Growing locals

Gardening with local plants in Perth

How can we make our gardens more environmentally friendly—so that they use little water and no harmful fertilisers or pesticides, and help conserve our local plants and animals?

A major part of the answer lies in the use of local plants.

by Robert Powell and Jane Emberson

Because gardens are green places that contain living plants and offer shade, we think of them as beneficial to the environment. But that is not necessarily so. In California, USA, conventional parks and gardens have been shown to be much more of a cost to the environment than a benefit. The fossil fuel used to operate lawnmowers and other equipment, to pump water, to manufacture fertiliser and to cart garden prunings to the tip, consumes more oxygen from the atmosphere than the parks and gardens produce—and also releases more carbon into the atmosphere than the parks and gardens absorb. The chemical fertilisers, herbicides and pesticides used cause long-term pollution of water and soil. Lawn clippings and garden prunings comprise more than 30 per cent of the landfill waste from California's residential communities.

Since Perth's climate and lifestyle are similar to those of California, our garden practices are probably imposing similar costs on the environment.

The longer we continue practices that are wasteful and harmful, the worse the consequences we shall have to suffer. We need to reconsider our ways of gardening from the point of view of sustainability—the principle of behaving in such a way as to sustain the Earth's plants and animals and the processes that support them. Many of us strive for sustainability in other ways; for example, by recycling used materials. It is time to apply the principle to our gardens too.

Gardens for sustainability

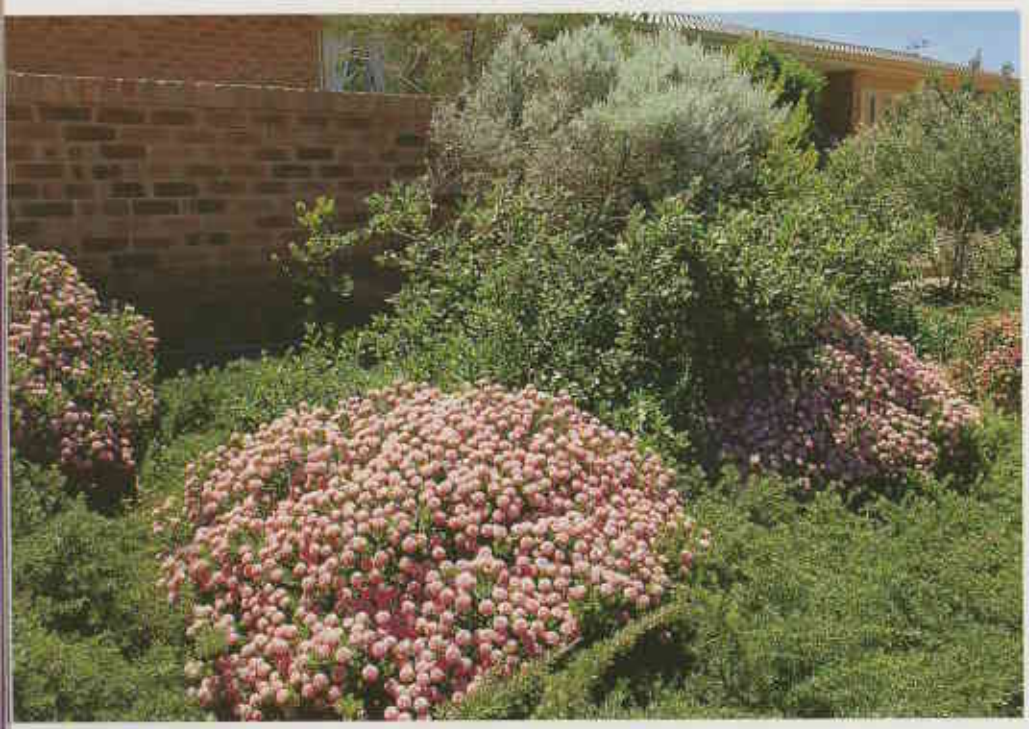
In order to save its diminishing supplies of water, California is now promoting 'xeriscape' gardens—gardens that need little or no watering.

In Perth as well, with a rapidly growing human population, it is of critical importance to limit the amount of water used. But it is not necessary to have a totally dry garden. A garden pond can provide a pleasant aesthetic feature and a useful aquatic habitat, while using far less water than well-watered gardens do.

But saving water is only one aspect of sustainability. Besides water, gardens should consume only minimal amounts of non-renewable resources, such as the fossil fuels needed to run lawnmowers. The use of harmful substances like pesticides and fertilisers should be minimised, since these eventually make their way into the groundwater and wetlands, with damaging effects.

Gardens should also not contain plants that are harmful to our natural environment. Many plants have become serious weeds in our urban bushlands, through 'escaping' from gardens. Plants from areas elsewhere in Australia or overseas that have climates similar to that of Perth might seem to have low environmental costs, because they need little watering or fertilising; but these are the very species most likely to escape and grow prolifically in bushland, displacing local plants.

Sustainability is not only about minimising environmental costs, but also about maximising environmental benefits. Parks and gardens should play a major role in helping to conserve our plants and animals. How well they do this will depend chiefly on the plant species they contain. The species of most environmental benefit are those that have conservation value in their own right, or a rich associated animal life.



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Main Jewel beetles at flowers of banbar (*Melaleuca teretifolia*), Beeliar Regional Park.
Photo – Jiri Lochman
Insets Local plants in the authors' garden from top: blue lace-flower; old man's beard; yellow lily; cockies' tongues and basketbush.
Photos – Robert Powell

Above left Allen Park Bushland Group and children from Swanbourne Primary School conducting a revegetation project with local plants.
Photo – Lesley Shaw

Above Students from City Beach Primary School in their bush garden identifying local plants for their parents.
Photo – Linda Nottle

Left Coastal garden of local dune plants, Mandurah.
Photo – Jiri Lochman/CALM

Top left Garden of local plants in the Darling Scarp.
Photo – Robert Powell

Above left Allen Park Bushland Group planting local plants to form the seaward corridor of vegetation, linking Allen Park Bushland (foreground) with the coastal strip of vegetated dunes (background).
Photo – Lesley Shaw

Above Firewood banksia (*Banksia menziesii*), formerly one of Perth's most abundant small trees, has largely been destroyed for housing or agriculture. It should be grown far more in gardens.
Photo – Jiri Lochman

The value of local plants

By 'local plants' we mean those species that used to occur naturally on the block, as part of the original vegetation. That is not the same as 'native plants', a term that includes all the thousands of species that occur naturally somewhere in Australia—anywhere, in fact, from Tasmania to the Kimberley. In any particular area, only a relatively small sub-group of those native plants are local; all the local plants are native, but most native plants are not local to that particular place, and indeed many come from environments that have almost nothing in common with it.

When gardening for sustainability, local plants are ideal. Their associated environmental costs are very low indeed. Being adapted to the natural conditions, they need no fertiliser and very little watering. Moreover, the great majority of Perth's plants are small species that can easily fit into a small garden without the need for pruning. Minimising pruning reduces the amount of landfill waste.

The environmental benefits of local plants, on the other hand, are very high. These species are the natural plant life of the area, and thus have conservation value in their own right. The central area of biological conservation is conserving plants and animals in their natural places. That means keeping Perth's local plants thriving in Perth. With the extensive clearing of Perth's coastal plain, many of Perth's plant species are now reduced here to small areas of occurrence, where they are seriously threatened by competition from weeds, by introduced pathogens (such as *Phytophthora* root-rot and canker fungi) and by various human disturbances (such as deliberate lighting of fires by vandals). Many are likely to decline further, or even disappear from this region. That makes it all the more important that they be cultivated.

Insects and local plants

Local plants are extremely important in supporting animal life—local trees, for example, support an enormous number of insect species (see box). Many others inhabit the understorey. Insects comprise much of the diversity of an ecosystem and perform indispensable roles. Many plant species rely on them for pollination; and they are the main food of many lizards, birds and bats. Insects such as parasitic wasps are often the main controllers of those few insect species that are pests. Insects in the soil are essential in aerating it and in breaking down leaf litter, thus providing nutrients to plants.

Besides, insects are fascinating. They are the most abundant creatures in the garden. With their many different forms and ways of life, they provide endless enjoyment for those who take time to observe them.

Non-local species of plants support relatively few local insect species. That can be observed from the almost unblemished foliage of most non-local trees and shrubs. Even eastern States eucalypts, so commonly planted in Perth, often have few blemishes on their foliage (in their natural environment, these eastern eucalypts support hundreds of insect species; but relatively few local insects use them).

Local plants, therefore, can turn our parks and gardens into habitat for wildlife. As well as the habitat provided by the plants themselves, the litter of leaves, twigs and bark that collects

Far left Kangaroo paw (*Anigozanthos manglesii*), a common herb of the coastal plain, and a delight to have in the garden.
Photo – Bill Belson/Lochman Transparencies

Left The spiny-tailed gecko can survive in coastal gardens where suitable habitat is provided.
Photo – Robert Powell

Below far left The white-winged fairy wren benefits from corridors of vegetation linking bushlands.
Photo – Babs & Bert Wells/CALM

Below left Devil's pins (*Hovea pungens*) grows and reproduces itself well in gardens with granitic soils in the Darling Scarp.

Bottom left Pixie-mops (*Petrophile linearis*) is a typical low shrub of sandy soils on the coastal plain.
Photos – Marie Lochman

under them provides an environment for fungi and still more species of insect, as well as other animals, such as lizards. Fungi are vital to the ecology, in recycling nutrients and in forming mutually beneficial associations with the roots of many plants.

As well as being beneficial to the environment, local plants are desirable for what they can teach us. If we want to learn, or want our children to learn, about nature, local plants are the ones to grow. Find out about your local species, what natural factors influence their distribution, what plants associate together, what creatures they support and how. These learning experiences cannot be derived from plants planted out of context.

With knowledge comes appreciation. By becoming familiar with local plants in the garden we begin to appreciate them. When we find these same plants in our local bushland, we begin to appreciate bushlands too. And experience in managing a garden of local plants can be usefully applied to managing these bushlands.

Public and private lands

Local plants are of value for use on both public and private lands. If we are to maintain, or restore, Perth's biological richness, we must make use of our green spaces and gardens to supplement our bushlands. This is especially important where the green spaces form corridors of habitat linking bushland areas. These

corridors allow mobile animals, such as birds, to move from one area to another. Since many urban bushlands often get burnt, such corridors are vitally important too in allowing animals to recolonise areas, as suitable habitat develops after the disturbance by fire.

Private lands—our own gardens—provide a visual demonstration of our personalities and values. If we believe in the importance of conserving our plants and animals, or sustaining our planet, here is a place to express that belief.

Although one garden can make only a small contribution towards conservation, the contribution made collectively by our gardens is huge. If we add up the areas of private gardens in the City of Stirling alone, the total area is 3,000 to 4,000 hectares, or eight to 10 times the size of Kings Park! Of course, a mosaic of separate gardens cannot provide the habitat of a single large reserve. But still, even if a minority of us were to improve the conservation value of our gardens, we could very likely provide ourselves with an environment that is biologically far richer.

Attitudes

Many of us love wildflowers, or like the bush for walking in or picnicking. But our attitudes towards plants and gardening are influenced strongly by our horticultural traditions, which have been brought to Perth by European settlers. We are thus taught to admire plants according to criteria of 'attractiveness', such as colourful flowers, neat shape and unblemished foliage.

Some local plants will meet some of those criteria. But to grow more species of local plant, we need to take a broader view of what is desirable in a garden. Plants are beautiful or interesting in many different ways, and surely we can appreciate them best if we get to know them as whole characters, including their seasonal behaviour and their associated insects. Children are fascinated by the various types of blemishes left on plants by different insects. Such an interest should be encouraged in adults as well.

The future

There are signs that our interest in local plants is increasing. In recent years, a number of publications on aspects of Perth's flora have appeared. More and more groups are forming with a concern for preserving our local flora. But involvement with local plants has concentrated on bushlands; the interest in growing such species in our gardens lags well behind.

In the greater Melbourne area, there are more than 40 nurseries specialising in their local plants. Melbourne's interest in cultivating its local flora has grown up suddenly, in the last 15 to 20 years. By contrast, Perth has only one or two nurseries that specialise in local plants (a few more specialise in Australian native plants). But as soon as our demand for local plants grows, nurseries will cater for it. New techniques being developed to propagate plants will make the supply of many species a lot more feasible.

An active interest in local plants could easily develop and spread in Perth. That would be of great benefit to nature conservation and sustainability.

Arthropods and our local eucalypts

Studies* carried out on eucalypts reveal that they support surprisingly large numbers of arthropods—segmented animals with an external skeleton. They comprise mostly insects, but also include other groups such as spiders and millipedes.

At a single site at Karragullen, in the Darling Range near Roleystone, 446 species of arthropod were found in the foliage of jarrah and 443 in that of marri. Of these, 308 were on both tree species, 138 were only on jarrah and 135 occurred only on marri. These surprisingly high numbers suggest that eucalypt forests and woodlands are among the richest biological communities of the world's temperate regions. By estimating, from other studies, the likely numbers of arthropods that use the trees in other ways, such as feeding on the bark or boring into the stems, one can expect the total number of arthropod species associated with jarrah or marri at a single site to be between 600 and 1,000.

* Recher, H.F., Majer, J.D. & Ganesh, S. 1996. 'Eucalypts, Insects and Birds', *Forest Ecology and Management*, Vol. 85: 177-95

Majer, J.D., Recher H.F. & Postle, A.C. 1994. 'Comparison of Arthropod Species Richness in Eastern and Western Australian Canopies', *Memoirs of the Queensland Museum*, Vol. 36 Part 1: 121-31

Above A belid weevil, Helena Valley. *Photo – Jiri Lochman*

Right The tiny two-spotted line-blue butterfly breeds on wattles. *Photo – Robert Powell*

This article is based on a book by Robert Powell and Jane Emberson: *Growing Locals: Gardening with Local Plants in Perth* (published by the Western Australian Naturalists' Club in 1996 and reprinted in 2001). Robert and Jane have worked together on a number of books and articles on aspects of Western Australian vegetation and its conservation.

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