Creek Line on Sims Farm

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Yr 11
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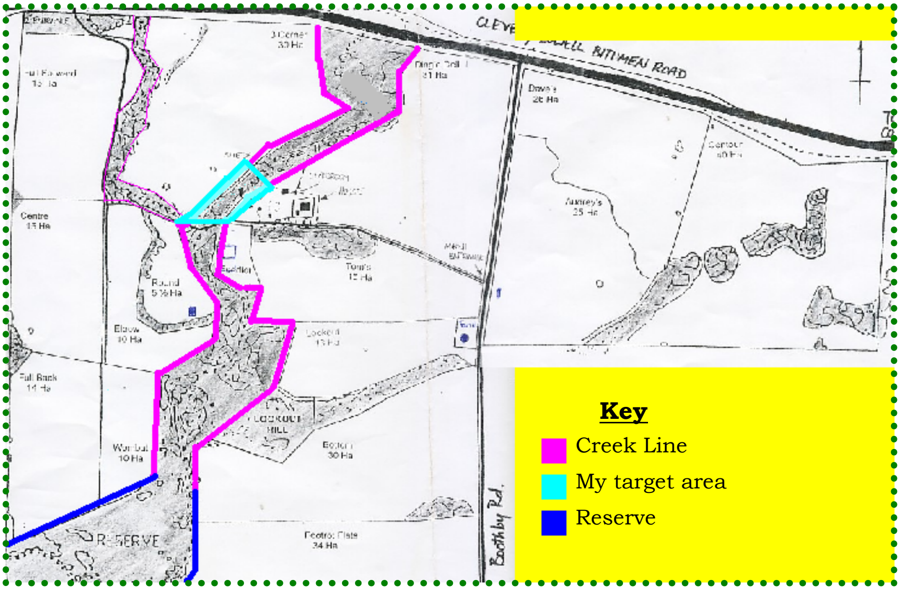
The Creek Line

On our school property called Sims Farm we have a large creek going through the property, it hasn't had any water in it for many years and would take a very large amount of rain for it to run again. In previous years there has been no research on the creek included in any subjects. The school has decided to pay some attention to the natural resource and include in some of the agricultural based subjects. In 2006 year 12 sustainable system students are using it for one of their projects. We have had Tony Zwar and Iggy Honan who are mainly targeting the bridal creeper which is rapidly taking over many of the smaller native trees and also preventing the already existing larger trees from growing healthily. There are also boxthorn and Prickly Pear that are also causing concern.

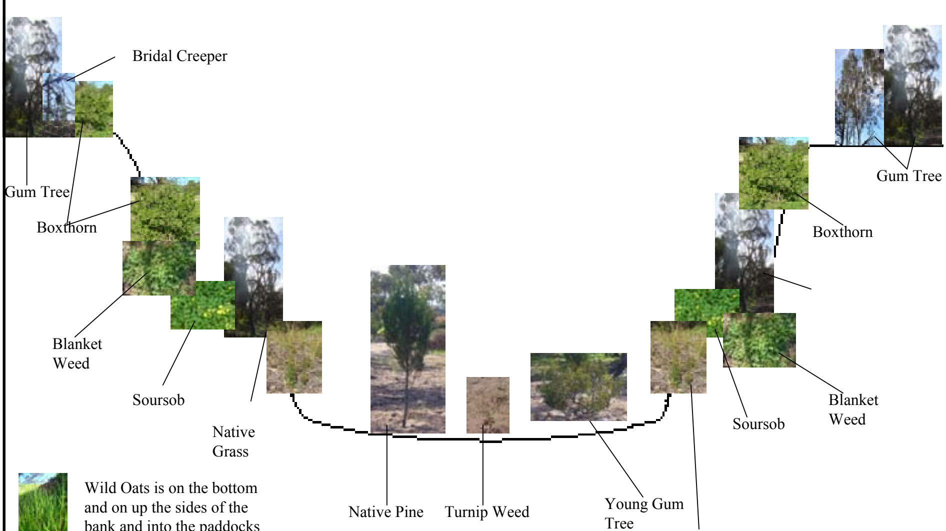
In my project I am aiming to identify most of the troublesome weeds and find out a bit about them and then try to find out some different kind of control methods we could use. Once we have cleared out most of the weeds in the future I hope we can plan to strategically eradicate problem weeds to encourage the native vegetation and bio-diversity of the creek line.

Because there is such a large area of the creek running through the farm I have decided to just target a small area behind the sheds and homestead on Sims Farm. In this area there are 2 major weeds Bridal Creeper and Boxthorn, and weeds that aren't such a problem but would be great if we could remove. This is just in this part of the creek in other parts there are also Prickly pear, Castor Oil plant and Horehound. The part I am targeting has been part of a stock exclusion project and hasn't had any stock on it for over 20 years. Because we have only started to try and manage what is happening in the creek other than the stock exclusion we haven't really acted on any problems yet except the Bridal Creeper. My project will have strategies we could use in the near future.

Map of Sims Farm



The Creek Bed



Bridal Creeper

Asparagus asparagoides

Bridal Creeper is an annual plant that grows from a perennial root system. The root system is what makes the plant one of the worst weeds in Australia. It consists of numerous tubers which store food grouped along a central rhizome (underground stem with short buds). The tubers and rhizomes are like a very thick mat and allow the plant to survive over summer and then has a rapid shoot growth in autumn. Above the ground the twisting stems can grow up to 3m in length and wraps around anything stationary in particular stems of other plants, the stem is very fine with small leaves. The leaves are a very bright green colour and look rather delicate but in fact are very strong. It produces a pea-size green berry which ripens to red and usually has about 2 or 3 black seeds in it. The flower is very small with tiny orange petals.

Affect on Creek line

Bridal creeper has huge impact on other plants where ever it is growing not just in this particular creek. It is not real advanced yet in the creek and we are hoping to eradicate it before it becomes a real problem. Bridal Creeper smothers the plants by strangling them with its climbing stem and then because of its extensive root system deprives the other plants of moisture and nutrients. It spreads and invades undisturbed habitats.
It can affect even the largest of trees and the plant I found was on a really big old gum tree but mainly a major threat to low shrubs and groundcover.

Control

We have chosen to use a biological control method. In the past on a different project we have collected bridal creeper and grown it then infested it with the leafhopper and replanting the infected plants into the area and hoped that it affected the area, this did not have a huge impact on the bridal creeper and is still a major problem. This time we have decided to use a new method called 'rust fungus'. It is similar to the rust that affects cereal crops but this type only grows on bridal creeper. What is does is completes its life cycle on bridal creeper, it produces a five spore state and infects the leaves and stems of the weed.
It uses the water and nutrients from the plant by establishing intimate contact with the living cells and deprives the weed from getting its required nutrients and affects the plant development and reproduction, there fore reducing the growth of fruit, rhizome and the tuber production. It is very noticeable once it is established on the plant and makes the plant look a orange brown colour. It can survive the summer when there is no bridal creeper being available for when it starts germinating every growing season.

Bridal Creeper

Asparagus asparagoides

Tony Zwar from Plant and Animal Control is assisting us in this project and has what we need to apply the rust. We are planning to infect some water in spray bottles and then walk around and spray all the bridal creeper we can find with the adequate amount of rust fungus. We are hoping that we can get most of the bridal creeper and reduce the risk of it becoming a major problem.
Another method would be herbicides but this is not suitable for this area because there are other plants in the creek that we do not want to destroy in the process of destroying the bridal creeper. Bio control is a lot slower process than using herbicides but we care for the health of the other plants that we want to keep growing. Manually removing it just wouldn't be suitable and would be a waste of time unless you are very careful and get all the tubers and rhizomes which would be near impossible to do successfully.
We hope that the rust fungus destroys all the bridal creeper weeds allowing the other native plants to continue growing and not be stunted or damaged by the bridal creeper.

Bridal Creeper Flower

Leaves and Stems

Bridal Creeper climbing up remains of a dead tree

African Boxthorn
Lycium ferocissimum

Boxthorn belongs the Solanaceae family. It is a branched woody shrub that can grow up to 6m high. It has a extensive root system with a long branched tap root. The branches are covered in very sharp thorns that can grow up to 4cm in length and have a very pointy end. It has dark green small leaves, the flowers are single or in pairs at the leaf-stem junction they are white with a purplish throat. The flowers are usually about 10mm in diameter and 12mm long with the stamen projecting to 4mm past the petals on the male petals, usually flowers in the summer. It has red berries that are about 1cm in diameter in a short drooping stalk. It is spread by the seed being eaten by foxes and birds.

Affect on creek line

The part I am targeting the boxthorns are further up on the bank and then on the flat land not in the creek bed. Boxthorn is a pest anywhere including in paddocks. The boxthorns in the creek are reasonably large and will be difficult to remove. They are very large shrubs and often are left alone because of there prickly nature and if they are advanced they are really big. It's a noxious weed and is easily spread so we obviously don't want it in our creek line.

Control methods

Unless the weed isn't very big it is not suitable for a human to manually remove them and its likely that seeds will still be remaining on the ground. For large plants heavy machinery can remove them but the material should be destroyed, the area needs to be monitored for regrowth and removing any plants that do germinate afterwards. After they have been removed something else can be planted to provide competition for the boxthorn seedlings and restricting the available light, water and nutrients. Herbicide is probably the best option but has to be monitored as they are very tolerant weeds and they may have appeared to have died but can regenerate quickly and will need to be sprayed again. As with all herbicides we would have to be careful that we only got the boxthorn and not any other wanted plants. Another way of using herbicide is the cut stump treatment, this is done by cutting the bush off at about 15cm above ground level, and then paint the freshly cut stump immediately with a chemical mixture to prevent regrowth. I think that this would be the safest herbicide treatment as it wouldn't have any risks of harming other plants. After we target the bridal creeper I believe we will be targeting the woody weeds which are boxthorn and prickly pear in this case.

African Boxthorn
Lycium ferocissimum

Herbicide Application for the Cut Stump Method

Type of Application	Herbicide (Active ingredient)	Commercial products (Content of active ingredient)	Rate of commercial product per L	Comments
Cut Stump	glyphosate triclopyr + diesel triclopyr	Roundup 360® (360g/L) Glyphosate 360® (360g/L) Garlon 600® (600g/L) Treekill® (50 g/L)	1L/L of water 33 mL/L diesel distillate 170mL/L of water	Use when basal diameter is greater than 5 cm. Apply to the freshly-cut stump.

Berry about 1cm in diameter

Large advanced Boxthorn about 6ft

Soursob
Oxalis pes-caprae

Soursob is a member of the Oxalidaceae family. It forms from a bulb which sprouts around the autumn or winter time biennial. It first forms trifoliate leaflets which are heart shaped with brown spots on the upper surface on a long petiole. They can grow up to 30cm in height and the leaves are arranged in a rosette on the long petioles, the leaves have short hairs on the lower surface and on the petiole. It produces bright fluorescent yellow trumpet shaped flowers. It mainly spreads through the bulbs which is caused by and soil movement. They are very commonly found in gardens and cultivated areas.

Affect on Creek line

It is well established on and up the banks of the creek, it has taken over from the native grasses and there is also wild oats growing with it. If we can effectively kill the soursobs the native grasses should start growing again.

Control

Grubbing- This method can be used all year round and involves removing the who plant including the bulbs but can be a very tedious task because there are many small bulbs that can be easily missed. Another way is mulching which also can be done all year round and will suppress oxalis. The easiest way is probably spraying with herbicide which a chemical like round up will be absorbed into the plant and then down to the roots and corms and will effectively kill the plant. It is sprayed onto the plant when the soursobs are flowering.

Round-up is a very tough chemical and will most likely kill some other plants and hopefully weeds. The native grasses should have enough of a seed bank to come up the next year and continue growing with out the competition of the soursobs.

Adult soursobs further down the creek

Fully bloomed flower

Adult flowering plants

Wild Oats
Avena fatua or Avena Barbata

Avena fatua belongs to the Poaceae family, is an annual weed that germinates in autumn-winter and flowers in August to December. The seed can germinate up to 40% at the start of the season and then depending on the environmental factors can continue germinating right through to the growing season through to spring. It can grow up to 1.7 metres high and is green in colour and has hair on the stems. There are two very similar types the Avena fatua and the Avena Barbata the main difference is that the spike lets (large and gaping, drooping from fine stalks) on the A. Fatua are on both sides where as the A. Barbata only go to one side. It frequently crosses with other Avena species making it more difficult to identify.

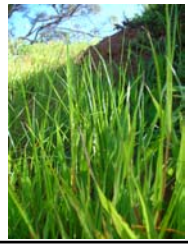
Affect on the creek line

The wild oats is in the bottom of the creek bed right up the banks and onto the flat area leading into the paddocks. It is a very high competitor and because it is spread widely across the creek it is preventing the native grasses like (….) growing to their full potential and over powering the unwanted weeds. Because it can stagger it germination it is greater competition as it doesn't just come and go at a certain time and allowing the other plants to grow it has a longer growing period. It also is a main host of diseases such as rusts on cultivated oats cereal cyst nematode, stem nematode, rhizoctonia, crown rot, and root lesion nematode so if we can eliminate it growing in the creek it cannot spread into the paddocks.

Control Options:

Realistically we can not remove the wild oats, we could spray them but they have such a good seed bank the next year it would re-grow.

Note ** We also have some Blanket Weed and Turnip weed but they don't really seem to be causing to much trouble yet but we will keep an eye on them that they don't start to become a problem.



Young wild oats, still looks like grass

Bibliography

http://www.weeds.asn.au/weeds/txts/oxalis.htm
http://www.dpiw.tas.gov.au/inter.nsf/WebPages/RPIO-523VU9?open

Noxious Weeds of Australia. W. Parsons and E. Cuthbertson, 1992, pages 601–603. *Flora of Australia*. 1982, Vol. 29, pages 63–66.
http://www.weeds.org.au/cgibin/weedident.cgi?tpl=plant.tpl&state=&s=0&ibra=&card=S10

Bridal creeper rust fungus, *Puccinia myrsiphylli 13th/8/2006*
http://www.weeds.crc.org.au/documents/wmg_bridal_creeper.pdf
http://www.ento.csiro.au/weeds/bridalcreeper/fungus/index.html

13th/8/2006 Weeds Australia, information compiled by Ty Kirby
http://weedman.horsham.net.au/weeds/avena_fatua/Avena_spp.htm

Crop Weeds J.L. A.G. Barnett R.L.Amor Published 1986 Pg 126 24/07/06

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