

**Supplementary Fig. 1** Categories of spiny-tailed species used in the study. The coding of species into spiny and non-spiny categories is straightforward in many cases. However, some species only possess small spines or keeled tail scales, making their assignment somewhat subjective (i.e. when is a keel becoming a spine?). To overcome this issue, we created the SPINY STRICT dataset, which only includes unambiguous spiny-tailed species (tail scales organized into discrete whorls, with caudal ends of scales possessing clearly visible spines, or large lateral and dorsal tail spines as shown by *Moloch horridus* and *Phrynosoma sp.*). In contrast, the SPINY dataset includes all spiny-tailed species including those with smaller spines. Grey squares represent an arbitrary illustration of the sizes of tail spines in the different categories. Images show example species out of the different categories (from left to right: *Uromastyx aegyptia*, *Agama agama*, *Eumeces fasciatus*).