



Sneaky Blister Beetles



The Mojave Desert, in the south west of the United States of America, is a large arid area that reaches temperatures which often **surpass** 50°C in Summer and drop as low as -18°C in Winter. It is also blasted by hot sandy winds and has very little rainfall.



Within this desert lives a large range of plant and animal species. There is estimated to be 2000 species of plants alone. One special insect that calls this **hostile** environment home is the *Meloe franciscanus* or Blister Beetle. Blister Beetles are called this because they **secrete** oil droplets from the joints in their exoskeleton which contains a toxic and harmful chemical called cantharidin that creates swelling and blisters on the skin.

The adult blister beetle lays her eggs in holes in the ground at the base of pockets of plants amongst the scorching hot sand. She digs down into the sand where it is cooler for her eggs to develop before hatching. The eggs hatch into small larvae which then have to find food, shelter and water. This means that they must travel across the extremely hot sand which is hot enough to fry an egg on. If the larvae spend too much time upon this sand, they die. Instead, they have evolved a **cunning** method for transportation across the desert.

The larvae **emerge** from their sandy nest and climb up the stem of the nearest plant. They **congregate** together and form a clump of larvae at the top of one of the branches. The ball of larvae resembles a female *Habropoda pallida* or digger bee. As well as the visual resemblance, they also vibrate a buzzing sound and release a **pheromone** (chemical signal) that is very similar to the chemical released by the female bees when they want to mate. These three behaviours together make the ball of larvae more attractive to male digger bees.

Scientists extracted the pheromone from the larvae and coated balls of tinfoil in it. They then attached these tinfoil balls to sticks in the desert and found that the male bees tried to mate with the tinfoil, proving that the pheromone the larvae make is strong enough to attract bees.

The male bee then flies to the larvae ball and begins to mate with the ball of larvae, thinking it is a female bee. The larvae then swarm onto him and attach themselves to the hairs on his body. The male bee isn't harmed at all and flies around until he finds another female bee. As he mates with her, the larvae swap hosts and attach themselves to the female bee. The female digger bee eventually flies to her nest below the sand. This is where the larvae get off and spend the rest of their juvenile lives feeding on her supplies. She stores large amounts of pollen in her underground nest in preparation for her young. The larvae eat this pollen and also any young bees that emerge. The blister beetle larvae have all the food that they need to grow into adults. When ready, they leave the bee's nest, mate with female blister beetles and then lay their own eggs elsewhere. It makes sense to leave the bees nest as the larvae have eaten all the supplies so there is no food left for their own young to eat.



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