**Figure 1**. Morphological variability in *Pristurus*, with insight from insularity (left) and habitat use (right). a) Morphospace with phylogenetic relationship between the species, showing body shape differentiation. b) Traitgram showing body size (SVL) through time on the summary phylogenetic tree of *Pristurus*, mapped by the discrete categories of presence in Socotra or the continent (left) and by ecological specialisation (right). Photos (proportional to species’ SVL): *Pristurus carteri* (top) and *P. masirahensis* (bottom), the largest and smallest species of the genus, respectively.

**Figure 2**. Observed (red arrows) and simulated (grey bars) ratios of phenotypic disparity between ground versus no-ground habitats. a) Body size disparity ratios. b) Head proportions (pPC2) disparity ratios.

**Figure 3**. AICc distributions from the model fitting for a) body size and b) shape evolution of the genus *Pristurus*. These results correspond to model fitting on 100 stochastic character maps (insularity in the top panels and habitat use in the bottom) on 100 trees from the phylogenetic posterior distribution. BM1: Brownian motion single rate. OU1: Ornstein-Uhlenbeck single rate. BMS (OUwie) / BMM (mvMorph): Brownian motion multi-rate. OUM: Ornstein-Uhlenbeck multi-rate. For body size, the best supported model is a Brownian motion with rate heterogeneity across categories. For body shape, a single-rate Brownian motion model was the best-fit, although there is an extensive overlap across all models.

**Figure 4**. Rates of a) body size and b) body shape evolution in the genus *Pristurus*, extracted from multi-rate Brownian motion models fitted on a total of 10,000 character maps (100 stochastic character maps on 100 posterior trees) of Socotra vs. continent and habitat use (ground, rock, and tree).

**Figure S1**. Ancestral reconstruction of insularity (left) and habitat use (right). Tip labels of the ground-dwelling species (Spatalura clade) are coloured according to the type of ground they use: soft ground and hard ground.

**Figure S2**. Morphological differentiation in *Pristurus* species. Phenograms show the variation of body shape (PC1 and PC2 of the phylogenetic PCA performed with species data) and body size (SVL) over time, along with phylogenetic relationships. In the left, the branches are coloured according to Socotra vs. continent; in the right, colors represent habitat use.

**Figure S3.** Test of the island rule prediction that island colonisation results in a change in body size. a) Estimated ancestral body size across the phylogeny of *Pristurus* under a multi-rate Brownian Motion model. The black triangles indicate the branches where there has been an island colonisation event based on the ancestral reconstruction of insularity (Fig. S1). b) Change in body size from continental parental nodes to island descendant nodes. The island rule predicts that descendant island nodes will tend to have different body size than their continental parental nodes.

**Figure S4**. Morphological differentiation of *Pristurus* species, with colours representing the more detailed habitat categorization (i.e., with ground-dwelling species divided into soft and hard ground.

**Figure S5**. Model selection (AIC distributions) and rates of morphological evolution (body size and shape) extracted from the multi-rate Brownian motion model (BMM or BMS) from the analyses performed on the consensus phylogenetic tree of *Pristurus*.