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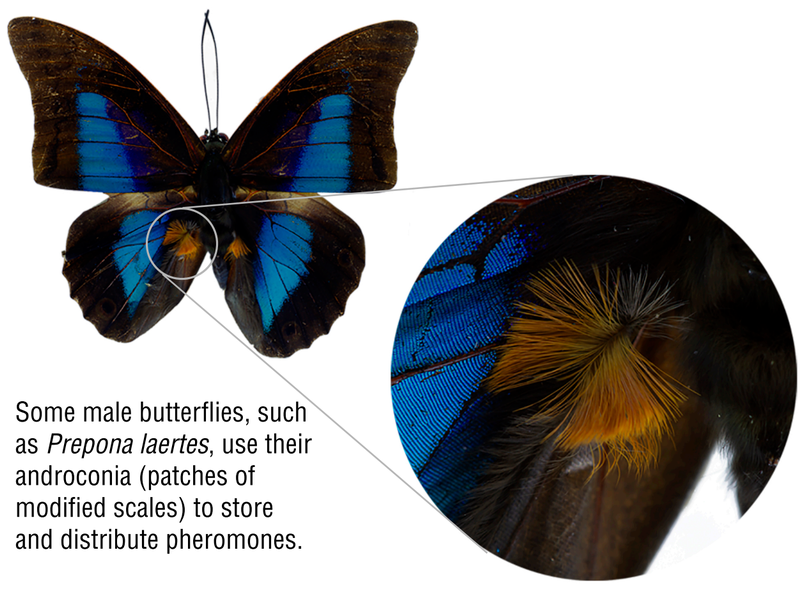
Choosing a mate

Just like in humans, choosing a partner is one of the most important decisions in a butterfly's life. Are they a good match? Will they provide for your offspring? And most importantly are they the right species! Butterflies base these decisions on different factors: What do they look like? What do they smell like? Are they from my neighbourhood? The complicated process of choosing a mate has led to some of the most amazing traits and behaviours in the natural world.

Mating *Heliconius erato*

Mate recognition. Some species, like *Heliconius,* use their bright colors to warn predators that they do not taste nice, and to attract mates. For example, males with a white band on their forewings prefer females with the same colour pattern; and males that have a red band on their forewing prefer females that have the same red pattern.



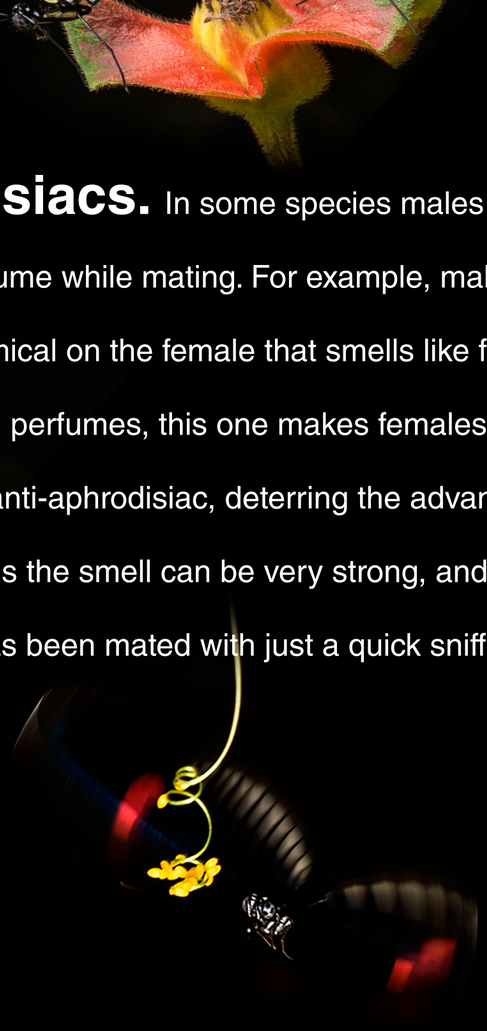
Some male butterflies, such as *Prepona laertes*, use their androconia (patches of modified scales) to store and distribute pheromones.

Attracting scents. Butterflies and moths often use special perfumes, called pheromones, to recognize potential mates. In moths, the smell of these perfumes can attract females from hundreds of metres away. In addition to color, many butterflies also use smell to choose the right partner but typically over much shorter distances.

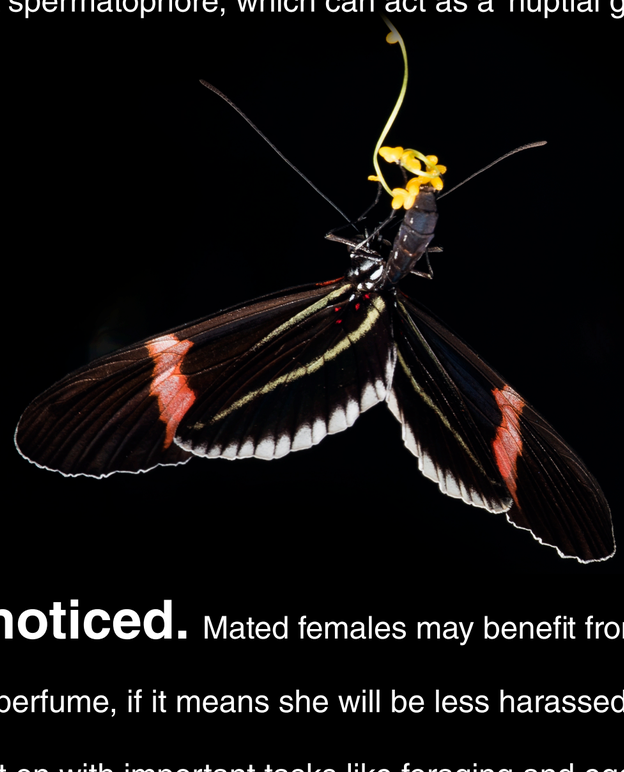
Pupal mating. Because unmated females are often rare, males often have to compete in order to mate. This competition for mates can be very strong. In some species of *Heliconius*, males will even mate with females as they emerge from their pupal case!

Heliconius hecale pupa.

Anti-aphrodisiacs. In some species males also give females the gift of perfume while mating. For example, male *Heliconius* butterflies leave a chemical on the female that smells like fried rice to humans. Unlike normal perfumes, this one makes females less attractive! The odour acts as an anti-aphrodisiac, deterring the advances of other males. Even for humans the smell can be very strong, and it's easy to tell if a *Heliconius* female has been mated with just a quick sniff.



Nuptial gifts. In many animals, fathers provide very little for their offspring. In contrast to the female's egg, which is large and packed with nutrients, sperm cells are little more than a package of DNA. In butterflies however, things are different. In addition to DNA, the male sperm is delivered with a large package of nutrients, called a spermatophore, which can act as a 'nuptial gift' for the female.



Being unnoticed. Mated females may benefit from this 'anti-aphrodisiac' perfume, if it means she will be less harassed by other males – allowing her to get on with important tasks like foraging and egg laying. In other butterflies, females sometimes look like males, probably to reduce unwanted harassment.

Mariposters a series of posters exploring knowledge on butterfly research. Poster # 12: Choosing a mate. Text by Richard Merrill. Design and photography by Sebastián Mena. Photos in third pannel by Luca Livraghi. Translations by: Chi-Yun Kuo (Chinese), Steven Van Belleghem (Dutch), Alexander E. Hausmann (German), Shinichi Nakahara (Japanese), Denise Dalbosco Dell'Aglio (Portuguese), Sebastián Mena (Spanish), Antoine Couto (French), Mateo Rossi (Italian). This poster may be downloaded at www.mariposters.si.edu