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of the European Union



The Functions of Ecosystems

Good morning everyone, I am Nicola Palmieri from the association Il Pianeta Naturale, partner of the European WAVE project, approved by the Erasmus+ KA 210 program. Today we will explore together the extraordinary functions of natural ecosystems and discover how these complex systems work to maintain the balance of our planet.



How Does a Mature Ecosystem Really Work?

A Self-Sufficient System

A mature ecosystem is a system that sustains itself autonomously: all its inhabitants have a home, a space to live, and all the necessary food to reproduce. This extraordinary balance does not arise by chance, but is achieved through a long and continuous evolutionary process, from the initial phases, up to the final or climax phase.





The Ecosystem at Work

Each phase prepares the ground for the next: pioneer plants enrich the soil, allowing more complex species to settle.

This process continues until the stable climax phase, in which the benefits for all communities involved

– from plants to insects, from mammals to birds – become enormous and the entire system reaches maximum efficiency.

The "Superpowers" of Ecosystems

Mature ecosystems possess extraordinary capabilities that positively influence the entire planet. These natural "superpowers" are the result of millions of years of evolution and represent essential services for life on Earth.



Climate Regulation

They regulate local and global climate, reducing daily temperature fluctuations and stabilizing seasonal temperatures.



Extreme Resilience

They withstand extreme weather events and regulate precipitation, distributing water in a balanced way.





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Water Management

They preserve aquifers through deep infiltration and natural water purification.



Natural Protection

They mitigate winds and reduce the impacts of floods. Mangrove forests control the impetuous force of the sea.

Ecological Services and Resilience

Vital Cycles

They keep the water and nutrient cycles active, ensuring the continuous circulation of essential elements for life.

Purification

They purify the air by absorbing pollutants and producing oxygen through plant photosynthesis.



Ecological Services and Resilience - Regeneration and Protection

Ecosystems

regenerate soil fertility, keep water and nutrient cycles active, purify the air, and preserve gene flow as a DNA resource that continuously fuels the evolution and adaptation of species.

Ecosystems

Protect **biodiversity**, both among different species and within individual species, giving ecosystems the **resilience** that makes them durable and stable in the long term.



Nature and Cities: A Possible Future

How can we bring back and defend nature in our cities?

The challenge of the future is to integrate the principles of natural ecosystems into the urban environment. In our cities, we should strive to create small, stable ecosystems, interconnected by ecological corridors that allow species to move, reproduce, and maintain genetic diversity.



Quality of Life

We enhance the beauty and pleasure of living in more natural environments, creating more livable cities for future generations

Permeable Soils

It is essential to implement spaces with soils free from concrete and asphalt, allowing water infiltration and subsurface life



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Health and Well-being

Urban green spaces improve the physical and mental health of citizens, reducing stress and air pollution

Environmental Sustainability

Nature in the city promotes sustainability, reducing temperatures, managing rainwater, and cutting emissions



Investing in the Urban Future

Investing in urban nature means investing in our future: every tree planted, every ecological corridor created, every square meter of land freed from concrete represents a step towards more resilient, sustainable, and pleasant cities to live in. The WAVE project is committed precisely to this direction, promoting knowledge and conservation of ecosystems.