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Nature, this week carries a report on the blister beetle, which lures the solitary Mojave bee to help its eggs reach a safe and well-provided place

The rose by another name…..

Smell is one of nature's strongest signaling media, says S.Ananthanarayanan.

The olfactory or smelling apparatus of most species is highly developed and sensitive to odours caused by just a small fraction of special molecules in a million molecules or air. Organisms routinely make use of the faculty to move away from danger, or to move towards food.

Mating signal

But the most sensitive use of smell in the natural world seems to be as a mating signal. The females of most species indicate their presence or their readiness to mate with the help of chemicals called pheromones. And so strong is the signal that certain butterflies and moths can detect a mate 10 km away, simply by a whiff of air that smells right!

Animals, in fact, use pheromones for a large number of purposes – to mark territory, to mark a trail leading to food, to signal attack or danger. Some grasses even exude an odor when they are grazed upon, to induce the rest of the prairie to produce tannin, and become less appetizing!

And flowers, of course, have their exquisite perfumes, with the sole purpose of advertising their nectar, or their cozy interiors, for butterflies, bees and many others to come and feast or repose. And thesole purpose is to make use of the insects to transfer pollen from flower to flower and bring fertility to the field. Many orchids also get pollinated by mimicking the smell of female insects, to attract unsuspecting males.

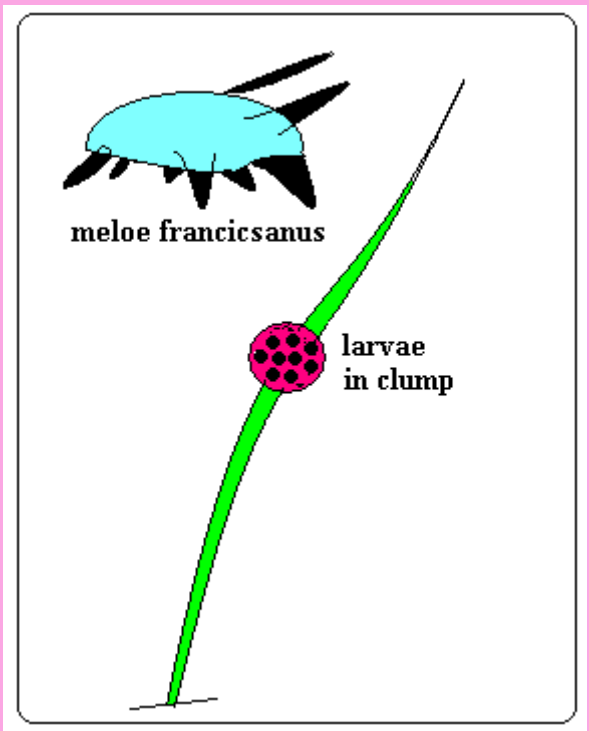
Deception

Chemicals that mimic pheromones have routine application to lure insects or vermin onto traps, or to mask real mating signals, and hence contain proliferation. In the natural world, there are odours that announce that an insect tastes horrid, to keep predators away. And even other, quite palatable insects, that mimic these odours, to be mistaken for the bad-tasting original and thus be spared! One species of spider, *Mastophora cornigera,* releases a mixture of volatile compounds that mimic the *sex pheromone* of the moth species it preys upon. Male moths flying upwind in search of a female end up getting eaten instead!

But the instance of deception that takes the cake seems to be that of *meloe francicsanus*, the blister beetle, whose larvae mimic the scent of a female of the bee, *habropoda pallida* to hail a male bee and hitch a free ride.

Hitch hiker

Many species use other species as a means of transport, particularly where the environment is harsh and meager resources occur in clumps. The blister beetle is a native of the deserts in South West United States. The beetle feeds and lays its eggs under plants which can hold aggregates of the eggs but cannot support the development of the larvae. But the beetle arranges for the eggs to be lifted and provided for in the nest of the female bee.



The larvae are found to contain a chemical molecule that is also found in the female bees but not in the males. The scent then attracts the males to alight on the plants, where clumps of the larvae attach themselves to the bee. Facsimiles of the larvae were found not to attract the males, which shows that that it was not the sight of the larvae that drew the males. But the same facsimiles did lure the males when sprayed with the chemical, which shows that the attraction is the smell.

The male bee, which finds no female here, soon sets off and ultimately does mate with a real female. The larvae now detach and take up residence in the female's nest, well provided with pollen, nectar and bees' eggs!

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