

Lizards on the landscape: An integrative approach to conserving a threatened lizard in a changing landscape

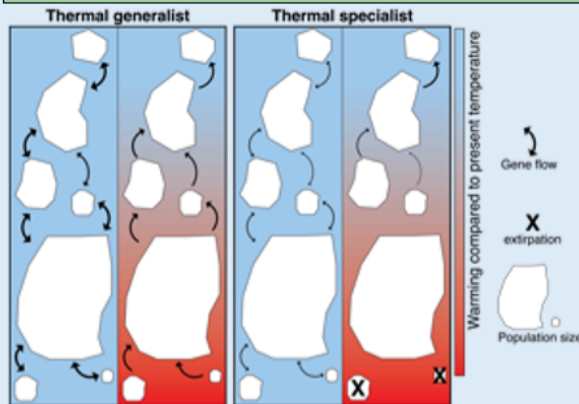
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Climate change and fragmentation threaten tropical ectotherms

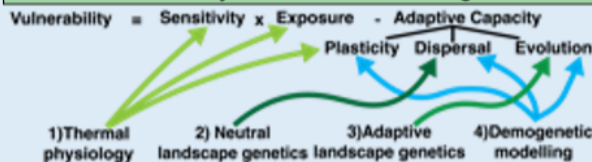


Thermal specialist ectotherms are especially vulnerable to climate change and habitat fragmentation¹.

Climate change and fragmentation threaten Sri Lankan biodiversity



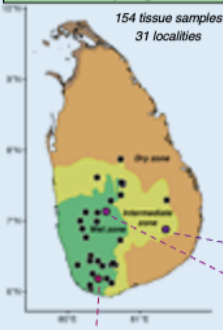
Vulnerability to environmental change²



Lyre-headed lizard

Endemic Sri Lankan rainforest Agamid.

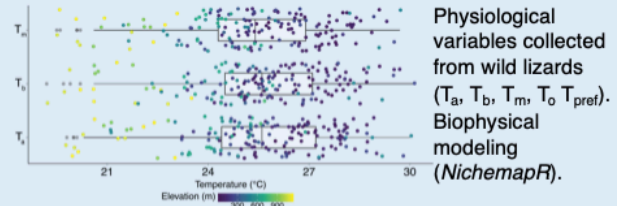
Sampling



Genomic data will be generated using DArTseq (Diversity Arrays Technology)



1) What is the thermal sensitivity of a tropical lizard?



2) What factors mediate gene flow?

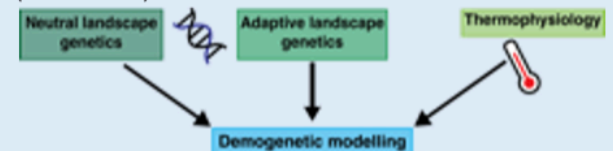
Identify landscape and climatic factors mediating gene flow across the landscape using genetic resistance modelling using *radish*³

3) Is there local adaptation to climate?

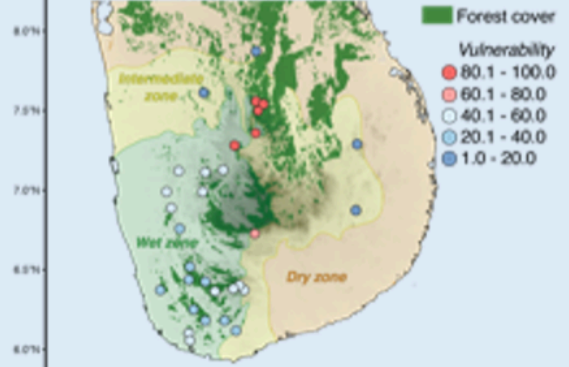
Evaluate population-level local adaptation to climatic variation across heterogeneous landscapes using Genotype-environment association analysis (Redundancy analysis)⁴.

4) How will populations respond to climate change and habitat fragmentation?

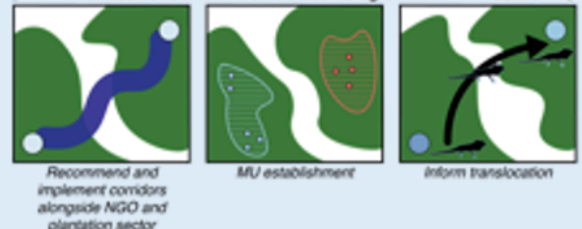
Use eco-evolutionary spatially explicit modelling to determine population persistence under future climate change (CDMetaPOP)⁵.



Possible population-level vulnerability assignment based on CDMetaPOP simulations



Intended conservation outcomes using CDMetaPOP results



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Literature cited: ¹R. B. Huey, et al. 2012. Phil Trans R Soc B: Biol Sci. 367, ²B. R. Forester, et al. 2022. Front Ecol Environ, ³W. E. Peterman and N. S. Pope 2020. Molec Ecol, ⁴T. Capblancq & B. R. Forester 2021. Methods in Ecol and Evol, ⁵E. L. Landguth et al. 2017. Methods in Ecol and Evol.