



Lycaenid caterpillar

MIMICRY IN INSECTS AND SPIDERS

**(*Naregamia alata* Wight & Arn)
a high value medicinal
plant endemic to South India**

Mimicry can be explained as a superficial resemblance (imitation) of one organism to another or to natural objects. Arthropods including insects also do mimicry in order to survive. Many species mimic ants. But,

why do other organisms mimic like ants?

Ants are the abundant wonderful creatures in the world, playing different roles in the ecosystems. They are dangerous, aggressive and very good defenders having

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Spider



Mantid nymph



Beetle



Katydid nymph



Tree hopper



Tree hopper

defensive characters like strong mandibles, a powerful sting, formic acid, communal defensive behaviour etc (Ramesh et al., 2016). Hence, most arthropods including predators mimic ants to escape predation (protective mimicry), while others mimic anatomically and behaviourally to hunt ants (aggressive mimicry). Ant mimicry is known as myrmecomorphy, which can be morphological, behavioural or chemical (Allan et al., 2002; Uma et al., 2013). Myrmecomorphy has evolved in more than 2000 species of insects and spiders (McIver & Stonedahl, 1993). Ecologists have estimated that in some tropical habitats ant mimics may account for as much as 1–2% of the arthropod fauna (Maderspacher and Stensmyr, 2011).

There are different types of ant mimicry in nature which are interesting !.

- **Protective mimicry**

The species that typically lack

strong defences make use of their resemblance to well-defended ants so as to avoid being attacked by their predators (protective mimicry).

This type of ant-mimicking (Batesian) exists in several groups of arthropods, among which spiders are the common ant mimics. Though spiders are good predators, they would want to mimic an ant either to eat them; and to avoid being eaten by them. More than 300 species of spiders are known to mimic ants. An interesting type of Batesian mimicry is observed in the jumping spider to escape from spitting spiders which are its predators. Here, instead of mimicking the ant, the jumping spider builds its nest near that of a weaver ant, which in turn keeps the spitting spider away. To avoid attack by ants in turn, jumping spiders build an abnormally tough nest which is difficult for ants to tear open, but resident spiders

can enter. Similarly, spiders belong to *Myrmarachnes* spp. also mimic several ants. This ant mimicry is also observed in few species of katydids, mirid bugs, tree hoppers, pod bugs, phasmids, mantids, flies, beetles etc.

- **Chemical mimicry**

Many insects live with ants to receive social benefits from ants. It is suggested that chemical mimicry has evolved so that insects can mimic the chemical signals produced by the ants so that they are not recognized as an intruder by the members of ant colony. For example, Lycaenid caterpillar (*Aloeides dentatis* and *Lepidochrysops signota*) mimic the ant *Acantholepis capensis*; and another Lycaenid species live in the nests of *Myrmica* ants and feed on ant brood (Dettner and Liepert, 1994). Some aphids (eg., *Paracletus cimiciformis*) also mimic *Tetramorium* ants by its cuticular hydrocarbon profile where these aphids are

transported by the ants to their brood chamber, where they feed on ant larva hemolymph (Salazar et al., 2015).

- **Aggressive mimicry**

Aggressive mimics are predators which resemble ants sufficiently to be able to approach their prey successfully. Some spiders, such as Zodariidae and some Myrmarachne species use their disguise to hunt ants. Eg., Aggressive crab spider, *Myrmarachne plataleoides* is an aggressive mimic of an Asian weaver ant (*Oecophylla smaragdina*). It typically jump on a lone unsuspecting ant and bite it. Then, in order to avoid encounters with other ants, the spider and its victim fall away on a safety line made of the spider's silk while the venom takes effect. Later, it use the body of their dead prey as a shield, holding it up between themselves and any other challenging ants. This tricks attacking ants into believing that the spider is just another ant, carrying a dead nest-mate away from their nest (Sana suri, 2014).

- **Tactile mimicry**

In this case, aphoretic mite *Planodiscus* (Uropodidae) appears to exploit tactile mimicry. It attaches itself to the tibia of its host ant, *Eciton hamatum*. As the cuticular sculpturing of the mite's body strongly resembles that of sculpturing of ant's leg, when the ant grooms its leg, the tactile sensation is as it would be in mite-free grooming (Bert and Edward, 1990). Tactile mimicry is also found in the cricket, *Myrmecophila acervorum* with ants.

- E v e n , a n



Myrmarachne plataleoides

Ichneumonid parasitoid wasp *Gelis agilis* shares many similarities with the ant, *Lasius niger* exhibiting multi-trait mimicry of garden ants (Malcicka et al., 2014).

Note: Photos are from different sources from internet.

Reference

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