

LORD OF THE WEEDS



WILLANS HILL, WAGGA
WAGGA

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WAGGA WAGGA HIGH SCHOOL

Introduction and Identification

I have chosen to research the weeds on Willans Hill, particularly the area Wagga Wagga High School owns. Willans Hill sits a block east of the high school. The school uses the level section of this land as a farm for Agriculture classes. The section of the hill that they own is used as a cross country track. The rest of Willans Hill is owned by the Wagga Wagga City Council, who have made it into a Reserve.

By removing the weeds from Willans Hill I hope to increase the already varied biodiversity found there. In place of the removed weeds I hope to plant native trees, which will encourage wildlife to move there. Willans Hill is already home to many species of birds including the Australian Magpie, Black Shouldered Cuckoo-Shrike, Dollar bird, Eastern Rosella and the Yellow-Rumped Thornbill. I hope that with encouragement these birds will become more prominent in the area.

If allowed to continue the way they are, the weeds on Willans Hill may pose a threat to the productivity of the Wagga Wagga High School farm. Should these weeds spread school crops may be infected reducing quality and costing money to remove. If livestock were to feed on these weeds they would have a lower weight gain, and again the school would have to pay to remove the plants and pay vet fees.

By removing the weeds in this area I hope to create a more inviting habitat for native fauna, while ensuring the continued success of the school farm.

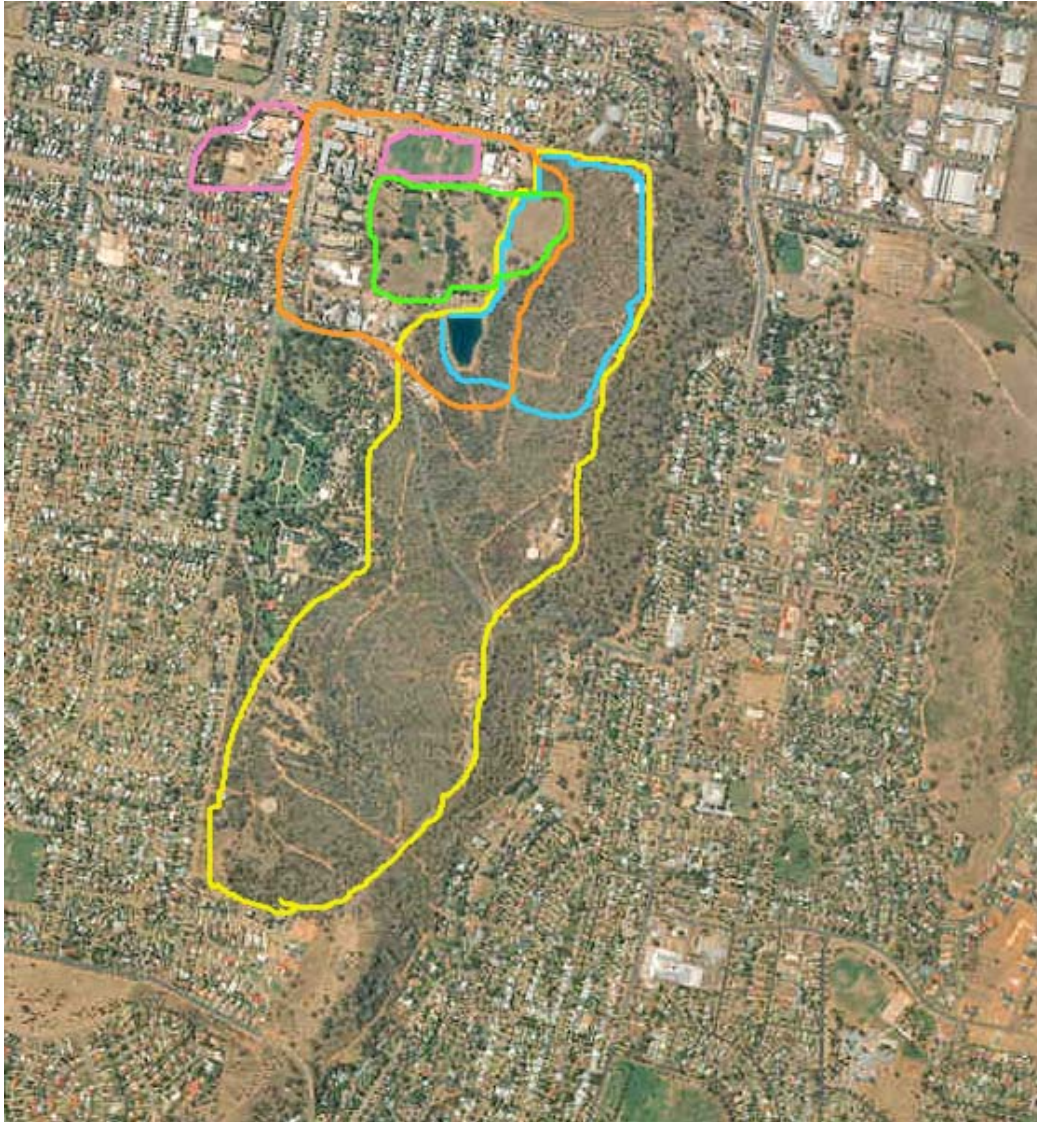
In the area of Willans Hill I am researching, I have located three major weeds. They are Paterson's Curse, St Johns Wort and African Boxthorn.

In this area Paterson's Curse, St Johns Wort and African Boxthorn are all class four weeds according to the Noxious Weed Declarations for Wagga Wagga City Council. This means that all weeds growth and spread must be controlled. This is what my action plan aims to do.



Part of the Wagga Wagga High School farm

SELECTED AREA



Willans hill

Cross country track

Selected area

Wagga Wagga High School Farm

Wagga Wagga High School

History of Willans Hill

Willans Hill was named after William Willans (1824-1900) who was Wagga Wagga's first solicitor. Willans came to Australia from Ireland with his wife and infant son in 1858.

Willans Hill was reserved as Crown Land and given to the City Council as Trustee. The Botanic Gardens and Nursery on the western slopes were established in 1962. The Rifle Range, which was relocated to Pomingalarna Common in the 1920's, was on the eastern slopes.

The Willans Hill Reserve, established on the 11th of June 1886, was the first parcel of land dedicated to the public. Much of the land on the lower slopes is still privately owned. These residential areas circle the Reserve and in effect, disrupt the ecology.

Over time Willans Hill has had many changes made to it. It has been used for the winning of gravel and rock, and water storage reservoirs, radio and television staging stations and over head electricity transmission lines were all added during Post War years.

Between 1951 and 1957 over 10,000 trees were planted including Eucalyptus, Acacia, Casuarina, Callitris and exotic Pinus species. In 1958 hiking and walking tracks were added, and some picnic tables were added later. The present Botanic Gardens were planted in 1961 with the Scout Hall being built in 1965.



Part of the walking track



Paterson's Curse

Paterson's Curse (*Echium plantagineum*) is also known as Salvation Jane (only in Australia). The plant is a native of the Mediterranean but was introduced in the 1880's to Australia as an ornamental plant and also probably by seed contamination. The weed is a prominent pasture weed throughout New South Wales, the Australian Capital Territory, Victoria, South Australia and Tasmania. It infests almost all areas including grasslands and woodlands.

Paterson's curse is an invasive and generally an annual spring-flowering plant, but is highly adaptable and if there is suitable conditions the plant can germinate out of season. Patterson's curse is able to germinate in a variety of conditions and can survive long dry periods. All these factors make Paterson's Curse such a versatile weed and a prominent one.

The plants stem grows to 120cms in height while the dark green, hairy, oval-shaped leaves reach lengths of 30cms long. The distinctive purple flowers grow in clusters and each has 5 petals. The weed grows quickly out of control and produces mass seeds, sometimes producing up to 30 000 seeds. The seeds spread by catching on animal's fur or wool, being carried in water and contaminant of crop seed.

Paterson's curse is a problem for stock as it contains pyrrolizidine alkaloids, which when eaten in large quantities can cause reduced livestock weight and in severe cases death.

Paterson's curse has been aided by human-induced habitat degradation, especially the removal of perennial grasses. It does not grow well in areas where the native vegetation is healthy and undisturbed.

Paterson's curse can be controlled by hand or with a variety of herbicides. This treatment but be continued over many years to reduce the seed bank, as some seeds can survive for five years.



Paterson's Curse diagram



ST JOHNS WORT

St Johns Wort (*hypericum perforatum*) is a perennial plant and was introduced into Australia in 1875 as a household garden plant. St Johns Wort is now a widespread plant residing in forests, national parks, pastures and water catchment reserves.

St Johns Wort is a native of Europe, North Africa and Asia but is now a weed in more than 21 countries. St Johns Wort has infested large areas in New South Wales, Victoria and South Australia.

There are two main strains of St Johns Wort in New South Wales. The more wide spread of the two strains is the narrow-leaved, which contains more oil glands resulting in higher levels of the toxin hypericum. The leaves are 7-9 mm wide while the stems are long and thin. The other strain has leaves that are 10-12 mm wide and is known as the broad-leaved strain. Because the leaves are wider they contain fewer oil glands resulting in lower levels of hypericum. This strain has thick stems and large seed capsules.

The flowers of St Johns Wort are yellow in colour and grow in dense clusters. The flowers are approximately 22mm and each flower has 5 petals. The plant flowers from late October-January. The seeds are released in Autumn and Winter and need mild temperatures, sunlight and rainfall to germinate. The seeds are spread by sticking to animals, being carried in the digestive tract, wind, water, machinery and humans (clothes and shoes).

St Johns Wort contains the toxin Hypericum, which if eaten by livestock results in photosensitisation. The skin damage from this hypersensitivity to sunlight leads to problems such as weight loss, reduced productivity and in some cases death. Once ingested hypericum passes from the stomach to the bloodstream and once in the skin's blood cells, the chemical is activated by sunlight causing the chemical structure to change and making the compound poisonous. The effects of this poisoning become apparent in less than 5 hours. The symptoms include; agitation, head rubbing, hind limb weakness, panting, confusion and depression. Mild diarrhoea, inflammation of the skin around the forehead and eyes and hyperthermia (high body temperatures) may also occur in some animals. Affected animals will lose weight, produce less wool (only in sheep), less milk, fewer offspring and fewer animals will be able to conceive. To treat St Johns Wort the affected animal must be kept away from sunlight for 4-7 days.

AFRICAN BOXTHORN

African boxthorn (*Lycium ferocissimum*) was introduced to Australia originally as a hedge plant. The sharp thorns were an effective boundary between properties in the early days of rural settlement. African Boxthorn is native of South Africa and is only reported as a weed in New Zealand and Australia.



The plant reaches heights of up to 4 meters. Its leaves are glossy and approximately 20mm wide, with creamy coloured flowers and bright red berries, which are about 10mm in diameter.

These berries are commonly eaten by wild animals, especially birds and the seeds are dispersed by excretion. The seeds are usually deposited underneath trees and the seedlings grow into plants dense enough to take over the area. African Boxthorn also has the ability to reproduce from root segments.

One of the main problems with African Boxthorn is that it seriously reduces a property's stock carrying capacity. This is the case at the Wagga Wagga High School farm. African Boxthorn grows in dense patches under trees. The long thorns prevent the stock using the shade provided by these trees. The thorns on the plant may scratch the livestock's eyes, causing medical problems.

Because of its long thorns African Boxthorn makes a perfect habitat for feral cats, foxes, rabbits and pigs. These animals can threaten the safety and well being of the stock on the school farm.

Control Plan

Now that I have located and researched the weeds on Willans Hill I am able to create a control plan to eliminate them.

- 1) A group, comprised of school students, should be formed. These students will carry out the control plan during sports times.
- 2) The students will clear the area of any rubbish along the tracks and in the bush left by walkers.
- 3) Students will split into three smaller groups, each targeting one weed. Each group will follow a specific plan for their weed.

African Boxthorn

African Boxthorn needs to be dugout using shovels and trails. Smaller plants can be removed by hand but students will need to be careful as African Boxthorn has large spikes. Once all plants have been removed the area needs to be monitored for regrowth. If any is found these can easily be removed by hand before they grow too large. Care needs to be taken to remove the roots, as the plant can grow back using them.

The removed plants need to be burnt. Because of the extreme fire risk on Willans Hill this should be done in a safer area, such as the other side of Wagga Wagga High School 's farm.

Native plants should be planted over the area where African Boxthorn has been removed. This will reduce the risk of regrowth.

St Johns Wort

This group of students will require the assistants of a teacher, as they will be using herbicides. The students will be using Fluroxypyr + Triclopyr, Picloram or Glyphosate, depending on which the school is able to get at the time. St Johns Wort should be sprayed when the flower is half opened. Again, the area should be monitored for regrowth, and natives should be planted once the weed is dead and removed.

Patterson's Curse

As there are only small patches of Patterson's Curse found on the schools area of Willans Hill it can easily be removed by hand. A group of students will have to

monitor this weed for up to five years as it is likely to grow back. Natives should be planted in this area too, to prevent regrowth.

- 4) Once these weeds have been removed students will need to continue checking for any new weeds, to check the growth of the newly planted natives and to clean the area of rubbish.

If this plan is completed the school will have provided an inviting habitat for the native wildlife, and will have prevented weeds entering the farm via Willans Hill.



Looking for weeds on Willans Hill



BIBLIOGRAPHY

www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/weeds_shrubs_african_boxthorn

www.hypericum.com/

www.northwestweeds.nsw.gov.au/african_boxthorn.htm

www.wagga.nsw.gov.au/index.aspx?item=he&sub=weeds&sub2=w

http://weedman.horsham.net.au/weeds/heliotrope/heliotropium_profile.htm

<http://www.weeds.org.au/cgi-bin/weedident.cgi?tpl=plant.tpl&state=&s=&ibra=&card=S10>

<http://wikipedia.com>

“St John’s Wort.” Agfacts (magazine). Fifth edition, (2005): 1-11. NSW Department of Primary Industries.

Green, Dick. Environmental Officer, Wagga Wagga City Council. 28th February, 2007.

“Noxious weed declarations for Wagga Wagga City Council”. NSW Department of Primary Industries. 23/08/2006.

“Willans Hill: Bushland for the community.” The Esplanade. Environment and Land Care Centre Greening Australia.

<http://www.factmonster.com/homework/t8biblio.html>

http://bird.net.au/bird/index.php?title=Patterson's_Curse