

7.6

Competition

Intraspecific and interspecific competition

When resources in an ecosystem are scarce, there is **competition** between organisms for that resource. As the rate of competition in an ecosystem increases, the rate of reproduction decreases (as there are fewer resources to be shared amongst the individuals) and the death rate increases (as the organisms have fewer materials to survive on).

Intraspecific competition

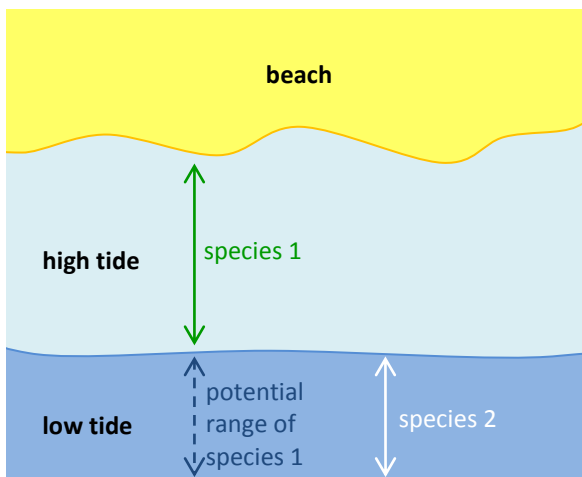
Intraspecific competition is within members of the same species. This tends to be less common than competition between members of different species, and so intraspecific competition mostly occurs when there is either a low level of resources or a very high population of that species. When resources are abundant in the ecosystem, or when the community is small, there is very little need for members of the same species to compete with each other.

An example of intraspecific competition might be found in lions. In a pack of lions, the dominant male will have the main feed from a fresh kill, and the others will then compete for it once the dominant male has finished. By this method of competition, the strongest (fittest) members of the species will succeed, getting more of the resource and having a larger chance of survival.

Interspecific competition

Interspecific competition is between members of different species, which happens on a much wider scale. This can affect both the population size of a species, and also the distribution of its members within an ecosystem. If two species compete for the same resources in the same way (i.e. under very restricted conditions), then usually one will be more effective than the other, and so the weaker species will be **excluded**.

However, species can avoid interspecific competition by means of **niche specialisation**, either by using different resources to overcome competition, or to begin using resources in different ways. For example, a species may not necessarily change the entire type of plant normally eaten, but perhaps just changing the time of day they go to feed on the plants.



Competition between different species is common when the factor in question is space. This is common particularly when **sessile** (non-mobile) organisms are involved. The diagram to the left shows a beach shore. We can use the example of barnacles to show interspecific competition.

For example, say *species 1* (*S1*) was one species of barnacle, existing only at *high tide* and is covered for a part of the day by the high tide; and *species 2* (*S2*) was another species which lives only at low tide. When *S2* is removed, the other species, *S1* thrives both at high tide and low tide, so why when *S2* is present does *S1* only exist at high tide? We can decipher from this that *S1* is able to survive in the whole range, as it can resist **desiccation** (drying out when the high tide goes down), however, it does not outcompete *S2* at low tide.

We can also tell that *S2* is quick to colonise and so competes well for space at the low water mark, where it is constantly wet and so does not suffer desiccation, and so survive there but do not outcompete *S1* at high tide regions because that barnacle simply cannot survive there, allowing *S1* to thrive.