

## Section 20.2: Review Answers

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1. Interspecific competition is taking place. Reasons for success of the white spruce could include that they have tolerance for a wider variety of soils, are hardier in a greater variety of moisture conditions, and have more consistent reproduction. The lodgepole pine is an early colonizer; its seed cones only open at temperatures associated with forest fires.
2.
  - (a) A species often mimics the warning coloration of another species to deter predators. Mimicry is achieved by natural selection, as individuals with such colouring are more likely to survive predation to reproduce.
  - (b) If the mimic does not mimic the behaviour of its model, predators may realize that the mimic behaves differently and use this difference to distinguish between them.
  - (c) If the model species were eliminated, predators would eventually realize that the mimic species was not well defended (i.e., not poisonous, unpalatable, or

harmful). Predation would increase and the population of the mimic species would decrease.

3. Through natural selection, some individuals in a population have a competitive advantage over other members of their species; for example, some plants are able to grow longer roots to absorb more water. These individuals will be more likely to survive long enough to reproduce and pass on their competitive traits to their offspring. Similarly, members of an animal population may compete with one another for food or shelter. Again, the best-adapted competitors will be more likely to survive and reproduce.
4.
  - (a) parasitism
  - (b) commensalism
  - (c) mutualism
  - (d) mutualism
5. Succession is the sequence of invasion and replacement of species in an ecosystem over time. It is driven both by abiotic factors, such as climate, and by biotic factors, such as interspecific competition for changing available resources. Due to interspecific competition and the changing habitat, some populations are better able to survive and will replace those that are not. As the habitat changes, the species of plants and animals change, and community dynamics are in a continual state of flux. Eventually the replacement process ends, and a stable community of varied species develops. This community, known as a climax community, will remain relatively stable if there are no major environmental changes in the future.
6. Student answers should outline a general process of succession. Answers should highlight an initial colonization by annual herbs and grasses, as well as the introduction of various insect, rodent, and bird populations. Predators would soon be attracted to the site, and bushes, shrubs, and trees would become established. Students may mention that over time, shade tolerant species would eventually replace the initial tree population, but this would likely not occur within the time span of ten years. Students may also mention specific species they might see on the site that are local to the area or already present in the neighbourhood. For instance, a student may envision maple trees lining the street and mention this species as a colonizer.