

## BIOTIC FACTORS

Biotic factors are all the actions that living organisms exert directly on each other. These interactions, known as coactions, are of two types:

**Homotypic or intraspecific**, when they occur between individuals of the same species.

**Heterotypic or interspecific**, when they occur between individuals of different species.

### 2.1. Neutralism:

Neutralism occurs when the two species are independent: they live together without having any influence on each other.

### 2.2. Interspecific competition:

Interspecific competition can be defined as the active search by members of two or more species for the same environmental resource (food, shelter, egg-laying site, etc.).

In interspecific competition, each species has an adverse effect on the other. The closer two species are to each other, the greater the competition.

However, two species with exactly the same needs cannot coexist, as one of them is bound to be eliminated after a certain time. This is the Gause principle or the principle of competitive exclusion.

### 2.3. Predation:

A predator is any free organism that feeds at the expense of another. It kills its prey in order to eat it. Predators can be polyphagous (preying on a large number of species), oligophagous (feeding on a few species) or monophagous (subsisting on a single species).

### 2.4. Parasitism:

A parasite is an organism that does not lead a free life: at least at one stage in its development, it is attached to the surface (ectoparasite) or inside (endoparasite) of its host.

Parasitism can be considered a special case of predation. However, the parasite is not really a predator because its aim is not to kill the host. The parasite must adapt to meet the host and survive at the host's expense. The host must adapt so as not to encounter the parasite and to get rid of it if it does. Like predators, parasites can be polyphagous, oligophagous or monophagous.

### 2.5. Commensalism:

Interaction between a commensal species, which benefits from the association, and a host species, which neither benefits nor harms. The two species interact in a mutually tolerant manner.

Example: Animals that take up residence and are tolerated in the homes of other species.

## **2.6. Mutualism:**

This is an interaction in which both partners find an advantage, which may be protection against enemies, dispersal, pollination, provision of nutrients, etc.

**Example:** Tree seeds need to be dispersed far and wide to survive and germinate. This dispersal is carried out by birds, monkeys, etc., which benefit from the tree (food, shelter, etc.).

The obligatory and essential association between two species is a form of mutualism, known as symbiosis. In this association, each species can only survive, grow and develop in the presence of the other.

**Example:** Lichens are formed by the association of an alga and a fungus.

## **2.7. Amensalism:**

This is an interaction in which one species is eliminated by another species that secretes a toxic substance.

In plant interactions, amensalism is often called allelopathy.

**Example:** The Walnut tree releases a volatile toxic substance through its roots, which explains the poverty of the vegetation under this tree.