

SHORT HISTORY OF THE TIMELESS DOMINANCE OF PLANTS ON EARTH



Elena Gogna

Biologist and populariser

The organisms that we must thank for the existence of almost all living things we encounter, including ourselves, are plants. When they developed on dry land, at a time when the earth's continent looked very different, they changed the entire structure of the planet, transforming the atmosphere from predominantly methane to predominantly oxygen. Most terrestrial creatures today are aerobic, living on oxygen. So, without their 'conquest of the land', everything would be very different today.

The first plants to arrive were mosses, approximately 450 million years ago. They were preceded only by lichens, which are not plants, but paved the way for plants because with their small roots they began to break up the volcanic rocks that the earth was made of, forming the first real soil. From moss then came the plants as we know them today, thanks to the evolution of a crucial component, lignin, which meant that plants could be more solid and grow upwards. Since then, millions of plant species have evolved, some of which we still see today, for example ferns or ginkgo biloba.

The animal world on Earth split from the plant world around 350 million years ago. These two branches of life have opted for opposite strategies. Distributed power on the one hand, centralised power on

the other. Let me explain: an animal has several vital functions concentrated in different organs, headed by one in particular that governs, actively or passively, the others; a plant, on the other hand, has its vital functions distributed throughout the entire organism and there is no real coordinating centre. This is because plants have sacrificed the ability to move, favouring greater resilience in a confined, unchanged area. That said, nothing prevented them from evolving so that, despite their immobility, their offspring could still come to life miles away.

So many interesting evolutionary choices for plants, all seemingly unfavourable when compared to our lives as walkers and communicators. But are we sure?

Today there are as many as 390,000 plant species in the world, specifically an estimated three trillion, which means 3,040,000,000 trees alone. They do not run away from danger with their legs, but defend themselves chemically, they do not rely on the availability of prey, but on natural, hopefully 'evergreen' elements such as sun, water, and earth. They do not have a mouth or vocal cords to communicate, but they do have a vast underground network through which they exchange substances and messages, communicating dangers and criticalities.

In the 1980s, the Chernobyl nuclear power plant collapsed, becoming a radioactive and unlivable place for all life for miles around. Guess who first returned to populate those areas? Plants.

In a context where global warming and pollution are endangering living species and the mass extinction of life on Earth is a possibility that is not only plausible, but also imminent, plants are perhaps the only hope that life forms will adapt to the new, hot and extreme terrestrial setting. Plants will ensure that life does not end with climate change.