Discrete trait models

Correlation of traits

BIO508- Rosana Zenil-Ferguson

Correlating two discrete traits

Mark Pagel -1994

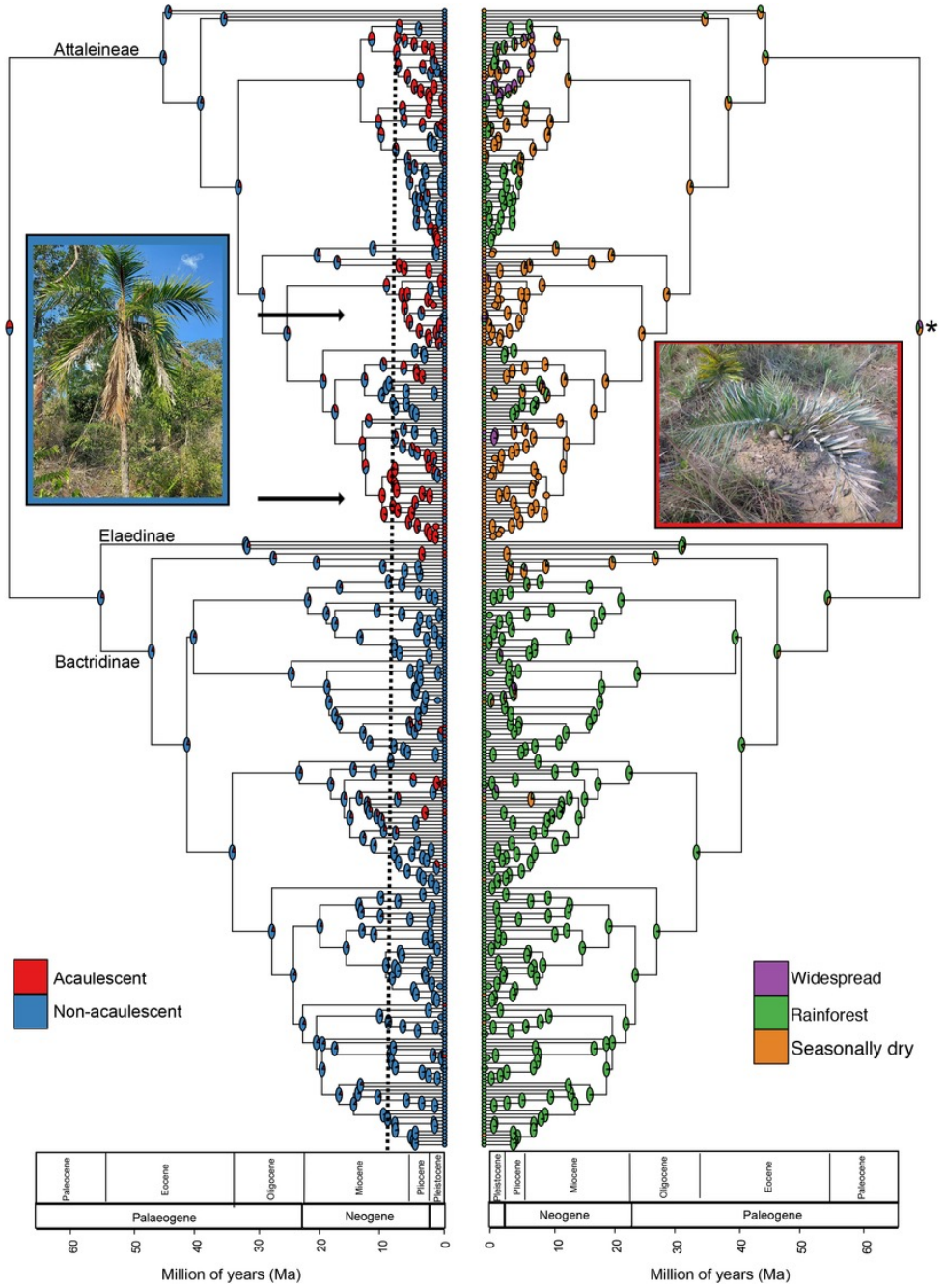
Two traits

Acaulescent: X_1

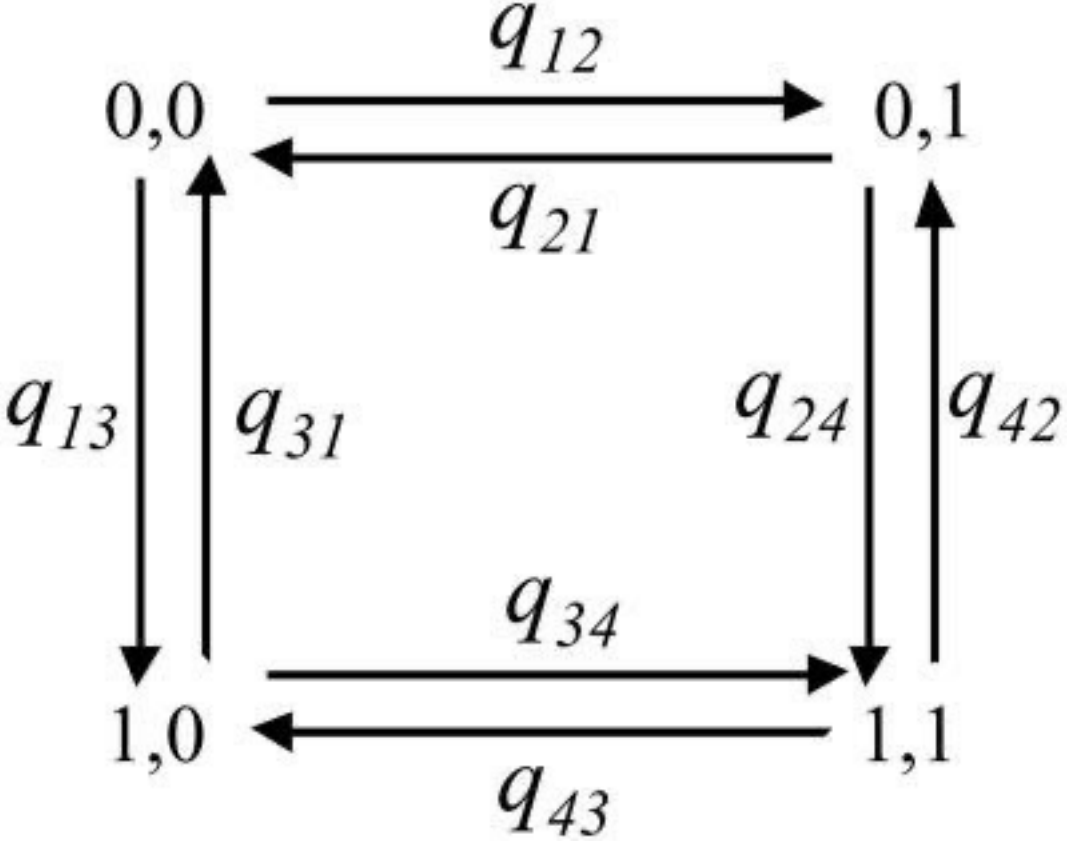
Water Availability: X_2

Acaulescent: No visible above-ground stem

Cassia Silva et al. Ecography. 2022



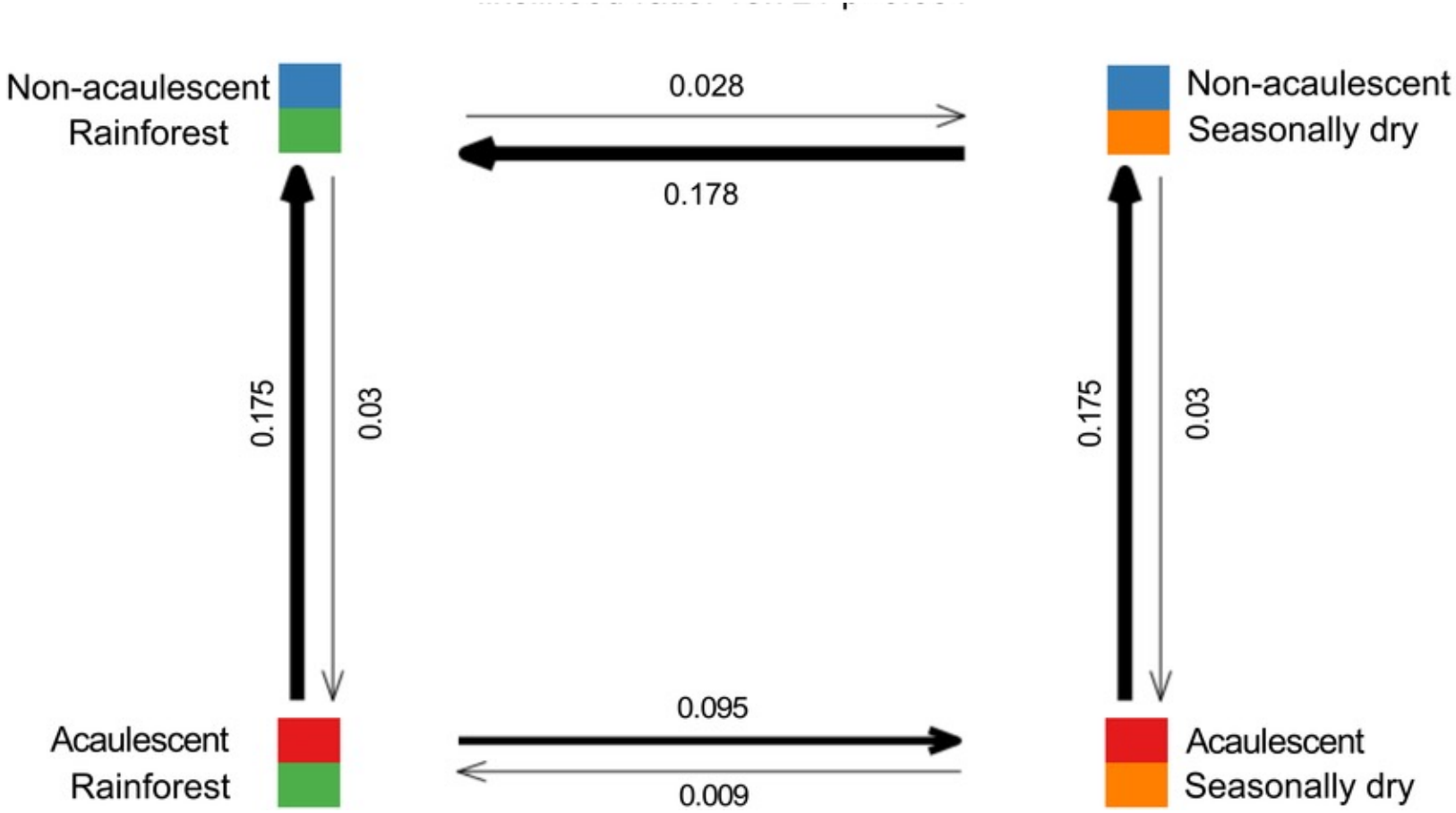
Correlated model



Uncorrelated model

Comparing nested models

- Likelihood Ratio Test
- Null hypothesis:
- Test statistic: $LRT = -2 \times \log(\frac{Likelihood\ (Uncorrelated\ model)}{Likelihood\ (Correlated\ model)})$
- $LTR \sim \chi^2$ with degrees of freedom k= #parameters full model-#parameters reduced model


Non-acaulescent
Rainforest
0.028
0.178
Non-acaulescent
Seasonally dry
0.175
0.03
0.175
0.03
Acaulescent
Rainforest
0.095
0.009
Acaulescent
Seasonally dry