

Wattles and wildlife

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Author: Sarah Berry & WB

Wattles are one of the most widely recognised native plants. This Note explores the less well known relationship between wattles and wildlife and highlights some qualities of wattles that are of benefit to landholders.

It should be remembered that wattles are only part of a plant community. To create a sustainable habitat for wildlife requires consideration of all the other species typical of the plant community and location.

Wattles and Birds

The seeds of wattles are eaten by birds including Red-tailed Black Cockatoo¹, Gang Gang², Emu³, Crimson Rosella, Red Wattlebird, Superb Fairy-wren, various honeyeaters⁴, King Parrot⁵ and Brush Bronzewing¹.

Certain birds glean insects directly from the foliage of wattles. The Brown Thornbill feeds mainly from acacias¹. Fan-tailed Cuckoos are common amongst wattles¹.

Yellow-tailed Black Cockatoos use their massive beaks to rip open the wood of wattles to expose and consume wood-boring grubs.

Many wattles possess glands at the base of the leaves or edge of the phyllode (leaf stem that has been modified to appear and function like a leaf). During flowering this gland may produce a sugary fluid that attracts a wide variety of birds including silvereyes, honeyeaters (New Holland, White-naped, Yellow-faced, White-plumed, Crescent, Spiny-cheeked) and thornbills. Wattle pollen has been observed in bird feathers and birds are known to act as pollinators of some wattles². Josephine Kendrick⁶ describes how her team used mist nets to catch the bird pollinators of Sunshine Wattle *Acacia terminalis*. Among the many species they caught were honeyeaters, spinebills, thornbills, tree-creepers and several kinds of wren.

The Little Corella has been observed feeding on wasp larvae from galls on *Acacia* spp¹.

Taller species, such as Blackwood *Acacia melanoxylon*, are used as perches by hawking species, including birds of prey. The compact shape, dense foliage (e.g. Blackwood) or prickly nature (e.g. Prickly Moses *A. verticillata*) of some wattles, provide shelter and roost sites for birds.

Gilmore¹ proposes that the structure and composition of insectivorous bird communities is largely determined by the structure of the vegetation. The diverse range of forms characteristic of wattles, some of which have fine feathery foliage whilst others are broad-leaved, adds considerably to the vegetation structure and foraging opportunities for birds.

Wattles and Mammals

"Research in rural forest remnants in Victoria has shown that the number of Sugar Gliders is determined by the amount of plant exudates available during winter. The most important exudates are the gums produced by certain species of wattles, particularly Black Wattle *Acacia mearnsii*. The density of Sugar Gliders has been shown to range from a minimum of one animal per hectare where wattles are absent, to as many as 12 per hectare where wattles are abundant"⁷. Sugar Gliders (and Squirrel Gliders) use acacia gum as an important source of carbohydrate during winter when other sources of energy-rich food, such as nectar and some insects, are scarce. The quality and quantity of gum produced by different acacia species is highly variable. The gum of Black Wattle is water-resistant and persists on the plant

throughout the year whereas Blackwood is not a gum producer⁷.

The rare Leadbeater's Possum *Gymnobelideus leadbeateri*, which is found in the Mountain Ash *Eucalyptus delegatensis* forests of Victoria's central highlands, feeds on the carbohydrate-rich sap of certain wattles. Where hollows are not limiting, the abundance of suitable wattles is the next most important factor determining the numbers of this possum.

Wattles and Invertebrates

Most of the insects which visit or live on wattles do not pollinate the flowers but come to take leaves, pollen or 'nectar'. Ants, native bees and wasps are attracted to the sugars produced by wattle glands during the flowering period. Wattle seeds possess an oil-rich attachment (elaiosome) that is designed to attract ants which aid in seed dispersal. Some weevils may predate so heavily on wattle seed that they can reduce annual seed production by 15-25%. The branches and trunk of wattles can be damaged by wood-boring beetles³.

A study conducted near Melbourne identified sixty species of moths, some rare, on wattles. Thirty-six species of wattle are known to be food plants for Australian butterflies³.

Galls, such as those found on some wattles, are produced in response to infection by flies, wasps, psyllids, thrips, scale insects, beetles, bugs, mites, nematodes, fungi and bacteria.

Why plant wattles?

Apart from attracting wildlife, wattles possess many qualities that can be of value to landholders.

For revegetation or as 'nursery' species

Their ability to fix atmospheric nitrogen allows wattles to grow well in soils low in both nitrogen and phosphorus, the absence of which inhibits nitrogen uptake. Wattles regenerate rapidly and are regarded as instrumental in restoring the nitrogen balance within forest ecosystems following fires¹.

Wattles and other native legumes have considerable potential in revegetation programs because they establish rapidly, are able to condition the soil and provide shelter for the slower-growing species, such as eucalypts. Wattles are 'pioneer' (first coloniser) species that exploit the high light and low competition that occurs following a bushfire. These qualities have been utilised for revegetation following mining operations⁸.

Some wattles are able to produce stems from their roots and so spread without producing seedlings. This feature is useful where establishment of plants is difficult (e.g. due to competition from pasture).

Natural pest control

In suitable habitat, especially where wattles are present to provide essential winter food, Sugar Gliders can be common (over 10/hectare). Sugar Gliders prey upon scarab beetles and other invertebrates which defoliate eucalypts and contribute to dieback. One study estimated each Sugar Glider ate 3.24 kgs of insects per year⁹. Hence, wattles and other understorey species which are important to larger predators indirectly contribute to biological control of pests and maintain the health of native vegetation.



In California, orange groves have been interplanted with wattles because they can host a range of predatory insects that provide biological control of pests of the orange trees. This natural pest control quality is equally valuable where wattles are interspersed with eucalypts. Predatory insects, hosted by the wattle, range across to the eucalypt keeping down the number of foliage-eating and sap-sucking insects that can reduce the health of the tree.

Shade and shelter

The dense foliage and compact shape of some wattles, such as Blackwood, makes them suitable for shelterbelt plantings in some areas. Wattles have a reputation for being short-lived. This is true of many species but not all. "Most acacia tree species (especially those with bipinnate foliage) tend to be short-lived, and some are rather susceptible to borers and disease"¹⁰. Golden Wattle *Acacia pycnantha* may live 8-10 years in cultivation¹¹. Other species, such as Lightwood *Acacia implexa* and Blackwood *Acacia melanoxylon* live considerably longer (more than 100 years).

Timber

The timber of Blackwood *A. melanoxylon* has been acclaimed as one of the world's finest furniture timbers. The potential of other species may be yet to be realised.

Erosion control

Wattles establish quickly, even in poor soils. Species of wattle grow along watercourses and therefore have potential in revegetation programs aimed at reducing erosion, filtering input to streams and mitigating flooding.

Colour and scent in the winter landscape

One of the finest qualities of wattles, which has made them famous world-wide and as garden specimens, is the variety and beauty of their foliage and vibrant yellow flowers. Many wattles flower in winter and early spring providing a colourful display when most other species are not in flower. This characteristic can be exploited to improve the farm landscape.

Bee-keeping

The abundant pollen is a source of protein during winter which is important for 'build-up' conditions for bee-keeping.

Other uses

Some wattles have been used for commercial tannin production and (by aborigines and early settlers)¹⁵ as hop substitutes.

Warning - wattles can be poisonous

Smith⁷ notes that stock preferentially graze young wattles even when other foods are available in abundance and regards this as being responsible for their absence in most unfenced vegetation remnants. However, many wattles are known to be poisonous or distasteful to stock. Wattle foliage contains the poisons tannic acid and cyanide which probably serve to deter some insect predators. If wattles are going to be used in stocked paddocks landholders should seek advice on the toxicity of the species.

Warning - environmental weeds

The attractive qualities of wattles and their widespread cultivation have led to many introductions of species that did not naturally grow in Victoria and to changes in the distribution of Victorian wattles. Some species have established themselves outside of their previous range and colonised areas of bushland where they previously did not occur. This threatens the nature of the bushland. *Cootamundra wattle *A. baileyana*, *Early Black Wattle *A. decurrens*, *Cedar Wattle *A. elata*, White Sallow Wattle *A. floribunda*, Flinders Ranges Wattle *A. iteaphylla*, Sallow Wattle *A. longifolia*, Rain Wattle *A. prominens*, *Golden Wreath Wattle *A. saligna* and Coast Wattle *A. sophorae* have been recorded invading native vegetation (environmental weeds) in Victoria¹². *denotes naturalised in Victoria¹³.

How to grow wattles

The use of LOCAL native seed is highly recommended. Costermans¹⁰ and Rogers¹⁶ have produced useful field guides for species identification.

Cross-pollination (pollen transfer between two plants) is important for successful seed set in Sunshine Wattle *A. terminalis*² and probably for many other species. Pollination is effected by birds and probably some insects.

Seed collection can usually be done by hand. An upside-down umbrella or tarpaulin can be useful. Seed pods are collected when they change colour from green to brown. Seed shed can be rapid in hot weather. The seed can be sorted from other material using a suitable sieve. Seeds should be stored clean in paper or cloth bags where they will remain viable for long periods.

The seed of wattles possesses a thick seed coat. This prevents entry of water and protects the seed from predators until conditions are right for germination. In nature, this may occur following a bushfire. Fire can be used in bushland remnants to promote germination of most wattles, however, care must be taken to avoid damage to other fire-sensitive and juvenile plants. Cultivation can also be used to damage the seed coat and so encourage germination of wattles. Wattles may also be established by direct seeding of pre-treated seed (described below).

The seed of most wattles will require pre-treatment to damage the seed coat (dark black outer layer) for successful propagation. There are various options. The most widely used treatment for medium quantities of seed is placement in boiling or hot water (let stand till cool). This imitates the natural heating of a fire. Note that some species (and batches within a species) do not require heat treatment or are sensitive to prolonged heating. For example, Cavanagh⁸ recommends 30secs at 100°C for *Acacia terminalis*. A sample of each seed lot should be tested before treating the entire batch. Nicking the seed coat with a single-sided razor-blade is suitable for small quantities. Other treatments include acid scarification (H_2SO_4 , 20 mins), microwaving (120 secs) and machine scarification⁸.

Wattles are ideal for sunny positions. They will grow rapidly for a few years and slow down as the canopy and trunk develop. When the desired height has been reached, wattles can be pruned hard after flowering to keep them from becoming straggly and woody. Pruning will prolong the life of wattles¹⁴.

What species to plant

Local native species are recommended. Check with your local DCE office for species native to the area. **DON'T FORGET, WATTLES ARE ONLY PART OF THE UNDERSTOREY IN SOME AREAS.**

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