

EXOTIC TREES ALONG WATERCOURSES

In many areas, the invasion of exotic trees, particularly willows (*Salix sp*), ash (*Fraxinus sp*) and poplars (*Populus sp*) has adversely affected native plants and animals.

Brought in by European settlers, exotic trees such as willows, were regarded as valuable erosion protection for stream banks. Despite their harmless appearance, willows are a problem because South Australian watercourse ecosystems have not evolved with them.

Willows cast such a dense shade that little else can grow underneath them. The banks under willows soon become bare and cannot provide food or shelter for wildlife. The bare soil can also become susceptible to erosion. The healthy looking willow is ensuring the slow death of other plant species and a decline in wildlife diversity and populations.

Excessive siltation is another problem that may be caused by exotic trees. Willows send out fibrous mats of roots which grow out into the water, trap sediment and extend the banks. When watercourses flood, willows are often uprooted and dropped downstream causing blockages which exacerbate flooding.

WHY ARE THEY A PROBLEM?

Biological monitoring in South Australia has shown that numbers and diversity of invertebrates such as beetles, dragonflies and daphnia and native fish have been greatly reduced under willow trees as compared with native vegetation.

Organic pollution

Because willows are deciduous, they drop all their leaves over a few weeks in late autumn. This sudden influx of organic material into the water is an organic pollutant.

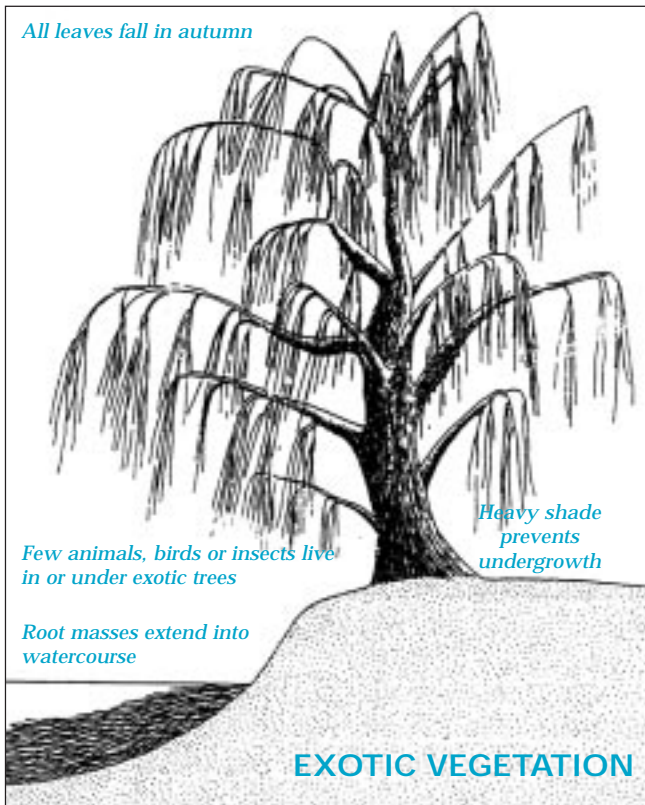
As the leaf material breaks down rapidly in the water, it releases large quantities of nutrients in a short period of time. As the nutrient levels

increase, oxygen levels decrease. These nutrients also encourage the growth of types of algae that other creatures can't eat. In contrast, native vegetation sheds leaves steadily throughout the year, providing a consistent supply of food for the whole wildlife chain.

Poor wildlife habitats

Willows reduce the number and diversity of species in the water, and on the banks. In summer, the deep shade from willows prevents other plants from establishing





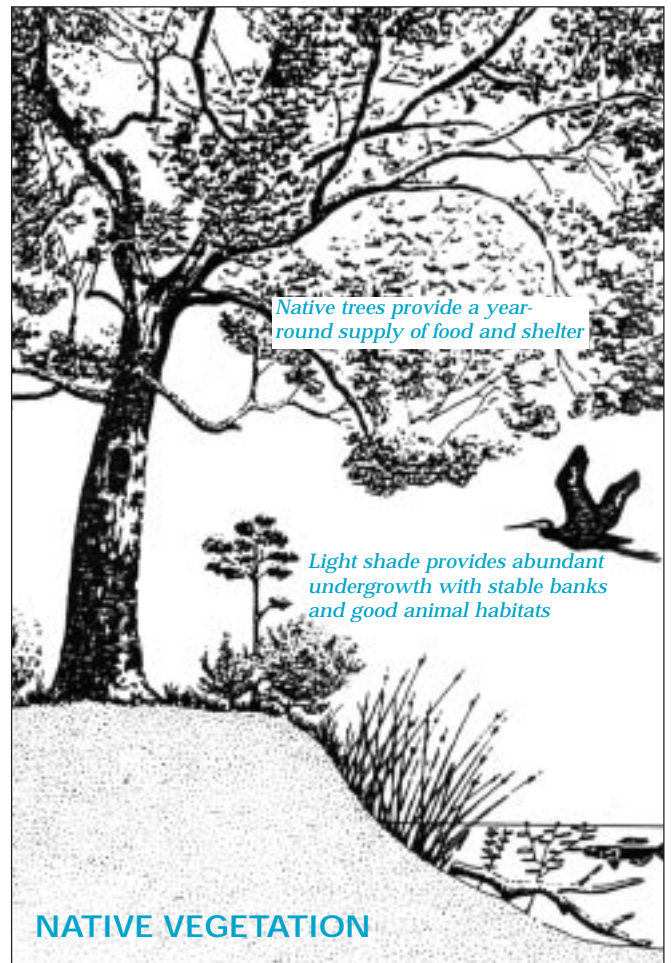
themselves. Animals that need an understory for food or shelter relocate to other areas.

Willows do not provide many native animals, birds or insects with either shelter or food. Willow bark is too dense to create hiding places for insects. This results in less insects becoming food for insect-eating birds and fish. Nectar-eating birds also avoid using willows as a food source or habitat.

Willow branches do not often drop branches into the water, but when they do, the branches decay so quickly they are useless as fish habitats. From late autumn to spring, the willows are bare, and offer little protection to wildlife.

CONTROL AND REPLACEMENT OF EXOTIC TREES

Streams are a dynamic part of the ecosystem and any woody weed control programs need to be undertaken with great care.



Do not attempt to remove all trees in heavily infested sections in a single year. It is important to plan a program to replace vegetation with suitable indigenous species at the same time as the control program. Before undertaking any removal of exotic trees along watercourses consult an experienced watercourse manager.

Willows

There are a number of options for controlling willows. Recent control programs in the Mount Lofty Ranges have provided valuable experience. The following control options are based on the experiences of Government agencies, Landcare Groups and individuals.

The timing of control programs is very important. Willows can quickly take root from broken branches and this needs to be considered when deciding on the appropriate control method.



Option 1: For small numbers of trees or individual trees injection of herbicide into the stems at any time during the growing season (October to April) will kill the tree. The trees can then just be left to break down naturally over time (3-5 years). The advantage of this method is that it takes little time and is cost effective.

Option 2: For larger numbers of trees or where the dead standing trees are considered unsightly, an alternative is to inject herbicide into the stems at any time during the growing season, wait until the trees are dead and then cut them down for disposal.

This method has the advantage of ensuring that follow up maintenance work is minimised because when live trees are cut down they 'shatter' creating hundreds of potential new plants from the broken branches.

The disadvantage of this method is that the dead trees can become very brittle which can be a safety hazard when the trees are cut down as the shattering branches can be thrown a considerable distance.

Option 3: Cut the trees down when they are alive by using a chainsaw. Cut the trunk as close to ground level as practical and painting the stump with Roundup Biactive™ within 20 seconds, if possible. This method has proved to be very effective if the trees are cut down during a warm period in summer so that any broken branches desiccate and die before they can take root. Where funds are available, the use of an excavator with a log grab to stockpile the fallen trees has proved to be cost effective and efficient.



Where funds are available, the use of an excavator with a log grab to stockpile the fallen trees has proved to be cost effective and efficient method of willow removal

The fallen trees should then be stockpiled above any potential flood risk level, ready for disposal by burning after the fire ban season. No better, more cost effective method of disposal has yet been found in the Mount Lofty Ranges.

The effectiveness of this method is increased if care is taken to collect all broken branches and twigs that may have fallen into water or on damp ground where they may otherwise take root.

Ash Trees

Because ash trees propagate by seed, they do not have to be poisoned before they are cut down. However, ash trees have the ability to seal cuts within seconds.

Stumps must immediately be painted with undiluted Roundup Biactive™ or drill holes into the sapwood layer at 10cm intervals and inject 2ml of undiluted Roundup Biactive™ into each hole. The hole should be immediately plugged with corks or dowling.

Poplar Trees

Trials have found that if poplars are cut down before poisoning, there can be prolific 'sucker' regrowth from the root system.



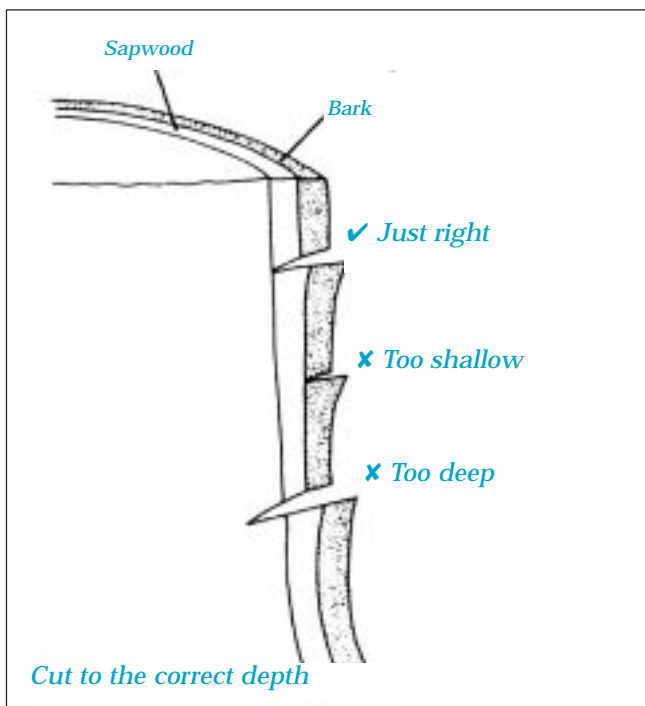
Controlling subsequent regrowth can then become time consuming.

Poplars should be poisoned before they are cut down. Poplars can be poisoned at any time of the growing season (October to April). Drill holes at intervals of 10cm at waist height around the circumference of the tree. Inject 2ml of undiluted Roundup Biactive™ into each hole. The holes should be immediately plugged with corks or dowling. The tree can be cut down when it is dead.

Stem injection method

Use undiluted glyphosphate herbicide (Roundup Biactive™) and apply close to the base of each limb. Make a cut, or drill a hole, at about 5 to 10 cm intervals around the circumference at the correct depth into the sapwood (*see diagram below*). Inject 2ml of herbicide into each cut.

- Note:
1. To minimise the use of herbicide near the watercourse overspraying the leafmass is not recommended.
 2. Do not attempt to dig out the root mass of the exotic tree, rather let it rot away.



REVEGETATION

The removal of any exotic trees should be followed by revegetation of the site. To maximise the benefits of any revegetation, establish a full range of local native plant species including trees, shrubs, grasses, groundcovers, sedges and reeds. For more information refer to Waterwise No. 2.

FURTHER INFORMATION

WATERCOURSE MANAGEMENT: A field guide, prepared by the Upper River Torrens Landcare Group

A guide to erosion control measures for small watercourses in the Mount Lofty Ranges, Jason Carter and Ed Collingham

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