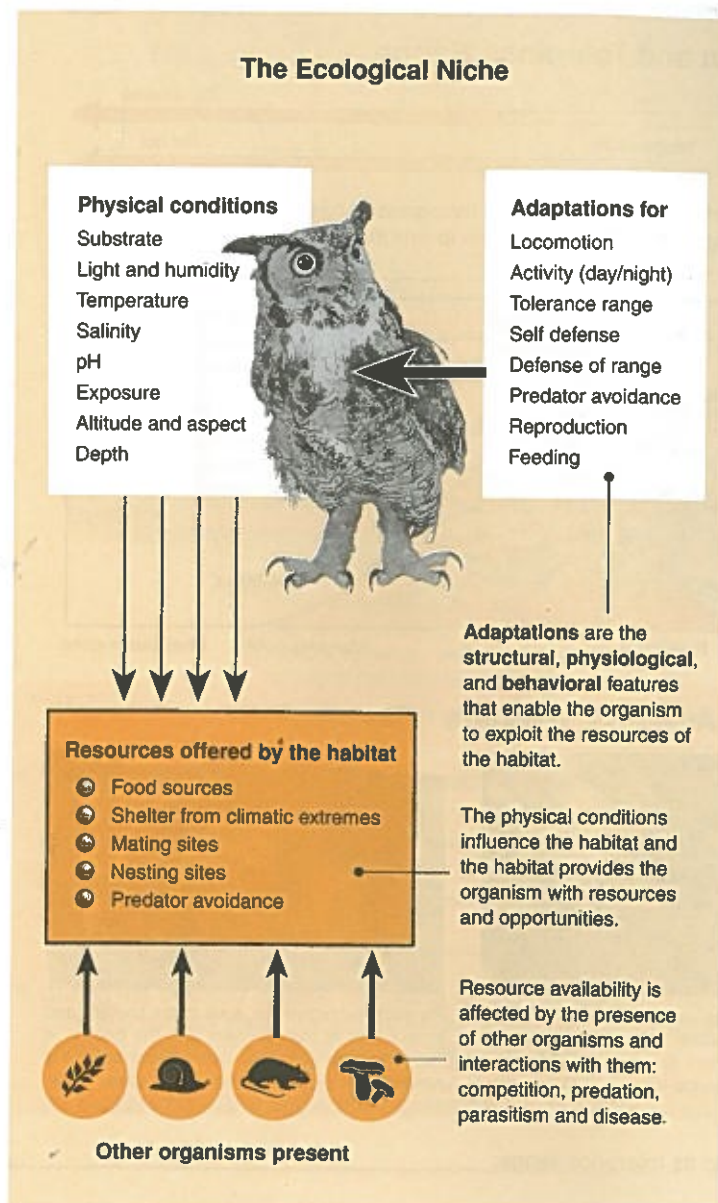


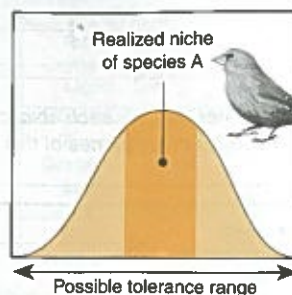
Ecological Niche

The **ecological niche** describes the functional position of a species in its ecosystem; how it responds to the distribution of resources and how it, in turn, alters those resources for other species. The full range of environmental conditions (biological and physical) under which an organism can exist describes its **fundamental niche**. As a result of direct and indirect interactions with other organisms, species are usually forced to occupy a niche that is narrower than this and to which they are best

adapted. This is termed the **realized niche**. From the concept of the niche arose the idea that two species with the same niche requirements could not coexist, because they would compete for the same resources, and one would exclude the other. This is known as **Gause's competitive exclusion principle**. If two species compete for some of the same resources (e.g. food items of a particular size), their resource use curves will overlap (below, right). Within the zone of overlap, competition will be intense.

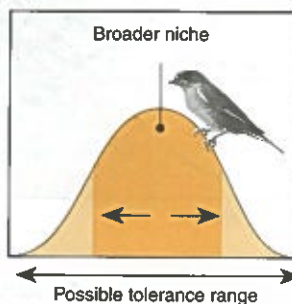


Competition and Niche Size



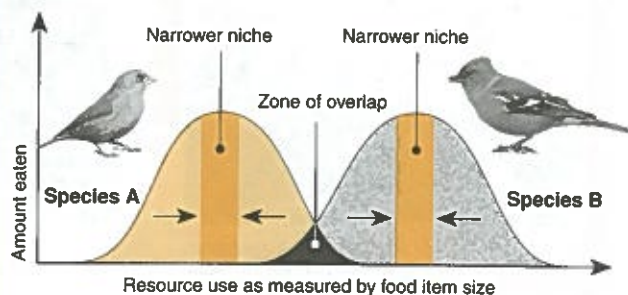
The realized niche

The tolerance range represents the potential (fundamental) niche a species could exploit. The actual or realized niche of a species is narrower than this because of competition with other species.



Intraspecific competition

Competition is strongest between individuals of the same species, because their resource needs exactly overlap. When intraspecific competition is intense, individuals are forced to exploit resources in the extremes of their tolerance range. This leads to expansion of the realized niche.



Interspecific competition

If two (or more) species compete for some of the same resources, their resource use curves will overlap. Within the zone of overlap, resource competition will be intense and selection will favor niche specialization so that one or both species occupy a narrower niche.

1. (a) Explain in what way the realized niche could be regarded as flexible: _____

(b) Describe factors that might constrain the extent of the realized niche: _____

2. Explain the contrasting effects of interspecific competition and intraspecific competition on niche breadth:
