

WESTERN PETALURA

ANCIENT RELICT
OF THE JARRAH FOREST



AUSTRALIA IS FAMOUS FOR ITS UNIQUE BIRDS, MAMMALS AND REPTILES. IMAGES OF KANGAROOS, KOALAS, FRILL-NECKED LIZARDS, LYREBIRDS AND PLATYPUSES ABUND IN BOOKS AND ON FILM. LESS WELL KNOWN, HOWEVER, ARE SOME OF THE EXTRAORDINARY INSECTS THAT INHABIT OUR ARID CONTINENT. ONE SUCH INSECT IS THE WESTERN PETALURA, A GIANT DRAGONFLY FOUND IN THE SOUTH-WEST OF WESTERN AUSTRALIA.

STORY BY ANDREW WILLIAMS AND MATTHEW WILLIAMS
ILLUSTRATIONS BY RAY ANDRESS

The western petalura (*Petalura hesperia*) belongs to a primitive family of dragonflies, the Petaluridae. This is a relict family: one whose original environment has changed. Fossil records suggest that petalurids, not unlike those living now, were plentiful some 150 million years ago. Only 10 species exist today, and four of these occur in Australia. The other representatives come from New Zealand, Japan, Chile and North America. The generic name *Petalura* is derived from Greek and refers to the flat, petal-like tail appendages in the male. The specific name *hesperia* also comes from Greek and denotes 'western', a reference to its distribution in Australia.

The western petalura is by far the largest dragonfly in Western Australia, with a body length of 8–10 centimetres and a wing-span exceeding 10 centimetres in some individuals. Though large by modern-day standards, it is dwarfed by *Meganeura monyi*, the largest of the early fossil dragonflies, which had a wing-span of about 70 centimetres. Overall, the western petalura's colouration is a sombre dull brown.

However, closer examination reveals that the facial area, a narrow line on top of the abdomen, and the leading edges to the wings, are pale yellow. The wing membranes themselves are transparent, with the veins forming a dense and intricate, net-like pattern. The eyes are set wide apart, unlike most of the other large Western Australian dragonflies whose eyes meet in the middle (see 'Dragonflies—Desert Jewels', *LANDSCOPE*, Summer 1986–87). In the males, the flat petal-like tail appendages are very distinctive.

Western petaluras can be seen on the wing from December to February. Compared with other Western Australian dragonflies they look huge, and in flight appear almost black. Their behaviour is also distinctive. Like other dragonflies, they are predators and feed on a variety of invertebrates. But they are relatively slow fliers and generally adopt an ambush technique to secure their prey. Individuals perch on the trunks of trees alongside forest streams watching for insects to fly past. They then dart out

from their vantage point to catch their prey, often returning to the same perch to feed.

The first specimen of this magnificent insect was collected near Lesmurdie by M. Hawkin in October 1956. Soon after its discovery, further searches by Tony Watson, then a student at the University of Western Australia, revealed local populations at nearby Karragullen, and at Bull Creek on the Swan Coastal Plain. In both cases, the dragonflies were located near the headwaters of permanent freshwater streams. This was not entirely unexpected, as other members of this relict family require similarly specialised breeding areas; their larvae live in burrows in boggy locations where there is a permanent supply of fresh running water.

In south-western Australia, similar conditions are found near the upper reaches of a few permanent streams

within the jarrah forests of the Darling Scarp south of Perth, and this is precisely where the western petalura has recently been found to occur. As with other Petalurids, the western petalura larvae excavate burrows in boggy situations alongside these streams. Burrows examined at Bull Creek by Tony Watson, opened on to dry ground, but extended as much as 60 centimetres below the water table. The larvae are therefore semi-aquatic. Like the adults, they forage for live food that may include such items as earthworms. Small insects that investigate the burrows would, no doubt, also be eaten. Little detailed information is presently available on the habits and life cycle of the western petalura, but it is quite possible that the larval development could take several years, far longer than the few weeks spent as an adult.

As human populations expand, both urban and rural developments have put



The full-grown male larva is almost without pigment and takes on the colour of the substrate in which it has dug its burrow.

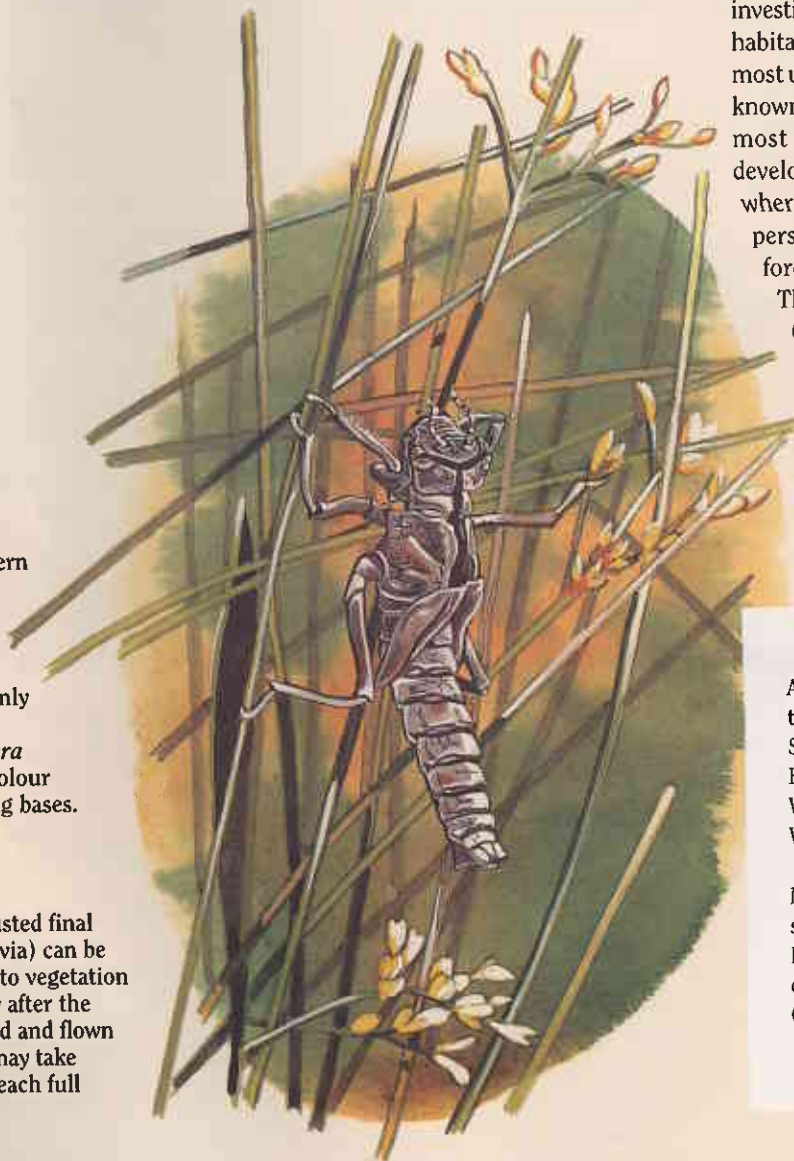
increasing pressure on the natural environment around Perth. Given that western petaluras are known to be rare, local and sedentary, concern for their long-term survival resulted in the Department of Conservation and Land Management (CALM) investigating the distribution and conservation status of the species. Not surprisingly, these investigations confirmed that the petalura habitats closest to Perth were the ones most under threat. Bull Creek, their only known locality on the coastal plain, was most severely threatened by urban development. Fortunately, other sites where populations of western petalura persist have now been identified in forested areas to the south of Perth. These sites are on land managed by CALM. The greatest threat to these fragile habitats is decreasing water quality, and therefore, careful management must continue to ensure the survival of this truly wonderful relict from the prehistoric past.

Facing page

Adult male western petalura.

Although rather subdued in colouration, this dragonfly is the only one of the four Australian *Petalura* species to show colour tinting at the wing bases.

The mud-encrusted final larval skin (exuvia) can be found clinging to vegetation above the burrow after the adult has emerged and flown away. The larva may take several years to reach full development.



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LANDSCOPE

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Flower arrangements featuring eucalyptus foliage are becoming popular with florists. Find out why on page 35.



Unseen for more than 100 years and believed to have been extinct, Gilbert's potoroo turned up quite unexpectedly. See page 28.



Salinity is a problem in the State's south-west, but farmers, communities and government agencies are working to find solutions. See page 39.



A giant dragonfly lives in the south-west of Western Australia. You can find out more about this ancient relict of the jarrah forest in 'Western Petalura' on page 52.



The thick-billed grasswren is one of several animals that may be reintroduced to Shark Bay as part of an ambitious project. See 'Return to Eden' on page 22.

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COVER

The stunning royal robe (*Scaevola striata*) is one of a host of fabulous fanflowers found in Western Australia. Suzanne Curry discusses this and other species in the family Goodeniaceae on page 10.

The illustration is by Philippa Nikulinsky.



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