

The smelly lives of butterflies

Human beings focus on things we can see, but many insects use smell to navigate the world. Unlike humans, in butterflies the receptors that detect important chemicals are found in the antennae, mandible, and even their feet! A rich array of receptors are used to smell and taste their environment. With these tools they can use chemical information to choose host plants and mates.

Finding a host plant

Many butterflies are very choosy about where to lay their eggs. For example, female *Heliconius* only lay eggs on *Passiflora* plants. They carefully inspect potential egg-laying sites visually and then by drumming their legs on the plant. Special sensory organs on their forelegs allow them to taste the plant to check for suitability.

Choosing a mate

Butterflies can use smell to assess mates during courtship displays. Information including sex, age and mating status are conveyed chemically. Receptors on the butterfly's antennae can detect the chemical compounds of other individuals and transmit signals to the brain for further processing.

Perfumes. Male butterflies produce an attractant that is stored in glands on their wings. During courtship, the male will hover above the female and flutter his wings to release the pheromone onto the female antennae. Females will not mate with males that do not produce perfume.



Repellants. Male butterflies also produce repellent compounds which they store in their genital region. These can be used to mark out and defend territories or to cover females they have mated with with anti-aphrodisiacs, making them unattractive to other males.