

Sexual reproduction of plants

Pollination is the process by which pollen is transferred from the anthers (male part) of a flower to the stigma (female part) of the same or another flower, mainly of the same species.

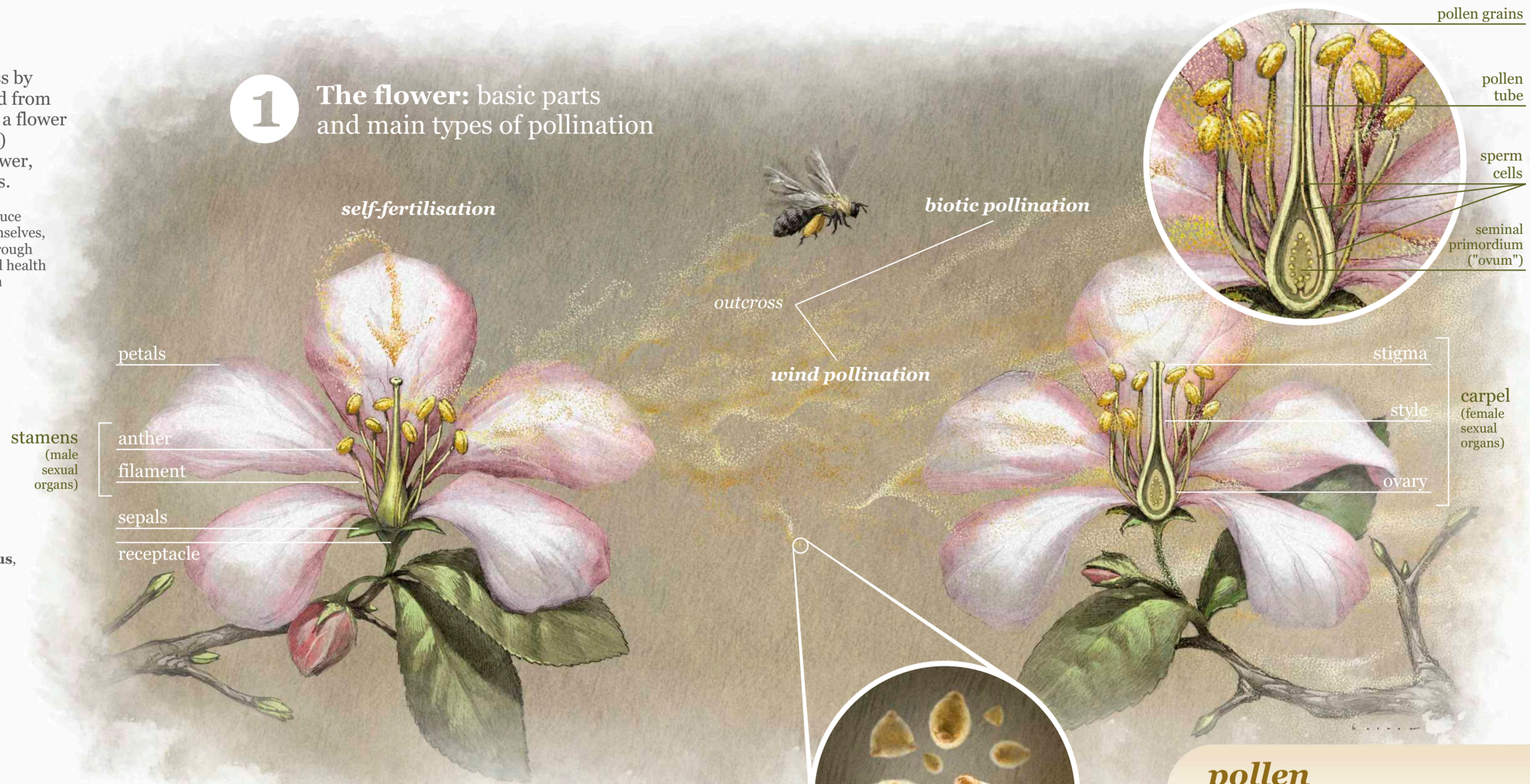
Although most plants can reproduce asexually, creating clones of themselves, the genetic exchange attained through **outcrossing** is vital for the good health of the population in the short run and for the evolution of species in the long term.

There are three vectors or agents responsible for carrying pollen from flower to flower: **wind, water** and **animals** (the later being called **biotic pollination**).

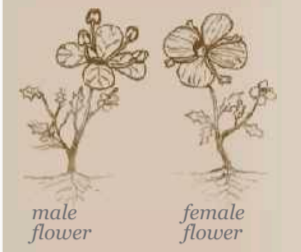
Many plants are **anemophilous**, i.e., they are wind pollinated; some examples are oak, beech, birch, grass or most of conifers (such as pine, fir and cypress).

Self-fertilisation is not the most common alternative and plants use different strategies to avoid it. Often there are cases of self-incompatibility, i.e., the surface of the stigma does not recognise the chemical signals of the pollen grain, preventing the growth of the pollen tube that carries the male gamete to the ovum for its fertilisation.

1 The flower: basic parts and main types of pollination



it is said that a plant species is ...



DIOECIOUS (separated sexes), when there are individuals with male flowers and individuals with female flowers. Example: Holly.



MONOECIOUS, when male and female flowers are separated but coexist within the same plant. Example: Hazel.



HERMAPHRODITE, when stamens and carpels are found within the same flower, which is the case of approximately 80% of the flowering plants.

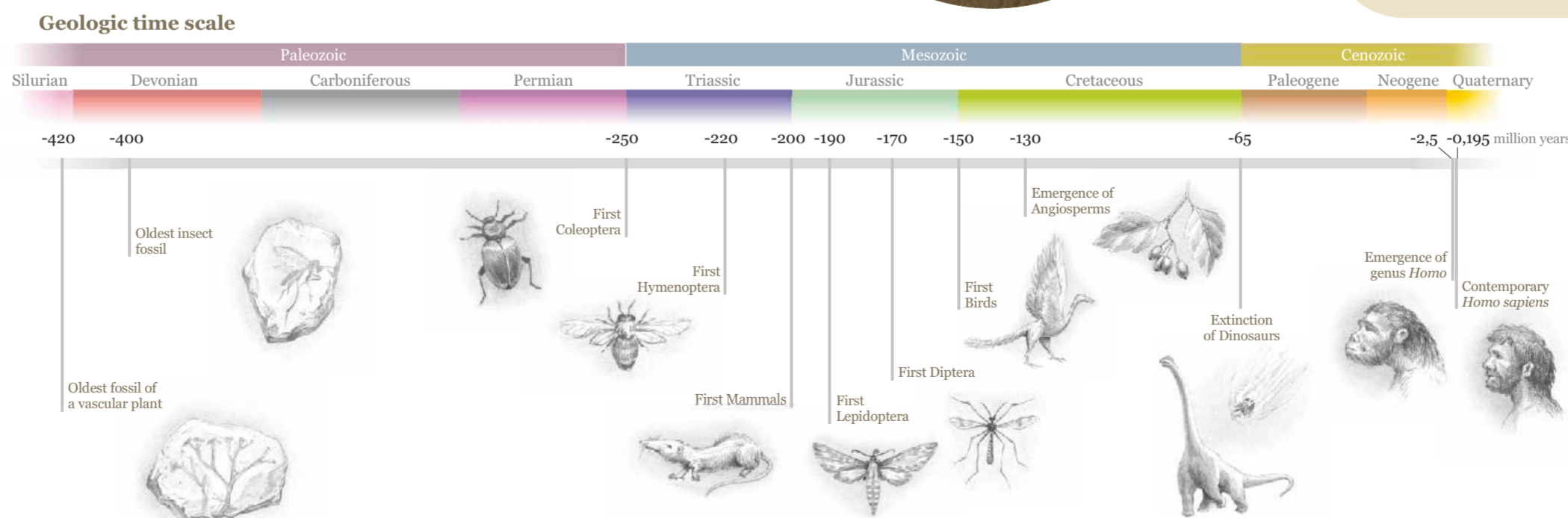
pollen

Pollen grains are a very perfect natural structures. Most of us are only conscious of their existence when they stain our clothes or cause allergic reactions, but they are extremely-well-prepared containers to transport the male sexual cells of **phanerogams** or **spermatophytes** (that is how botanists call plants with flowers and seeds).

2 Biotic pollination

Insects are by far the largest group, although some **reptiles, birds** and even **mammals** (such as bats and lemurs) may also undertake this important task.

Plants and pollinators have been evolving together for millions of years and probably make the finest example of **mutualism** that can be observed in nature (two species have a mutualistic relationship when both are benefited from that interaction); usually pollinators get a reward from plants, either as food (mainly nectar and pollen), as fragrances that they use later in their courtship or just as protection for their descendants, helping the perpetuation of plants in return.



Angiosperms (flowering plants whose seeds are protected inside a fruit) are by far the largest group of contemporary vascular plants; they are also the plant species that rely more heavily on animal pollination; in fact it is thought that these interactions among plants and insects were, at least in part, responsible for the great diversification of both groups.

🕒 *If it were possible to compress all Earth history in one hour, the flowering plants would have only existed in the last minute and a half, whereas humans beings, current dwellers of almost every corner of the planet, would have been born in the last second!*