28.6% **	+613 37.5% **	+580 33.7% **	+612 37.4% **	-325 10.6% **	-049 0.2% -	-417 17.4% **	+593 35.2% **	+607 36.8% **
fronto- parietal index 397-399	Birdsell area ≈	56 T+ 75%	+317 10.1% */**	+391 15.3% **	+403 16.3% **	+474 22.4% **	-448 20.0% **	-125 1.6% -	+010 0.0% -	+441 19.5% **	+379 14.4% **
fronto-gonial index 399-400	Birdsell area ≈	56 T- 70%	+332 11.0% */**	+281 7.9% *	+075 0.6% -	+340 11.5% **	-381 14.5% **	-395 15.6% **	-281 7.9% *	+328 10.8% */**	+153 2.3% -

variable	data	N ^o tribes	sun- light	mean temp.	min. temp.	max. temp.	relative humidity	rain- fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s) area estimate	Tas ± (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman) -	-
zygo-frontal index 400-401	Birdsell area ≈	59 T+ 70%	-.143 2.0% -	+.068 0.5% -	+.128 1.6% -	+.069 0.5% -	+.113 1.3% -	+.203 4.1% -	-.072 0.5% -	+.046 0.2% -	+.135 1.8% -
zygo-gonial index 401-405	Birdsell area ≈	56 T- 65%	+.266 7.1% *	+.195 3.8% -	+.040 0.2% -	+.271 7.3% *	-.259 6.7% -/*	-.312 9.7% */**	-.074 0.5% -	+.197 3.7% -	+.118 1.4% -
<i>Facial indices</i>											
facial index (total) 405-408	Birdsell + others area ≈	92 T+ 90%	-.336 11.3% **	-.299 9.0% **	-.284 8.1% **	-.389 15.1% **	+.501 25.1% **	+.270 7.3% **	+.002 0.0% -	-.321 10.3% **	-.246 6.1% */**
upper facial index 408-411	Birdsell + others area ≈	85 T+ 80%	-.080 0.6% -	-.170 2.9% -	-.215 4.6% *	-.187 3.5% -	+.217 4.7% *	+.025 0.1% -	+.059 0.3% -	-.205 4.2% -/*	-.156 2.4% -
nose breadth index 411-413	Birdsell area ≈	56 T- 65%	+.217 4.7% -	+.261 6.8% -/*	+.300 9.0% **	+.397 15.8% **	-.471 22.2% **	-.251 6.3% -/*	+.123 1.5% -	+.358 12.8% **	+.314 9.8% */**
nose depth index 413-414	Birdsell area ≈	56 T- 65%	-.300 9.0% **	-.527 27.8% **	-.566 32.1% **	-.601 36.1% **	+.397 15.7% **	+.056 0.3% -	+.085 0.7% -	-.571 32.6% **	-.613 37.5% **
lip index 414-416	Birdsell area ≈	56 T- 65%	-.308 9.5% *	-.185 3.4% -	-.024 0.1% -	-.292 8.5% *	+.422 19.5% **	+.457 20.9% **	+.142 2.0% -	-.208 4.3% -	-.047 0.2% -
<i>Composite metrical gradients</i>											
body composite 417-418	Birdsell area ≈	34 T- 30%	+.185 3.4% -	+.347 12.0% *	+.266 7.1% -	+.359 12.9% *	+.538 28.9% **	+.577 33.3% **	-.479 23.0% **	+.212 4.5% -	+.377 14.2% *
cranial composite 418-419	Birdsell area ≈	34 T 30%	+.529 28.0% **	+.511 26.1% **	+.469 22.0% **	+.580 33.7% **	+.240 5.8% -	+.571 32.6% **	-.083 0.7% -	+.372 13.8% *	+.661 43.6% **
facial composite 419-420	Birdsell area ≈	34 T- 30%	+.210 4.4% -	-.319 10.2% -/*	-.343 11.7% *	-.166 2.7% -	+.193 3.7% -	-.059 0.4% -	+.145 2.1% -	-.249 6.2% -	-.139 1.9% -
composite metrical 420	Birdsell area ≈	34 T- 30%	+.415 17.2% */**	+.267 7.1% -	+.197 3.9% -	+.371 13.7% *	+.470 22.1% **	+.528 27.9% **	-.229 5.3% -	+.166 2.7% -	+.424 17.9% */**

variable	data	N ^o tribes	sun- light	mean temp.	min. temp.	max. temp.	relative humidity	rain- fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s) area estimate (%)	Tas ± (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman) -	

Composite gradients

serological composite 67, 434 area ≈	Birdsell T- 30%	34 T- -	+0.161 2.6% -	-0.097 0.9% -	+0.001 0.0% -	-0.126 1.6% -	-0.204 4.2% *	-0.357 12.8% -	+0.070 0.5% -	+0.121 1.5% -	-0.015 0.0% -
dental composite 434	Birdsell T- area ≈	34 T- 30%	-0.224 5.0% -	+0.166 1.4% -	+0.039 0.2% -	-0.048 0.2% -	+0.199 4.0% -	+0.112 1.3% -	+0.118 1.4% -	-0.045 0.2% -	-0.061 0.4% -
morphological composite 301, 434	Birdsell T- area ≈	34 T- 30%	+0.091 0.8% -	-0.308 9.5% -/*	-0.222 4.9% -	-0.209 4.4% -	-0.261 6.8% -	-0.534 28.5% **	+0.045 0.2% -	+0.026 0.1% -	-0.131 1.7% -
composite metrical 418, 434	Birdsell T- area ≈	34 T- 30%	+0.415 17.2% */**	+0.267 7.1% -	+0.197 3.9% -	+0.371 13.7% *	+0.470 22.1% **	+0.528 27.9% **	-0.229 5.3% -	+0.415 17.2% **	+0.451 20.4% **
all four combined 434-435	Birdsell T- area ≈	34 T- 30%	+0.299 8.9% -/*	-0.043 0.2% -	+0.009 0.0% -	-0.017 0.0% -	+0.028 0.1% -	-0.201 4.1% -	-0.016 0.0% -	+0.175 3.1% -	+0.130 1.7% -

A2.2

DENTAL DATA (Birdsell 1993): CORRELATION RESULTS

key: row 1: r = Pearson correlation coefficient
 row 2: r^2 = estimate of total variance %
 row 3: s = significance level (2-tailed): * < 0.05 ** < 0.01

variable Birdsell 1993 page references	data source(s) area estimate (%)	N° tribes Tas ± (%)	sun- light (hours)	mean temp. (°C)	min. temp. (°C)	max. temp. (°C)	relative humidity (%)	rain- fall (mm.)	wind velocity (km/hr)	wind chill - (Steadman) -	Apparent Temp.
dental wear (p.72-76)	Birdsell area ≈	37 T - 30%	-0.239 5.7% -	-0.062 0.4% -	-0.121 1.5% -	-0.101 1.0% -	+0.075 0.6% -	+0.001 0.0% -	+0.142 2.0% -	-0.189 3.6% -	+0.036 0.1% -
size of dentition (p.76-78)	Birdsell area ≈	55 T + 70%	+0.711 50.5% **	+0.249 6.2% -	-0.004 0.0% -	+0.464 21.6% **	-0.740 54.8% **	-0.754 56.9% **	-0.242 5.8% -	+0.413 17.0% **	+0.052 0.3% -
palate breadth (p.79-81)	Birdsell + others area ≈	60 T + 55%	-0.360 13.0% **	-0.486 23.6% **	-0.545 29.7% **	-0.515 26.5% **	+0.233 5.4% -	-0.051 0.3% -	+0.368 13.5% **	-0.445 19.8% **	-0.512 26.3% **
palate shape (square) (p.81-83)	Birdsell area ≈	37 T - 30%	-0.028 0.1% -	+0.424 17.9% **	+0.323 10.4% -	+0.285 8.1% -	-0.238 5.6% -	+0.169 2.8% -	-0.071 0.5% -	+0.335 11.2% *	+0.233 5.4% -
bi-canine breadth (p.83-85)	Birdsell area ≈	37 T - 30%	+0.513 26.3% **	+0.699 48.8% **	+0.591 34.9% **	+0.652 42.5% **	+0.130 1.7% -	+0.450 20.3% **	-0.408 16.6% *	+0.611 37.4% **	+0.673 45.3% **
bi-incisor breadth (p.85-86)	Birdsell area ≈	37 T - 30%	+0.421 17.8% **	+0.738 54.4% **	+0.684 46.9% **	+0.644 41.5% **	+0.269 7.2% -	+0.568 32.2% **	-0.318 10.1% -	+0.576 33.2% **	+0.693 48.0% **
M1 breadth (lower) (p.86-88)	Birdsell area ≈	41 T + 40%	+0.328 10.7% *	+0.023 0.1% -	-0.284 8.1% -	+0.079 0.6% -	-0.397 15.8% **	-0.480 23.1% **	-0.245 6.0% -	+0.169 2.9% -	-0.140 1.9% -
M2 breadth (lower) (p.88-89)	Birdsell area ≈	41 T + 40%	+0.211 4.4% -	-0.034 0.1% -	-0.239 5.7% -	-0.043 0.2% -	-0.193 3.7% -	-0.365 13.3% *	-0.046 0.2% -	-0.059 0.3% -	-0.165 2.7% -
M3 breadth (lower) (p.88-91)	Birdsell area ≈	41 T + 40%	+0.273 7.5% -	+0.200 0.4% -	+0.020 0.0% -	+0.251 6.3% -	-0.320 10.3% *	-0.300 9.0% -	-0.172 2.9% -	+0.118 1.4% -	.000 0.0% -
M2 > M1 (lower) (p.92-95)	Birdsell area ≈	37 T - 30%	-0.231 5.3% -	-0.614 37.7% **	-0.538 28.9% **	-0.533 28.4% **	+0.153 2.4% -	-0.387 15.0% *	+0.318 10.1% -	-0.674 45.5% **	-0.550 30.2% **
M2 > M1 (upper) (p.95-96)	Birdsell area ≈	37 T - 30%	+0.179 3.2% -	+0.379 14.4% *	+0.280 7.8% -	+0.315 9.9% -	-0.011 0.0% -	+0.052 0.3% -	+0.281 7.9% -	+0.071 0.5% -	+0.205 4.2% -
M1 - 4 cusps (lower) (p.96-99)	Birdsell area ≈	59 T + 70%	-0.604 36.5% **	-0.246 6.0% -	-0.182 3.3% -	-0.393 15.5% **	+0.522 27.3% **	+0.490 24.0% **	+0.042 0.2% -	-0.258 6.6% *	-0.258 6.6% *

variable	data	N ^o tribes	sun-light	mean temp.	min. temp.	max. temp.	relative humidity	rain-fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s) area estimate (%)	Tas ± (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman) -	
M2 - 4 cusps (lower) (p.99-102)	Birdsell area ≈	59 T + 70%	-489 24.0% **	-193 3.7% -	-149 2.2% -	-365 13.3% **	+234 5.5% -	+201 4.1% -	+093 0.9% -	-239 5.7% -	-262 6.9% -
M3 - 4 cusps (lower) (p.102-104)	Birdsell area ≈	60 T - 75%	-524 27.5% **	-038 0.1% -	+188 3.5% -	-242 5.9% -	+393 15.4% **	+489 23.9% **	+239 5.7% -	-238 5.7% -	+051 0.3% -
M1,M2,M3 av 4 cusps (lower) (p.102-105)	Birdsell area ≈	37 T - 30%	+431 18.6% **	+409 16.8% *	+341 11.6% *	+631 39.8% **	+235 5.5% -	+412 16.9% *	-105 1.1% -	+236 5.6% -	+541 29.2% **
M1 - 4 cusps (upper) (p.105-107)	Birdsell area ≈	37 T - 30%	-397 15.6% *	-597 35.7% **	-636 40.4% **	-511 26.1% **	-324 10.5% -	-713 50.8% **	+503 25.3% **	-522 30.4% **	-665 44.2% **
M2 - 4 cusps (upper) (p.107-109)	Birdsell area ≈	37 T - 30%	-441 19.4% **	-587 34.4% **	-651 42.4% **	-658 43.3% **	-132 1.7% -	-488 23.8% **	+360 13.0% *	-619 38.3% **	-647 41.8% **
M3 - 4 cusps (upper) (p.109-111)	Birdsell area ≈	37 T - 30%	-410 16.8% *	-357 12.7% *	-525 27.6% **	-552 30.4% **	-137 1.9% -	-383 14.7% *	+316 10.0% -	-446 19.9% **	-471 22.2% **
M1,M2,M3 av. 4 cusps (upper) (p.111-112)	Birdsell area ≈	37 T - 30%	-434 18.9% **	-522 27.3% **	-623 38.9% **	-561 31.5% **	-178 3.2% -	-555 30.8% **	+423 17.9% **	-552 30.5% **	-593 35.1% **
M1 fissures (lower) (p.112-115)	Birdsell area ≈	59 T + 70%	-279 7.8% *	-312 9.8% *	-270 7.3% *	-396 15.7% **	+438 19.2% **	+203 4.1% -	-030 0.1% -	-357 12.7% **	-279 7.8% *
M2 fissures (lower) (p.115-118)	Birdsell area ≈	59 T + 70%	-358 12.8% **	-189 3.6% -	-229 5.2% -	-351 12.3% **	+452 20.5% **	+303 9.2% *	-009 0.0% -	-246 6.0% -	-185 3.4% -
M3 fissures (lower) (p.118-120)	Birdsell area ≈	59 T + 70%	+361 13.0% **	+301 9.1% *	+118 1.4% -	+320 10.2% *	-315 9.9% *	-204 4.2% -	-266 7.1% *	+306 9.4% *	+299 8.9% *
M1,M2,M3 av. 4 cusps (lower) (p.120-122)	Birdsell area ≈	37 T - 30%	-058 0.3% -	+008 0.0% -	+078 0.6% -	-058 0.3% -	+111 1.2% -	+183 3.4% -	-146 2.1% -	+160 2.6% -	+127 1.6% -
M3 crown (lower) (p.122-124)	Birdsell area ≈	37 T - 30%	-033 0.1% -	+132 1.7% -	+282 7.9% -	+174 3.0% -	-038 0.1% -	+053 0.3% -	-001 0.0% -	+109 1.2% -	+294 8.7% -
M3 irregular (lower) (p.124-126)	Birdsell + others area ≈	37 T - 30%	-056 0.3% -	-185 3.4% -	+054 0.3% -	-025 0.1% -	-313 9.8% -	-306 9.4% -	+220 4.9% -	+061 0.4% -	-125 1.6% -

variable	data	N ^o tribes	sun- light	mean temp.	min. temp.	max. temp.	relative humidity	rain- fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s) area estimate (%)	Tas ± (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman) -	
M3 impacted (lower) (p.127-130)	Birdsell area ≈	59 T + 70%	+0.155 2.4% -	+0.185 3.4% -	+0.144 2.1% -	+0.157 2.5% -	-0.053 0.3% -	-0.103 1.1% -	-0.024 0.1% -	+0.182 3.3% -	+0.135 1.8% -
supernumerary molars (p.130-134)	Birdsell area ≈	49 T - 70%	+0.240 5.8% -	-0.132 1.7% -	-0.164 2.7% -	+0.013 0.0% -	-0.262 6.8% -	-0.324 10.5% *	+0.071 0.5% -	+0.102 1.0% -	-0.214 4.6% -
6th cusp lower molars (p.135-137)	Birdsell area ≈	37 T - 30%	+0.021 0.0% -	+0.109 1.2% -	+0.072 0.5% -	+0.285 8.1% -	+0.027 0.1% -	+0.164 2.7% -	-0.320 10.3% -	+0.038 0.1% -	+0.135 1.8% -
7th cusp lower molars (p.137-139)	Birdsell area ≈	37 T - 30%	+0.001 0.0% -	+0.299 8.9% -	+0.097 0.9% -	+0.037 0.1% -	-0.238 5.6% -	+0.042 0.2% -	+0.036 0.1% -	+0.261 6.8% -	+0.170 2.9% -
Bolk's cusp (paramolar, lower) (p.139-141)	Birdsell area ≈	37 T - 30%	+0.191 3.6% -	+0.297 8.8% -	+0.282 7.9% -	+0.197 3.9% -	+0.409 16.7% *	+0.492 24.2% **	-0.338 11.5% *	+0.048 0.2% -	+0.207 4.3% -
Campbell's cusp (upper) (p.141-144)	Birdsell area ≈	42 T - 35%	+0.084 0.7% -	+0.315 0.0% *	+0.280 7.8% -	+0.317 10.1% *	-0.088 0.8% -	+0.193 3.7% -	-0.217 4.7% -	+0.387 15.0% *	+0.340 11.6% *
Carabelli's features (p.144-146)	Birdsell area ≈	37 T - 30%	+0.003 0.0% -	+0.107 1.1% -	-0.025 0.1% -	+0.089 0.8% -	+0.350 12.2% *	+0.288 8.3% -	-0.394 15.5% *	+0.063 0.4% -	+0.098 0.1% -
Carabelli's cusp (p.146-148)	Birdsell area ≈	37 T - 30%	-0.148 2.2% -	-0.347 12.0% *	-0.526 27.6% **	-0.347 12.0% *	+0.260 6.8% -	-0.143 2.1% -	+0.045 0.2% -	-0.418 17.5% *	-0.296 8.7% -
Carabelli's fissures (p.148-150)	Birdsell area ≈	37 T - 30%	+0.063 0.4% -	+0.485 23.5% **	+0.493 24.3% **	+0.414 17.1% *	+0.127 1.6% -	+0.440 19.4% **	-0.516 26.7% **	+0.520 27.0% **	+0.366 14.9% *
Carabelli's pits (p.150-152)	Birdsell area ≈	37 T - 30%	+0.104 1.1% -	+0.231 5.3% -	+0.245 6.0% -	+0.228 5.2% -	-0.043 0.2% -	+0.071 0.5% -	-0.108 1.2% -	+0.240 5.7% -	+0.266 7.1% -
Musgrave cusplet (p.152-154)	Birdsell area ≈	37 T - 30%	+0.426 18.1% **	+0.448 20.0% **	+0.565 31.9% **	+0.524 27.5% **	+0.188 3.5% -	+0.410 16.8% *	-0.356 12.7% *	+0.448 20.0% **	+0.452 20.4% **
Musgrave - double (p.154-155)	Birdsell area ≈	37 T - 30%	+0.372 13.9% *	-0.029 0.1% -	+0.003 0.0% -	+0.087 0.8% -	-0.343 11.7% *	-0.297 8.8% -	+0.285 8.1% -	+0.200 4.0% -	+0.092 0.8% -
incisor gap (upper) (p.155-157)	Birdsell area ≈	37 T - 30%	+0.016 0.0% -	+0.172 3.0% -	+0.182 3.3% -	+0.198 3.9% -	-0.013 0.0% -	+0.029 0.1% -	-0.194 3.8% -	+0.036 0.1% -	+0.036 0.1% -

variable	data	N ^o tribes	sun- light	mean temp.	min. temp.	max. temp.	relative humidity	rain- fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s) area estimate	Tas ± (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman) -	
incisor winging (p.157-159)	Birdsell T - area ≈	37 30%	+270 7.3% -	+405 16.4% *	+502 25.2% **	+561 31.5% **	+143 2.0% -	+392 15.4% *	-255 6.5% -	+438 19.2% **	+438 19.2% **
reduced upper lat. incisors (p.159-160)	Birdsell T - area ≈	37 30%	+014 0.0% -	+275 7.6% -	+269 7.2% -	+310 9.6% -	-151 2.3% -	+073 0.5% -	-363 13.2% *	+275 7.6% -	+201 4.0% -
shovel-shaped incisors (p.160-163)	Birdsell T - area ≈	61 75%	+344 11.8% **	+179 3.2% -	+052 0.3% -	+236 5.5% -	-105 1.1% -	-048 0.2% -	-023 0.1% -	+164 2.7% -	+162 2.6% -
basal tubercles (upper anterior) (p.163-165)	Birdsell T - area ≈	57 70%	-037 0.1% -	-319 10.1% *	-322 10.4% *	-280 7.8% *	+150 2.3% -	-097 0.9% -	+100 1.0% -	-394 15.5% **	-305 9.3% *
premolar displacement (p.165-167)	Birdsell T - area ≈	37 30%	+377 14.2% *	+270 7.3% -	+250 6.2% -	+442 19.5% **	+070 0.5% -	+160 2.5% -	+065 0.4% -	+237 5.6% -	+291 8.4% -
premolar rotation (p.167-169)	Birdsell T - area ≈	37 30%	-110 1.2% -	+335 11.2% *	+272 7.4% -	+180 3.2% -	-138 1.9% -	+139 1.9% -	-027 0.1% -	+214 4.6% -	+219 4.8% -
premolar size disharmony (p.169-170)	Birdsell T - area ≈	37 30%	-056 0.3% -	+165 2.7% -	+201 4.0% -	+132 1.7% -	+018 0.0% -	+285 8.1% -	-067 0.4% -	+099 1.0% -	+257 6.6% -
multi-cusped premolars (p.171-173)	Birdsell T - area ≈	37 30%	-561 31.5% **	-629 39.5% **	-686 47.1% **	-632 40.0% **	-030 0.1% -	-414 17.1% *	+429 18.4% **	-703 49.5% **	-642 41.2% **
open bite (anterior) (p.176-178)	Birdsell T - area ≈	37 30%	+027 0.1% -	+291 8.5% -	+292 8.5% -	+260 6.7% -	+211 4.5% -	+356 12.7% *	-061 0.4% -	+242 5.8% -	+268 7.2% -
tooth displacement (p.179-181)	Birdsell T - area ≈	37 30%	+412 17.0% *	+462 21.3% **	+491 24.1% **	+500 25.0% **	+168 2.8% -	+245 6.0% -	-073 0.5% -	+464 21.6% **	+453 20.5% **
D5 + P6 / D5 (decid. + perm.) (p.181-182)	Birdsell T - area ≈	28 25%	-191 3.6% -	-122 1.5% -	-131 1.7% -	-236 5.6% -	-090 0.8% -	-172 3.0% -	+082 0.7% -	-039 0.2% -	-279 7.8% -
Complex A ("simple" genetics) (p.173-175)	Birdsell T - area ≈	34 30%	-042 0.2% -	+611 37.3% **	+615 37.8% **	+332 11.0% -	+369 13.6% *	+615 37.9% **	-259 6.7% -	+459 21.0% **	+600 36.0% **
Complex B ("polygenic") (p.173-175)	Birdsell T - area ≈	34 30%	-148 2.2% -	-445 19.8% **	-318 10.1% -	-292 8.5% -	+123 1.5% -	-264 7.0% -	+330 10.9% -	-397 15.7% *	-403 16.2% *
Complex A + Complex B (p.175-176)	Birdsell T - area ≈	34 30%	-245 6.0% -	-062 0.4% -	-012 0.0% -	-148 2.2% -	+401 16.1% *	+157 2.5% -	+142 2.0% -	-121 1.5% -	-046 0.2% -

A2.3 SEROLOGICAL DATA (Birdsell 1993): CORRELATION RESULTS

key: row 1: r = Pearson correlation coefficient
 row 2: r^2 = estimate of total variance %
 row 3: s = significance level (2-tailed): * < 0.05 ** < 0.01

variable	data	N ^a tribes	sun- light	mean temp.	min. temp.	max. temp.	relative humidity	rain- fall	wind velocity	wind chill	Apparent Temp.
Birdsell 1993 page references	source(s)	Tas ± area estimate (%)	(hours)	(°C)	(°C)	(°C)	(%)	(mm.)	(km/hr)	- (Steadman) -	
<i>ABO system</i>											
A ₁ allele	Birdsell	76	+0.299	-0.312	-0.452	-0.128	-0.490	-0.463	+0.199	-0.158	-0.361
ABO group (pp.38-43)	+ others area ≈	Tas- 95%	8.9% **	9.7% **	20.4% **	1.6% -	24.0% **	21.5% **	4.0% -	2.5% -	13.1% **
B allele	Birdsell	76	-0.388	+0.187	+0.238	+0.014	+0.352	+0.363	-0.247	+0.045	+0.155
ABO group (pp.43-44)	+ others area ≈	Tas- 65%	15.1% **	3.5% -	5.7% *	0.0% -	12.4% **	13.2% **	6.1% *	0.2% -	2.4% -
O allele	Birdsell	75	-0.170	+0.339	+0.475	+0.173	+0.427	+0.426	-0.159	+0.198	+0.452
ABO group (pp.39-41)	+ others area ≈	Tas- 95%	2.9% -	11.5% **	22.6% **	3.0% -	18.2% **	18.2% **	2.5% -	3.9% -	20.4% **
<i>MN groups</i>											
N gene	Birdsell	76	-0.203	-0.425	-0.298	-0.289	-0.053	+0.044	-0.388	-0.399	-0.315
MN group (pp.44-48)	+ others area ≈	Tas- 95%	4.1% -	18.0% **	8.9% **	8.3% *	0.3% -	0.2% -	15.0% **	15.9% **	10.0% **
<i>Rhesus locus</i>											
R ¹ gene (cDE) (pp.48-51)	Birdsell + others area ≈	59 Tas- 40%	-0.210 4.4% -	+0.286 8.2% *	+0.267 7.1% *	+0.089 0.8% -	+0.246 6.0% -	+0.439 19.2% **	-0.084 0.7% -	+0.137 1.9% -	+0.250 6.3% -
R ² gene (cDE) (pp.51-54)	Birdsell + others area ≈	54 Tas- 40%	+0.140 2.0% -	-0.461 21.2% **	-0.503 25.3% **	-0.081 0.7% -	-0.360 13.0% **	-0.512 26.2% **	+0.097 0.9% -	-0.296 8.8% *	-0.527 27.8% **
R ⁰ gene (cDE) (pp.53-56)	Birdsell + others area ≈	58 Tas- 40%	-0.407 16.5% **	+0.415 17.2% **	+0.427 18.2% **	+0.199 3.9% -	+0.323 10.4% *	+0.344 11.9% **	-0.062 0.4% -	+0.192 3.7% -	+0.372 13.8% **
R ^z gene (cDE) (pp.54-60)	Birdsell + others area ≈	58 Tas- 40%	+0.320 10.3% *	-0.021 0.0% -	-0.073 0.5% -	-0.009 0.0% -	-0.111 1.2% -	-0.114 1.3% -	-0.143 2.0% -	+0.212 4.5% -	+0.062 0.4% -
<i>Lewis factor</i>											
a+ antigen Le(a+) (pp.61-64)	Birdsell + others area ≈	50 Tas- 35%	-0.235 5.5% -	+0.483 23.3% **	+0.382 14.6% **	+0.383 14.7% **	+0.418 17.5% **	+0.546 29.8% **	-0.094 0.9% -	+0.224 5.0% -	+0.483 23.3% **
<i>P group</i>											
P ₁ + variant (pp.64-66)	Birdsell + others area ≈	49 Tas- 30%	+0.071 0.5% -	-0.010 0.0% -	+0.003 0.0% -	-0.036 0.1% -	-0.022 0.0% -	-0.036 0.1% -	-0.100 1.0% -	-0.071 0.5% -	-0.050 0.2% -
<i>Composite gradient</i>											
R ¹ , R ² , R ⁰ , R ^z Le (a+), P ₁ + (pp.64-68)	Birdsell + others area ≈	34 Tas- 25%	+0.163 2.7% -	-0.089 0.8% -	+0.007 0.0% -	-0.118 1.4% -	-0.200 4.0% -	-0.342 11.7% *	+0.069 0.5% -	+0.127 1.6% -	-0.005 0.0% -