

URBAN ANTICS



Flying 'fossils'

I was but a tot when I first saw the beast on Auntie Glad's lapel. It was a big dragonfly, so strange and so old. I supposed it was old because . . . Auntie Glad was old. But I was so wrong—compared to dragonfly history, Auntie Glad was a 'spring chicken'.

Gone is the brooch and auntie, but in the autumn of each passing year when dragonflies again dip and swoop through the golden shafts of evening sunlight over the backyard pool, the memories of that diamante decoration come flooding back.

It is ironic that today, in the lazy warmth of an autumn evening, we can be fascinated and, further, besotted with the appearance and antics of arguably one of the planet's oldest inhabitants.

Dragonflies were found in the first readable fossil records that appeared from the beginning of the Upper Carboniferous, the age of the great coal forests. At this time, some 320 million years ago, the *Meganura*, an immense dragonfly-like creature with an 80 centimetre wingspan was flitting through the same shafts of sunlight. This huge predator, oblivious to anything except feeding on other unimaginable insects and searching for a mate, was virtually the same shape as today's smaller, varied species.

In the Order Odonata, there are two main groups of dragonflies; the

larger, more powerful ones form the Suborder Anisoptera, while the smaller, more delicate damselflies belong to the Zygoptera.

Dragonflies are large powerful fliers with two pairs of glassy, membranous wings that have specialised venation (arrangement of veins). When in forward flight the individual membranes are used to cause instant vertical or backward flight. The beasts also have strongly developed predatory habits.

In flight, dragonflies seize smaller insect prey with their strong, spiny, forwardly-directed legs and consume them with large, well-developed, biting mouth parts. They feed voraciously while flying, or at roost. Their eyes are large—as befits an active predator. The antennae are inconspicuous and the abdomen is often long and thread-like.

Adult dragonflies mate while in flight. The male flies ahead of the female and grips her head with his terminal abdominal claspers. The female then bends her abdomen forward and receives spermatozoa from the front of the male abdomen. Hence, if you see a couple looking like 'bent pretzels' slowly chugging along at eye level, do not think to disturb, as they are not in conflict, but 'indulging'.

The Odonata are primarily freshwater dwellers and, depending on the species, adults drop or deposit eggs in temporary pools, running streams, permanent lakes or swampy bogs. Nymphs go through as many as 10–12 aquatic stages (instars) before becoming winged adults; they 'swim'

for much longer than they fly. Depending on the species, the aquatic stages can last from several months to several years.

Like adults, nymphs are voracious underwater hunters and capture crustaceans, fish, tadpoles and insects using a highly specialised labium. This jointed structure, which covers the mouth like a mask when not in use, is capable of being extended rapidly to seize prey with a pair of pointed terminal hooks.

Eventually, the full-grown nymph crawls or swims to a plant stem or rock and, when above the surface of the water, an adult dragonfly emerges from the splitting larval skin. These empty skins can be observed hanging on to vegetation around many local waterways. Soon, the adult expands its beautiful gossamer wings and flies off . . . to let the winds send it where they will.

BY JOHN HUNTER

DID YOU KNOW?

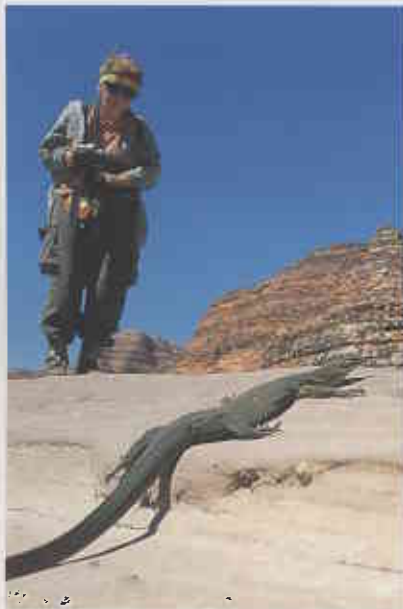
- Dragonflies and their nymphs are opportunistic cannibals. One adult was observed with a smaller species in its grasp, whereupon it landed, severed the head of its prey and proceeded to feed on the thorax. The crushing of mandibles against the chitinous body-part was audible over about 1.5 metres.
- Dragonfly nymphs have gills that not only help them to breathe, but also aid them in swimming.
- Australia has a very diverse dragonfly fauna. There are at least 302 species here, but only eight or nine are found in the Perth region.

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LANDSCOPE



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During the past decade more than 500 people have contributed to science projects in WA by joining a LANDSCOPE Expedition (see page 34).



Since the 1960s Barrow Island's animals have shared their island paradise with the oil industry. Read how the mammals are being monitored and protected. See page 18.



Georgiana Molloy made a major contribution to the early botanical knowledge of the south-west. Read about this remarkable woman on page 43.



The Goldfields Woodlands National Park protects the region's best examples of eucalypt woodlands (see page 28).



Collecting seeds is one way in which we are helping to conserve biodiversity. Join the 'Hunters and Gatherers for Conservation' on page 49.

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COVER

There's something going on in our schools. Students are voluntarily taking an active interest in conserving their local environments. They are visiting forests, beaches and wetlands to study native wildlife. And they are having fun! What is happening and why? See 'EcoEducation—winning over school communities' on page 10.



Cover illustration by Ellen Hickman

