The model is made to detect the transition phase in mutualisms based on increasing costs. It is a simple, preliminary model where it relates costs and benefits to the maintenance of interactions in mutualistic networks.

The main assumption is that when the costs for species *i* overcome the benefits, we have a loss of this species from the network. Here, every species possesses a vector of costs and one of benefits . There are two different costs that are summed to obtain , the first one is the physiological cost , and the second one is the ecological cost . As I am investigating the effects on increased costs, I need a parameter to control the costs, which is . The next assumption is that the physiological costs are affected by some environmental change. For instance, the costs to produce nectar could increase as drier the environment due to the reduction in water supply. Therefore, is fixed for each species but affected by .On the other hand, every partner species *j* may increase the ecological costs of *i.* For example, the presence of ant species interacting with plants affects the main pollinators – bees – interaction patterns with these plants. Therefore, is summed by all the *j* partners interacting with *I* as follows:

, (1)

But, besides the ecological costs, every interaction partner *j*, may bring some benefits to species *i*. If the summed benefits provided by each *j* partner overcome the costs, the interactions are maintained. Therefore, the net benefit follows:

, (2)