

Problem Set 4

1. Consider the 2-player Hawk-Dove game. The benefit of the resource equals 4. The cost of aggression, incurred when two hawks interact, is 3. What is the frequency of hawk at the evolutionarily stable strategy?
2. Consider “fitness” in an aggregation economy. $W(G)$ is the fitness of each individual in a group of G members. We have:
$$W(1) = 1 \quad W(2) = 3 \quad W(3) = 2 \quad W(4) = 0.5 \quad W(5) = 0.1$$
What is the equilibrium group size under free entry when average relatedness = 0? What is the equilibrium group size under group-controlled entry when average relatedness = 0?
3. Briefly discriminate among the following: mutualism, non-kin cooperation with temptation to “cheat,” kin-directed altruism, reciprocal altruism.