

'The Crystal Butterfly'

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One of the most exquisite creatures on our planet, which is found only in the rainforests between Mexico and Panama and belongs to the species Lepidoptera, is semi-transparent.

Perched on a blossom bathed in sunlight, the butterfly Greta oto may easily be overlooked by the human eye.

The wings of this delicate insect, whose wingspan ranges from 5.6 to 6.1 cm, are completely diaphanous, with the exception of their "border". It is usually dark in colour and sometimes lightens to a deep orange.

If we observe Greta oto closely, we will certainly notice that the tissue between the veins of its wings is translucent. In most other butterflies, the wings have coloured scales that determine their

pattern – often intended to repel predators. The glasswing butterfly uses a completely different method – over the course of millennia its wings have served as protection against predators.

How do the wings of the crystal butterfly become transparent?

In order for the tissue of an organism to be transparent, it must absorb light rather than scatter it. For example, humans cannot be transparent because they contain chemical and biochemical compounds with different refraction (bending of light). The surface of the wings of *Greta oto* is covered with numerous miniature nanostructures that have the same refractive index. Thus, together with the low absorption and scattering of the light passing through the wing, its transparency is ensured.

The butterfly feeds on the nectar of the diverse flowers of the rainforest, but when the time comes to lay its eggs and seek security for future generations, the butterflies demonstrate an ingenious adaptation. They lay their eggs on a plant of the genus ***Cestrum***. It belongs to the nightshade family and is highly poisonous.

The most common English name of *Greta oto* is “glasswinged butterfly”, in Spanish it is called the crystal butterfly “mariposa de cristal”, and in German it bears the mystical name „Waldgeist“, which fully corresponds to its ethereal nature.