

# Exercícios de Metapopulações

Capítulo 4 - Gotelli

## Questão 1

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- 4.1. You are studying a rare and beautiful species of ant lion (see cover). Populations of the ant lion live on a set of islands and on an adjacent mainland that serves as a permanent source of colonists. You can assume that the mainland is the only source of colonists and that extinctions on the islands are independent of one another.
- If  $p_i = 0.2$  and  $p_e = 0.4$ , calculate the fraction of islands occupied at equilibrium.
  - \*b. A developer is preparing to pave over the mainland area for a new condominium complex. To appease local environmental groups, the developer promises to set aside the islands as a permanent "ant lion nature reserve." Assuming that  $p_e = 0.4$  and  $i = 0.2$ , predict the fate of the island populations after the mainland population is eliminated.

## Questão 2

- 4.2. An endangered population of 100 frogs lives in a single pond. One proposal for conserving the frog population is to split it into three populations of 33 frogs, each in a separate pond. You know from your demographic studies that decreasing the frog population from 100 to 33 individuals will increase the yearly risk of extinction from 10% to 50%. In the short run, is it a better strategy to retain the single population or to split it into three?

## Questão 3

- \*4.3. Suppose a metapopulation has a propagule rain and a rescue effect. The parameters are  $p_i = 0.3$  and  $e = 0.5$ . Forty percent of the population sites are occupied. Is this metapopulation expanding or shrinking?