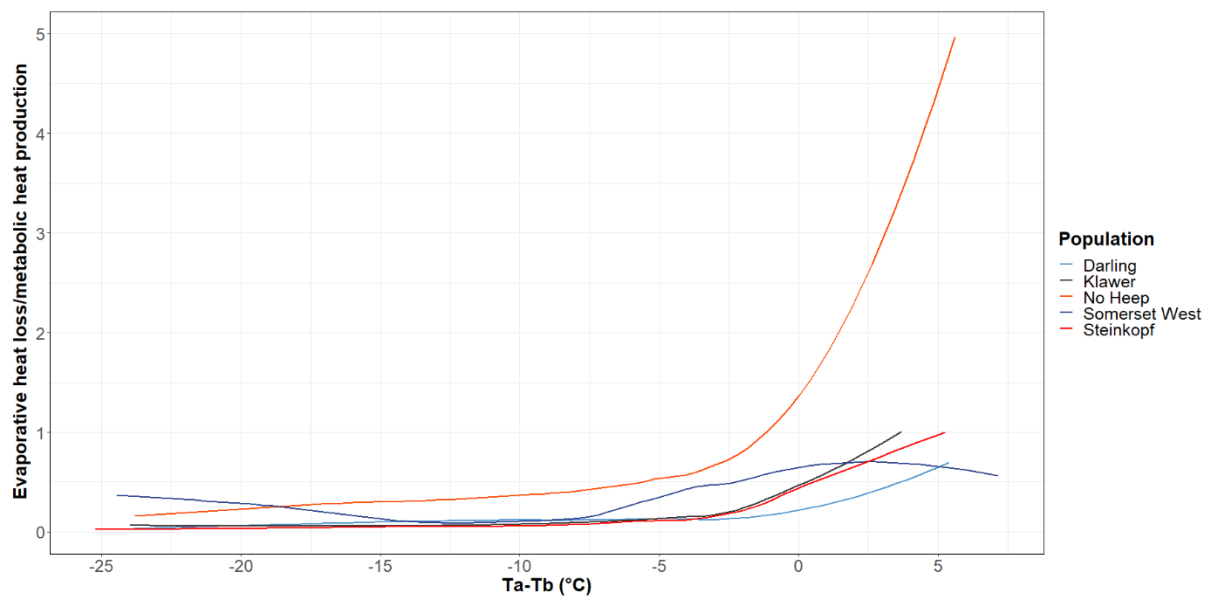


**Fig. S1.** Volumetric soil moisture content ( $\text{m}^3 \text{m}^{-3}$ ) at 0-7cm (a), and 7-28cm (b) depth; soil temperature ( $^{\circ}\text{C}$ ) at 0-7cm (c) and 7-28cm (d) depth for each of the 5 populations for each month in the year 2020. Temperature of the soil at 2m above the soil surface (e) and accumulated liquid and frozen water that falls to the Earth's surface (f) at each of the 5 locations for every month in the year 2020. All data is based on climate data retrieved from ERA5-Land dataset.





**Fig. S3.** Body temperature subtracted from ambient temperature ( $T_a-T_b$ ) against evaporative heat loss/metabolic heat production (EHL/MHP) for each population of common mole-rats (*C. h. hottentotus*) at each temperature during which they were in the respirometry chamber.

**Table S1.** ANOVA results table of TNZ range between each of the 5 populations of common mole-rats (*C. h. hottentotus*). No significant difference was found between any of the populations.

	<b>Df</b>	<b>Sum Sq</b>	<b>Mean Sq</b>	<b>F value</b>	<b>Pr(&gt;F)</b>
<b>Population</b>	4	66.64	16.66	3.8	0.09
<b>Residuals</b>	45	223.57	4.38		

**Table S2.** ANOVA results table of thermal range between each of the 5 populations of common mole-rats (*C. h. hottentotus*). No significant difference was found between any of the populations.

	<b>Df</b>	<b>Sum Sq</b>	<b>Mean Sq</b>	<b>F value</b>	<b>Pr(&gt;F)</b>
<b>Population</b>	4	41.85	10.46	2.38	0.06
<b>Residuals</b>	45	237.88	4.4		

**Table S3.** A series of ANOVA results tables to determine within population differences between each colony for each of the physiological measures: metabolic rate (MR) in the TNZ (TNZMR), evaporative water loss (EWL) above the inflection point (UpEWL); metabolic heat production (EHL/MHP) above the inflection point (UpEHL/MHP). No significant differences were found between colonies within the same population of common mole-rats (*C. h. hottentotus*). Any significance indicates differences between colonies from different populations.

## TNZMR

	<b>Df</b>	<b>Sum Sq</b>	<b>Mean Sq</b>	<b>F value</b>	<b>Pr(&gt;F)</b>
<b>Colony</b>	24	0.56	0.02	1.91	0.05
<b>Residuals</b>	30	0.37	0.01		

## UpEWL

	<b>Df</b>	<b>Sum Sq</b>	<b>Mean Sq</b>	<b>F value</b>	<b>Pr(&gt;F)</b>
<b>Colony</b>	24	27.56	1.15	5.39	p<0.01
<b>Residuals</b>	30	6.39	0.21		

## UpEHL/MHP

	<b>Df</b>	<b>Sum Sq</b>	<b>Mean Sq</b>	<b>F value</b>	<b>Pr(&gt;F)</b>
<b>Colony</b>	24	47.72	1.99	1.45	0.17
<b>Residuals</b>	30	41.18	1.37		