**Electronic Supplementary Materials 3:** Replication of phyloANOVAs analysing brain subdivision vs ecomorph without collapsing across ecomorph.

In our manuscript we examine whether brain subdivisions differ in volume between the different ecomorphs. Since our previous results indicate that burrowers have a distinct brain morphology from sprinters and rock dwellers, but that the latter two do not differ from each other, we collapsed our ecomorph categories into “burrower” and “sprinter/rock dweller”. Using phylogenetically corrected ANOVAs, we found that the volume of the optic tectum is larger (T2,12 = -3.62, p = 0.0035) and the rhombencephalon smaller (T2,12 = 3.23, p = 0.0072), in burrowers compared to sprinters and rock dwellers (Manuscript Figure 4).

In order to verify our findings, we repeated this analysis without collapsing sprinters and rock dwellers into a single category. The results are qualitatively identical, with the volume of the optic tectum larger (T2,12 = -2.65, p = 0.021) and the rhombencephalon smaller (T2,12 = 2.45, p = 0.031), in burrowers compared to sprinters and rock dwellers. See figure below.

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