**Supplementary materials @@@: difference between groups size in the ordinated space (PCA)**

1 – we tested whether there were any differences between groups in terms their pairwise distances (PERMANOVA, table 1). Yes.

2 – we then tested whether there were any differences between groups in terms of their size or their position (t-test, table 2 and 3). Yes, for some.

3- however, we don’t know what this differences translates too in the skulls (i.e. are skulls in one group wider? etc.). So we plotted the extremes of the variation of the first PC axis on the consensus skull and looked which regions of the skulls seemed to have the most changes. The heatplots thing.

4- we then used these regions to test whether they were actually changing in the Procrustes space at an individual level.

**Table 1:** PERMANOVA results based on the distances of the PCA for both partition (specimens pairwise distances   species)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Df | SumsOfSqs | MeanSqs | F.Model | R2 | Pr(F) |
| group.cranium | 2.00 | 0.15 | 0.08 | 37.02 | 0.52 | 0.00 |
| Residuals.cranium | 68.00 | 0.14 | 0.00 |  | 0.48 |  |
| Total.cranium | 70.00 | 0.29 |  |  | 1.00 |  |
| group.mandible | 2.00 | 0.07 | 0.04 | 16.84 | 0.39 | 0.00 |
| Residuals.mandible | 52.00 | 0.11 | 0.00 |  | 0.61 |  |
| Total.mandible | 54.00 | 0.18 |  |  | 1.00 |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 2:** Pairwise t-tests results based on the median distances the centre for each group (with Bonferroni correction).   |  |  |  |  | | --- | --- | --- | --- | |  | statistic: t | parameter: df | p.value | | CW:SHNW-cranium | 35.87 | 146.53 | 0.00 | | CW:NHNW-cranium | 31.70 | 164.09 | 0.00 | | SHNW:NHNW-cranium | -3.81 | 191.17 | 0.00 | | CW:SHNW-mandible | 25.55 | 197.73 | 0.00 | | CW:NHNW-mandible | 4.04 | 183.46 | 0.00 | | SHNW:NHNW-mandible | -17.79 | 186.59 | 0.00 |     **Table 3:** Pairwise t-tests results based on the median centroid distance from each group (with Bonferroni correction).   |  |  |  |  | | --- | --- | --- | --- | |  | statistic: t | parameter: df | p.value | | CW:SHNW-cranium | 10.63 | 190.50 | 0.00 | | CW:NHNW-cranium | 29.98 | 197.28 | 0.00 | | SHNW:NHNW-cranium | 16.64 | 194.20 | 0.00 | | CW:SHNW-mandible | 2.82 | 192.06 | 0.02 | | CW:NHNW-mandible | 8.90 | 141.03 | 0.00 | | SHNW:NHNW-mandible | 6.76 | 156.16 | 0.00 | |  |  |  |

PCA_t_tests.pdf

**Figure 1:** Group size measured as the median distance from centroids between the common wombats (CW), the Southern Hairy-Nosed wombats (SHNW) and the Northern Hairy-Nosed wombats (NHNW).

Figures/PCA_t_tests_centre.pdf

**Figure 2:** Group size measured as the median distance from the centre of the PCA space between the common wombats (CW), the Southern Hairy-Nosed wombats (SHNW) and the Northern Hairy-Nosed wombats (NHNW)