

Probability of Choosing One of Two Branches

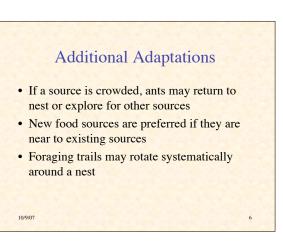
- Let $C_{\rm L}$ and $C_{\rm R}$ be units of pheromone deposited on left & right branches
- Let $P_{\rm L}$ and $P_{\rm R}$ be probabilities of choosing them

$$P_{\rm L} = \frac{\left(C_{\rm L} + 6\right)^2}{\left(C_{\rm L} + 6\right)^2 + \left(C_{\rm R} + 6\right)^2}$$

• Nonlinearity amplifies probability

10/9/07

• Then:



Pheromone Evaporation

- Trails can persist from several hours to several months
- Pheromone has mean lifetime of 30-60 min.
- But remains detectable for many times this
- Long persistence of pheromone prevents switching to shorter trail
- Artificial ant colony systems rely more heavily on evaporation

10/9/07

