

Butterflies from an ant's nest



Small and rare... a female *Acrodipsas illidgei*. Its wingspan is about 25 mm.

Butterflies are often thought of as among the gentlest of insects. Their fragile beauty, their carefree life of sucking nectar, and the fact that they seem to hurt nothing all lend support to this view.

It comes as something of a shock, therefore, to learn of a predacious butterfly that feeds — of all things — on ants! Well... that's not quite true: the adult butterfly itself doesn't, but the larval stage — the caterpillar — does.

A caterpillar feeding on ants is bizarre enough; but the facts that the caterpillar is not even 'armoured' and that the ants actually carry it into their nests and look after it seem even more strange.

The whole story is restricted to a few patches of mangrove stretching north and south of Brisbane. The nest of a particular species of ant living inside the dead branches of the grey mangrove is home to the caterpillars of the small butterfly in question, *Acrodipsas illidgei*.

The life history of this most unusual creature starts when a female lays eggs on the outside of the mangrove twigs. She will

usually lay on only one species of mangrove, and then only if it has ants living in association with it.

Foraging ants find the first-stage caterpillars that emerge from the eggs and bring them into their nest within the plant. The caterpillars are put near the ant 'nursery' and feed by sucking the juices from the developing ant larvae. They may consume entire young ants, but the adults in the nest seem generally to take no action against them.

Eventually the caterpillars pupate — most often near the tips of small branches, perhaps because that will help them make a quick 'get-away' when they emerge. At any rate, the small adult butterflies fly away from the ant-ridden plant, after a successful childhood spent at the expense of the ants.

Clearly, some fascinating relationships need to be unravelled here. One of several scientists who are knowledgeable about these butterflies is Dr Don Sands of the CSIRO Division of Entomology's Brisbane

laboratories. Also, recent work by Mr Chris Sampson, of the Bureau of Sugar Experiment Stations, has thrown further light on the butterfly's life history.

The butterfly belongs to a rather special club: its genus, *Acrodipsas*, contains only seven species, three of which Dr Sands was the first to describe. All seven are thought to have predatory caterpillars — eating ant larvae — but *A. illidgei* is the only one that has such a restricted range, living only in the Moreton Bay mangroves and in the Mary River to the north.

Another genus of predatory butterflies also occurs in Australia, with its species living in the nests of the green tree ant in northern Queensland. However, these caterpillars are, quite sensibly, armoured and so protect themselves against ants, which, after all, are among the most aggressive of insects.

So how does *A. illidgei* survive without armour? Clearly, some 'trickery' must be involved. Scientists have recorded many examples of

associations between ants and butterflies or other insects where both benefit. Dr Sands speculates that in the case of *A. illidgei* the ants may 'believe' that the caterpillar secretes sugar, like those of several closely related species that the ants take into their nests to 'milk'. However, *A. illidgei* does not appear to come up with the goods; instead it takes advantage of being placed near the ants' nursery and exploits the vulnerable larval ants as a food source.

But perhaps genuine mutualism is involved. The caterpillar may excrete traces of amino acids — precursors of protein and sources of nitrogen, an element in shorter supply for ants than the abundant carbon that sugars contain.

The relationship clearly benefits the butterfly and cannot be too damaging for the ants, else it and the ant species would no longer be around. But the problem for the butterfly is its over-specialisation. Because of habitat destruction, *A. illidgei* is now an endangered species. The preferred type of mangrove and its associated ant have become scarce since development changed much of the coastline.

Fortunately for it, one of its last remaining habitats was recently protected by a court decision preventing further development in the area.

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A new genus, *Acrodipsas*, for a group of Lycaenidae (Lepidoptera) previously referred to as *Pseudodipsas* C. and R. Felder, with descriptions of two new species from northern Queensland. D.P.A. Sands. *Journal of the Australian Entomological Society*, 1979, 18, 251-63.