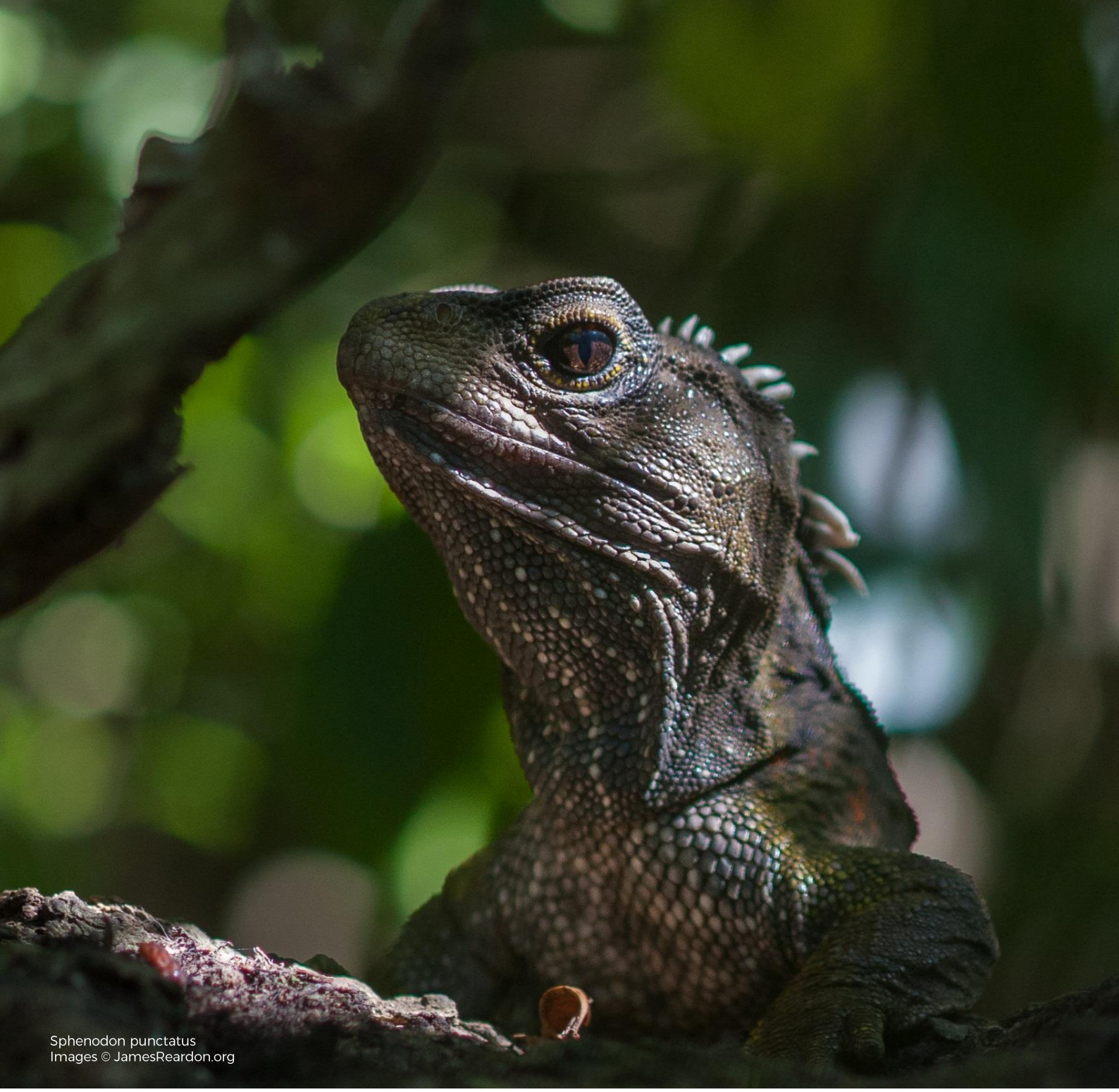

Sphenodon punctatus
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Testing a mechanistic hypothesis: how does climate predict the distribution of parasites in lizards?

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Environmental perturbations, such as abrupt climatic shifts, may induce physiological stress which can reduce host immune competence against parasites. This is one of the reasons why parasites have been often used as environmental stress bio-indicators. We tested this mechanistic hypothesis in *Gallotia galloti* (Squamata: Lacertidae) analysing 1) the relationship between bio-climatic variables and mean values of corticosterone (a stress hormone) during the summer, and 2) possible synergies of climate change and parasitization by adjusting an ecological model to the association between climate and levels of blood parasites (haemogregrines). We sampled ~1,000 lizards during six years across 30 localities in Tenerife (Canary Islands), which widely represent the microclimatic variation of the other six major islands in the archipelago. We used models of current climate (extracted from WorldClim, 1970-2000) to infer mean bio-climatic conditions of sampled localities. Using an equation that defines the relationship between climatic variables and parasites only in Tenerife, we modelled projections for local abundances of parasites for the entire archipelago. Then, we validated this model of distribution of parasites based on climate by comparing its predictions to real parasitemia data across the archipelago. Conclusively, our mechanistic hypothesis was supported because aridity was the most important predictor, ahead of other plausible predictors such as vector and host abundances, elevation, or an index of human disturbance, and it was positively associated with both mean abundance of blood parasites and corticosterone concentration.