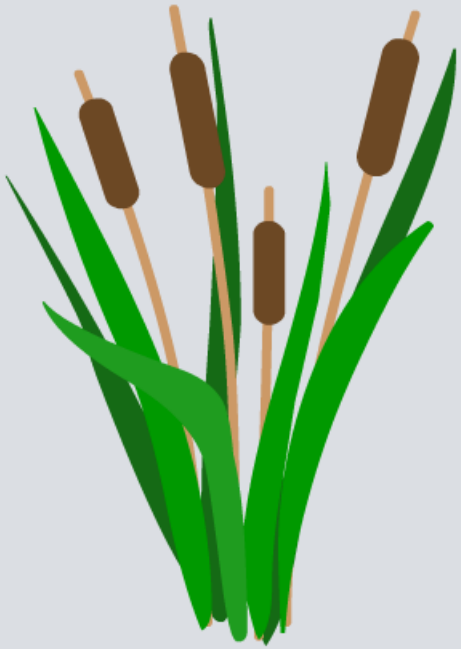
Ecosystems and Succession



Ecosystems

An **ecosystem** consists of all the living organisms in a given area, along with the **abiotic factors** that influence them.

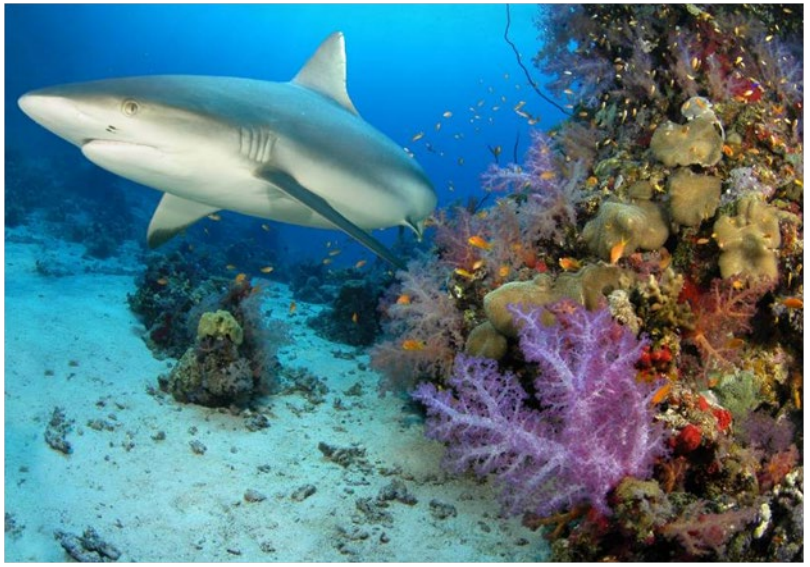
Ecosystems are dynamic, continually changing as the organisms within them interact with one another and the ever changing environment.

Energy and nutrients generally flow between organisms within the same ecosystem, and little is lost to the outside.

Biotic and abiotic factors

An ecosystem is formed of **biotic** and **abiotic** components.

Biological organisms are part of their ecosystem's biotic component. The organisms within an ecosystem all affect one another, acting as either an energy source, or a competitor.



The abiotic component is the non-biological part of an ecosystem. This includes the climate, light level and rainfall.

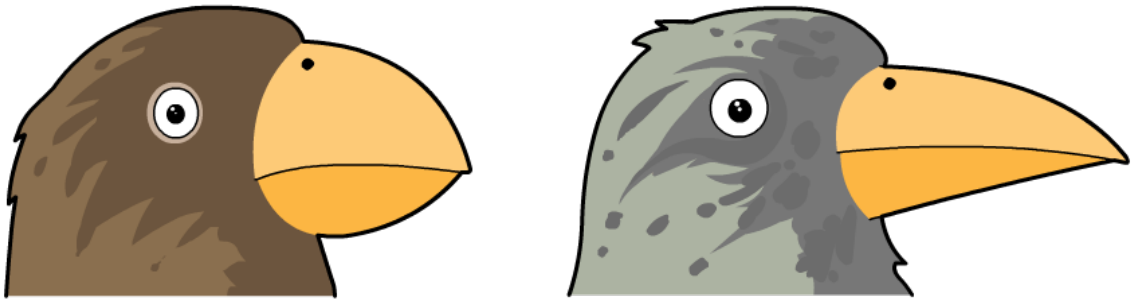
Some abiotic factors, such as the soil, can be altered by the presence of organisms.

Niches

All organisms occupy a specific **niche** within an ecosystem. A niche is often described as an organism's role within its ecosystem. It encompasses its food source, habitat, physiology and behavior.

Natural selection ensures that organisms are adapted to a specific niche.

How are these two finches adapted for different niches?



Overlap between the niches of two species in the same ecosystem results in **interspecific** competition.

Describing niches

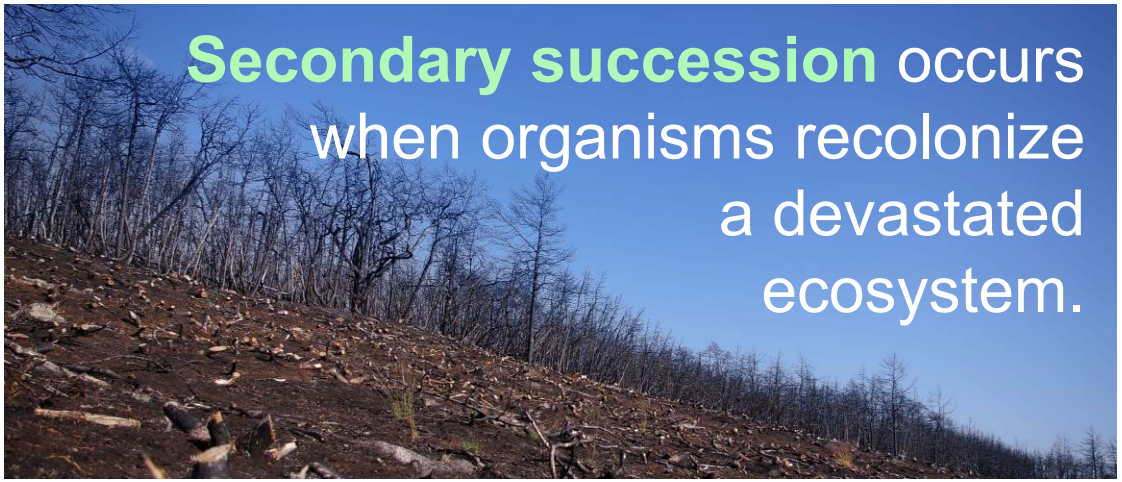
Succession

Succession is the gradual change in a community over time.

During succession the organisms within an ecosystem change its abiotic conditions.

This allows better adapted organisms to colonize the area, replacing its current inhabitants.

Primary succession occurs when organisms colonize a lifeless habitat.



Sand dune succession

Species adaptations during succession

Succession on a rocky surface

Conservation of habitats

Each seral stage of succession has distinct biotic and abiotic characteristics. It may be necessary to halt the process of succession, preventing the climax community from forming, in order to conserve unique species.

Unlike other plants, grass leaves have their meristems at their base, allowing them to continue growing even when cut. Thus grasslands can be maintained by mowing or grazing.

This can help to conserve some rare wildflower populations which are endemic to grassland ecosystems.

From pioneer to climax community