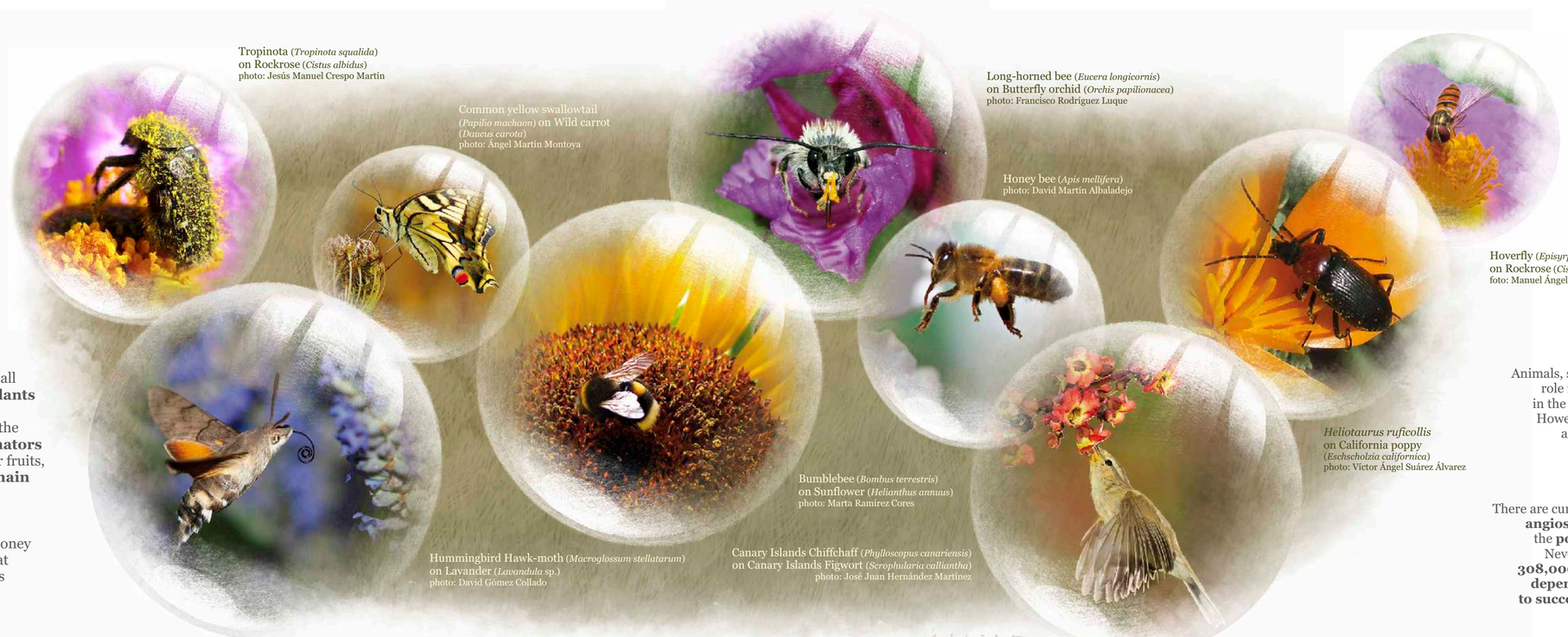
Pollination and biodiversity

Genes, **populations**, **species** and **ecosystems**; the combination of these elements (each one of them being included within the next, as Russian dolls) constitute what is commonly known as **biodiversity**, the diversity of life forms that populate the Earth.



Tropinota (*Tropinota squalida*) on Rockrose (*Cistus albidus*)
photo: Jesús Manuel Crespo Martín

Common yellow swallowtail (*Papilio machaon*) on Wild carrot (*Daucus carota*)
photo: Ángel Martín Montoya

Long-horned bee (*Eucera longicornis*) on Butterfly orchid (*Orchis papilionacea*)
photo: Francisco Rodríguez Luque

Honey bee (*Apis mellifera*)
photo: David Martín Albaladejo

Hoverfly (*Episyrphus balteatus*) on Rockrose (*Cistus albidus*)
foto: Manuel Ángel Rosado

Heliotaurus ruficollis on California poppy (*Eschscholzia californica*)
photo: Víctor Ángel Suárez Álvarez

Bumblebee (*Bombus terrestris*) on Sunflower (*Helianthus annuus*)
photo: Marta Ramírez Cores

Hummingbird Hawk-moth (*Macroglossum stellatarum*) on Lavander (*Lavandula* sp.)
photo: David Gómez Collado

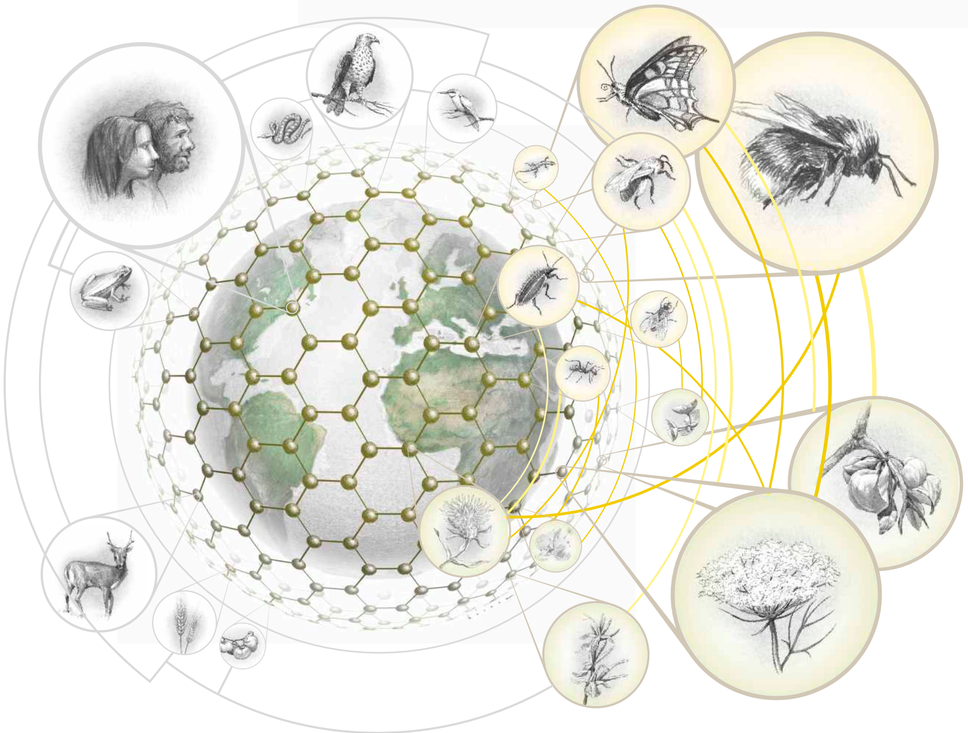
Canary Islands Chiffchaff (*Phylloscopus canariensis*) on Canary Islands Figwort (*Scrophularia calliantha*)
photo: José Juan Hernández Martínez

No species lives isolated in nature; we are all related through a **complex network**, where **plants** and **pollinators** play a key role in both the **functioning** of **terrestrial ecosystems** and the conservation of **biodiversity**. **Without pollinators** many flowering plants do not produce seeds nor fruits, many animals have no food and **the trophic chain is broken**.

As the hexagonal geometry makes it easier for honey bees to optimally use the space, or provides great stability to certain chemical compounds, so does **biodiversity** confer functional **stability to ecosystems**; therein lies the **resilience of ecosystems** after a **perturbation**, being it natural or man made.

Animals, specially insects, play an important role in plant reproduction as they assist in the pollination of many plants species. However, if a nature manager would ask a scientist "**how flowering plants are pollinated by animals?**", a honest scientist would accept "**we do not know**".

There are currently about **352,000 described angiosperm** species and we do not know the **pollination** details of most of them. Nevertheless, it is estimated that about **308,000** (87.5%) of these flowering plants **depend** to a certain extent, **on animals to successfully carry out this process.**



pollination and agriculture

In 2012 we are already **7 billion human beings** living on planet Earth, this population is expected to reach 9.3 billion people by 2050. But... **who will pollinate all the crops that will be necessary to meet the needs of so many people?**

Not all cultivated plant species depend on pollinators for their production. Many **cereals** are wind pollinated; other crops, such as **potatoes**, depend on the vegetative growth of their tubers and, in some cases, as **bananas** and **figs**, pollination is not even necessary.

However, **most cultivated plant species show an increase in seed and fruit production when pollinator animals are present.**

Fruit trees (almond, peach tree, cherry tree, plum, apple tree, pear, etc), **forage legumes** (such as alfalfa or clover), **Cucurbitaceae** (melons, cucumber, pumpkins, courgette, etc), plants for **oil extraction** (such as rape and sunflower) or **textile fibres** (such as linen and cotton) are some examples of plants that could struggle from the lack of pollinators.

The fruit set and fruit quality significantly improve in the presence of **suitable pollinators**, thus it would be wrong to quantify the **benefits** that pollinators pose to crops in absolute terms of production.

APOLO observatory of pollination agents

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