EEB 5301 Homework 3

Samantha Apgar & Henry Frye

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Problem 1

Part a

Figure 1 shows that interspecifc competition dominates the interaction, the cotinga population will go extinct and the fruit dove population is safe.

The y-intercept of the purple dove line is defined by $\frac{k}{\alpha_{dc}}$ and the x-intercept of the orange cotinga line is defined by $\frac{k}{\alpha_{cd}}$. Since $k_c = k_d$, we assume k=1 for graphical simplicity.

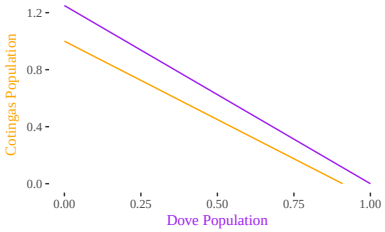

Figure 1: Fruit Dove and Spangled Cotingas Phase Diagram

Part b

In Figure 1, the conclusions based on the intercepts of the axes are constrained by the following be true: $\frac{k_c}{\alpha_{cd}} < k_d$ (x-axis) and $k_c < \frac{k_d}{\alpha_{dc}}$ (yaxis). If the carrying capacity of the Cotingas violates these constraints then the conclusions in Part a would change.