Australian ADMIRAL

By Robert Powell

The Australian admiral is our version of the stunning red admiral of the northern hemisphere. It can easily be reared from a caterpillar, making it ideal for study by schoolchildren. Naturalist Robert Powell describes the sometimes elusive lifestyle of this admirable admiral.

Although known best from eastern and southern Australia, the Australian admiral (*Vanessa itea*) apparently occurs throughout this continent. It has been collected as far inland as the MacDonnell Ranges, and specimens in the WA Museum were taken as far north as Koolan Island and Darwin. The admiral also occurs in New Zealand, Norfolk Island, Lord Howe Island, and east across other islands in the South Pacific to Rapa Island, about halfway between Australia and South America.

Such a wide range is not surprising, given that our admiral belongs to the genus *Vanessa*, many of whose species range very widely indeed. The most notable example is the painted lady (*Vanessa cardui*), one of the world's most widespread butterflies, which occurs through most of Europe, Asia, Africa and North America.

Butterflies of the genus *Vanessa* are of medium size and are brightly coloured, predominantly in reds and blacks. The sixteen species can be divided into three groups, the 'painted ladies', the 'northern admirals' and the 'southern admirals'. The painted ladies, which have rather chequered markings in pinkish-orange, black and white, include the species referred to above and eight further species, most of them in the Americas. The northern admirals are more boldly marked; the commonest one, the red admiral of Europe, Asia and North America, is a striking species that is one of the world's best-known butterflies. The other four species of northern admiral occur chiefly in Asia. There are only two southern admirals: the Australian admiral and the New Zealand red admiral. The Australian species, with large oval areas of pale yellow on its forewings, features a colour that is shared only with two uncommon, tropical species in the genus. In New Zealand it is called the 'yellow admiral'. In that country these two southern admirals have occasionally produced hybrids, demonstrating that they are indeed closely related.

In Australia the admiral's closest relatives are the Australian painted lady (*Vanessa kershawi*), a very common and widespread species in this country, and the 'European' painted lady, the almost cosmopolitan species referred to earlier. The latter has arrived in Australia in recent times, probably from South Africa, perhaps with the help of ships, and has become established around Bunbury.

Some butterflies are highly visible. The introduced cabbage white, apart from being very common, stands out because of its colouring and its relatively slow, floating flight. Many butterfly species, however, are more cryptically coloured, are rare or have elusive habits, or, like many Western Australian 'blues' and skippers, are very small; and they therefore go largely unnoticed by all except butterfly enthusiasts. The Australian admiral is one such. This is partly because it is much less abundant than the cabbage white, and partly because of its habits. The admiral flies fast, and we usually catch no more than a glimpse of it. Moreover, it often flies above eye-level, sometimes round the tree-tops, and is therefore out of our field of vision for much of the time. Even when it is seen, the admiral is not very conspicuous on the wing, despite its bright colouring. It tends to look like a dark blur, but a flicker of its yellow wing markings can often be seen; this enables it to be distinguished from the Australian painted lady and from another fast-flying butterfly, the meadow argus.

The admiral does settle to feed at flowers. Then one may see it opening its wings in the sunshine: a splendid sight. It should be approached gingerly, as it will usually take off at the slightest disturbance. At other times, the admiral likes to rest head-downwards on tree-trunks. Here, by folding its wings above its body with its hind wings overlapping its forewings, it can conceal itself very successfully.

The best places to find admiral butterflies are hilltops. For quite a number of butterfly species, and also other insects - some dragonflies, for instance - hilltops are where the sexes meet. (We human beings have our own places - clubs, bars, etc. - that serve the same important purpose!) The more prominent the hill, the more chance of finding admirals; Buckland Hill (near the war memorial), Reabold Hill and Mt Flora are good ones on the coastal plain. Go there on a sunny day during the spring months, or in August if it is warm, in the late afternoon (after 3:30 p.m. in winter, and after 5:00 p.m. in late spring).

The admirals will be seen behaving in ways that are collectively called 'hilltopping'. The males establish a number of perching-sites within a territory, and will fly out towards any passing butterfly. If that butterfly is a male, the two will make dashes at one another. Or they will fly around each other in tight circles - which can be interpreted as an aerial combat, or merely a vigorous investigation of each other. Often the two will fly off together into the wind, one behind the other, or in parallel, sometimes rising far up into the air before separating and returning; the purpose of this is even less clear. If the butterfly encountered is a female, the two will fly more slowly, often one close behind the other in a bobbing flight. I have never yet seen mating take place; perhaps the pair go well away from the hill to mate.

Often Australian painted ladies will be hilltopping too. The behaviour of

Left: Australian painted lady.
Top: New Zealand admiral.
Right: Australian admiral.
Illustrations - Ian Dickinson

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Main: Wing detail.
Photo - Jiri Lochman
Inset: Butterfly shortly after emerging, its wings still crumpled.
Photo - Matthew Williams

Illustration - Margaret Pieroni

On Rottnest Island, where pellitory and nettles grow in abundance, Bob Hay, of the Western Australian Insect Study Society, and children from Rottnest Primary School collect pellitory plants and admiral larvae for captive rearing.
Photo - Chas Hansen

the two species on hilltops is very similar. The admirals' territories tend to be concentrated nearer the summit of the hill than those of the painted ladies; and the admirals tend to perch on trees, shrubs or walls, whereas the painted ladies often perch on the ground.

The admiral appears to be comparatively long-lived. In southern parts of Australia butterflies that emerge in summer or autumn are known to hibernate through the winter, appearing again when warmer weather arrives.

MIGRATION

On sunny days in late winter and early spring I have often seen and recorded admirals flying rapidly south. These butterflies were probably migrating, a behaviour typical of the genus *Vanessa*.

Specimens of the admiral collected over its wide range exhibit no regional variation; this suggests that it migrates extensively. In eastern Australia it has been recorded as joining in migrations of the Australian painted lady, which each spring travels south from southern Queensland, as far as Tasmania. What is remarkable is that the admiral can also travel across large expanses of ocean between the South Pacific Islands from which it has been recorded.

Several Australian species of butterfly do occasionally make the eastward crossing from Australia to New Zealand. This often happens when strong westerly winds are blowing while the butterflies are migrating in eastern Australia; apparently some of them are blown off course and carried to New Zealand. Suitable winds could propel them across the 2 000 to 2 500 km distance in two to four days. What is not known is how the butterflies can survive for that length of time without feeding. In order not to fall into the ocean they must fly actively, and this uses up energy. They probably drift as much as possible, or make lazy wing movements. The opposite journey - from east to west - must be very uncommon, as the prevailing winds are westerly.

FOOD-PLANTS

'Food-plants' refers to the plant species on which a butterfly's eggs are laid and on which the larvae feed. (All adult butterflies, on the other hand, feed on fluids, such as nectar, by means of a roll-up tube called a proboscis.) Many species of butterfly are limited to a very narrow range of food-plants. The caterpillars of the Australian admiral feed only on plants in the nettle family. In eastern Australia they use both a native species of nettle (*Urtica incisa*) and the introduced common stinging nettle (*U. urens*). In Western Australia, where there are no native nettles, introduced nettles have been the only known food-plants.

Until recently, that is. A few local naturalists interested in butterflies believed that there must be a native food-plant for the admiral in Western Australia. The only likely candidate was pellitory (*Parietaria debilis*), a small annual plant that, whilst in a different genus from the nettles, belongs to the same family, and is the only member of the nettle family native to south-western Australia. On Rottnest Island, pellitory and stinging nettle grow in abundance, in some places side by side. On both of these plant species I observed caterpillars that looked like admiral larvae, some of them in shelters typical of those made by admiral larvae. Some of the larvae found on the Rottnest plants were subsequently reared in captivity on pellitory. The larvae grew, pupated and hatched into healthy admiral butterflies: pellitory as a food-plant was confirmed.

Since then, I have also examined another type of pellitory (*Parietaria judaica*), an introduced perennial species from western and southern Europe, which has become established in parts of Fremantle, and found empty admiral pupal-cases adjacent to these plants on limestone walls in laneways south-west of the Fremantle markets. As there were no other obvious food sources in the vicinity, it is reasonable to suggest that the admiral uses this plant too.

The native pellitory has declined in the South-West, as a result of agricultural clearing, urbanisation and competition from weeds. Where native plant species

Pellitory (*Parietaria debilis*), the Australian admiral's native food-plant in south-western Australia.
Illustration - Ian Dickinson

THE LIFE CYCLE OF THE ADMIRAL

Reference photographs by Matthew Williams.

egg (greatly enlarged)

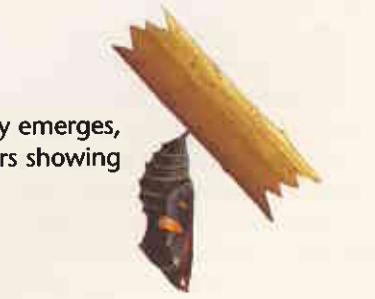
larva

nettle with larval shelter (the folded leaf-blade on the left)

larva hanging from silken pad it has spun preparing to pupate

pupa

pupa a day before butterfly emerges, with wing colours showing



butterfly shortly after emerging

butterfly with wings fully expanded, ready to fly

decline, so do most of the insects and other animals that depend on them. The admiral butterfly, which continues to prosper, is an exception. By being able to transfer to introduced plants, it has survived the decline of its natural food source and has become, to some degree, domesticated.

REARING CATERPILLARS

An ideal way for schoolchildren and others to learn about the life-cycle of an insect is to rear insect larvae in captivity, and the admiral is one of the easiest Australian butterflies to rear.

First, find some nettles. A market-gardener, or even a home vegetable-grower, may have them, and be pleased to give some away! In late winter or early spring these plants, particularly if they are growing in abundance, are likely to be supporting admiral larvae. Look for the larvae, which may be very small, or may betray themselves by their shelters. Pot one or two plants that have larvae on them, and several more plants for further feed. Remove from them any spiders (which kill caterpillars) and preferably any slender green caterpillars, which will be the larvae of the silver-Y moth. Keep the plants with admiral larvae indoors, in a room that is not too dark. If possible, keep them in a transparent or translucent enclosure - such as an aquarium with a bit of cloth over the top, weighed down around the sides with pegs.

An enclosure serves two purposes. It prevents the older larvae, which often leave the food-plant during the day, from wandering too far. It also keeps out spiders - particularly important if, like me, you hate to discourage them from sharing your home with you.

The main maintenance thereafter is to water the nettles once every few days to keep them alive, and to provide further nettles once the existing plants have been eaten.

The larvae shed their skins four times during their development as caterpillars. To do so they may make a shelter and retreat into it for a day or so. The periods between the skin changes are called 'instars'. After a larva of the fifth, and final, instar has been eating and growing for five or six days, it will leave the food-plant and seek the underside of a horizontal surface, such as the top of the enclosure. It will attach its rear end to a small silken pad it has spun and will hang head-downwards, curled into the shape of an inverted comma. It will then form into a chrysalis. This stage (pupation) will last ten to eighteen days, depending on the temperature. A day or two before the butterfly emerges, wing colours begin to show through the chrysalis. The butterfly will emerge at a time of day when the temperature is rising, usually in the morning and often quite early.

ADMIRALS IN THE GARDEN

Another way to breed butterflies is to grow their food-plants in the garden. This requires a different approach to gardening - one that aims to benefit conservation by considering the garden as a place not only for plants, but also as habitat for insects and other animals. Australia could follow the example of other countries such as the United Kingdom, where this approach has received much attention. It is particularly appropriate in expanding urban regions such as Perth.

Those of us who enjoy the challenge of propagating new plants should try to establish native pellitory in our gardens. We may then find that we experience the satisfaction of having the Australian admiral breed there each year. ⊡

ORIGIN OF NAMES

The Australian admiral is so named to identify it as a relative of the red admiral, a common summer immigrant to England. The *Oxford English Dictionary* (*OED*) quotes a book of 1720 on the natural history of English insects as an early use of the name admiral: 'A most beautiful Fly called the Admiral Butter-fly'. The meaning of the name is interesting. The *OED* considers that it may have had nothing to do with the navy, but may have been a contraction of 'admirable'; in another book on natural history, of 1798, the butterfly was referred to as the 'red admirable'. In those days 'admirable' meant 'surprising' and 'wonderful', rather than 'something of which one approves'.

The Australian admiral's scientific name is *Vanessa itea*. 'Vanessa' is the 'wondrous maid' of Jonathan Swift's poem *Cadenus and Vanessa* (published 1726). The species name 'itea' was published in 1775, but no explanation of its origin or meaning was given.

Spot formed by excretion of waste products after the butterfly emerges from its chrysalis. The colour varies depending on the food-plant and the butterfly species.

Caterpillar of the silver-Y moth, another species found on nettles. The cocoon is often parasitised, and many tiny wasps emerge instead of a moth.

Photos - Robert Powell

Robert Powell began observing butterflies in his childhood. He is a member of the Western Australian Insect Study Society, which can be contacted by ringing Terry Houston at the WA Museum, on (09) 328 4411.

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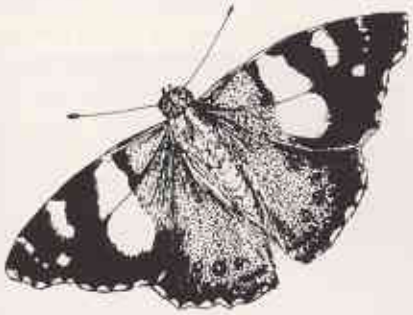

Painted ladies, northern admirals, southern admirals and Western Australian skippers - not the stuff of a sailor's dream, but all members of the butterfly family. *See page 23.*

You don't have to go far from Perth to enjoy the peace and quiet of the bush. The forest is right on our doorstep. *See page 10.*

Our native animals are prey to introduced species. While baiting gives them a fighting chance, scientists are looking for more long-term, humane solutions. *See page 16.*

The increase of births in captivity for cockatoos seemed promising, but was it related to the upsurge in 'birdnapping' in the wild? To Catch a Thief *explains how forensic experts unravelled the mystery.* *See page 28.*

The bilby has many names, including ninu and dalgyte. Ninu Magic *tells the story of this shy animal and its remarkable survival skills.* *See page 43.*

FEATURES

REGULARS

COVER

The red-tailed black cockatoo (Calyptorhynchus magnificus) *is one of several cockatoos native to Western Australia. These spectacular birds nest in tree hollows and can be found in the woodlands and grasslands of the south-west of Western Australia.*

Illustration by Philippa Nikulinsky.

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