

The Area

The studied area is located in James Ruse Agricultural High School which is on Jenkins Road, in between Pennant Hills Road and Baker Street. It is approximately 50m by 20m in size.

On one side of the area, there is a road with a storm water drain along with a small creek running from it. The creek opens up into the man-made school dam which is used to irrigate grazing pasture. The weir at the bottom end of the dam directs water further along the stream into Hunts Creek. For this reason we felt it important to control the weeds at this particular site. Seed and cuttings from the weeds can easily be transferred further down the catchment, all the way to Parramatta River.

As a waterwatch group we currently test the water coming from the storm water drain at least once a fortnight. Previously we had a narrow pathway to access the site, with knee high Kikuyu and Wandering Jew. Now we can safely make our way along the woodchip path without the risk of being bitten by spiders, snakes or mosquitoes.

An agricultural grazing paddock borders the south side of the site. Kikuyu is the dominant pasture, especially in summer. For many years weeds were not addressed in this remote north corner of the school and the Kikuyu had made its way through the fence and established itself throughout the whole site. In doing this the slower growing native grasses had eventually all died out. It became "KIKUYU – Lord of the Land"!

Crofton Weed and Wandering Jew also covered a large area on the site, especially along the banks of the creek and dam. We can assume that the seeds and cuttings of the weeds were brought to the area by birds and ducks which we often see on the dam. Another theory is that they escaped from peoples residential gardens and made their way through the storm water systems, and into the creek.

Written by Peggy Xie, Joanna Fan and Daisy Chan

The site is lightly timbered with Casuarinas, Eucalypts and Banksia trees. Although there has been tree planting in the area on National Tree Days, there has been little use of follow-up procedures, in regards to weeds control, until recently. The lack of attention to the area caused an increase in the amount of weeds which compete with the small saplings and grasses. The aim now is to regenerate the area and keep it rehabilitated. This involved the planting of 2,200 native trees, grasses and shrubs, including Casuarina, Acacia, Lomandra grass and several species of Juncus which now will hopefully encourage native wildlife back. And did we mention our team of 25 planted all these natives (tube stock) all in one rainy day. Although, weeks of weeding and mulching preceded this day.

This project was made possible after submitting a proposal to the Upper Parramatta River Catchment Trust in early 2006. They have funded the whole process including the hiring of a local regeneration group, 'Toolijooa Environmental Restoration', which helped with weed removal using methods not safe for us to do so at school. Chemical herbicides were used. A petrol auger was also used to dig the 2200 holes. They also supplied all the plants and helped with plant selection.

The diversity of native plants in the area is of great natural significance to the students and staff at James Ruse AHS. The area can be regenerated to become a natural habitat for native animals and therefore is vital to the survival of certain species of flora and fauna. It is hoped it can be used by teachers as a safe learning area to study native flora and fauna.

By Gene Ling, Helen Tong, Alan Ng, Calvin Cheung and Bowen Li

Weeds identified in the area:

***Tradescantia fluminensis* (Wandering Jew/Wandering Dew) –**

“It is a succulent with well defined nodes. Leaves are alternate and shiny. They are common in damp places with nutrients enriched from urban areas” **(Buchanan 1981)**

This is an extremely invasive weed that affects native bush areas. It is considered as a noxious weed and is extremely difficult to eradicate. Wandering Jew is notorious for its ability to blanket the entire ground in forest and smother smaller plants and prevent regeneration of larger ones. Whenever a part of a disconnected stem contacts soil, it may begin to take root, making the Wandering Jew capable of spreading at extreme speeds.



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Ageratina adenophora (Crofton Weed) - This weed is a perennial shrub with chocolate coloured woody upright branching stems growing from an underground crown. It usually grows up to 1- 2 metres high. Leaves are bright green and opposite on the stem. The flowers are small, white dense heads at the ends of branches. It is poisonous to animals, particularly horses, to which it causes Tallebudgera Horse Disease. Crofton Weed should be controlled before it flowers, as to prevent it from reproducing. If not, it can lead to devastating infestations.

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***Pennisetum clandestinum* (Kikuyu grass)** - Kikuyu grass is an African native plant. It grows by establishing runners along the ground and beneath it. Like the Wandering Jew, it is a noxious weed and is highly invasive, being able to spread quickly and form dense mats on the ground. Kikuyu is known to climb other plants and release a toxin which kills them, and thus is a notorious weed. As it has a strong network of roots, mowing and

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grazing Kikuyu is inefficient as it will easily regenerate again. Herbicides can be used to efficiently eradicate Kikuyu.



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'Supported' by NSW Agriculture, Hunter Catchment Management Trust, NSW National Parks and Wildlife. " Weeds of the Hunter and Central Coast"

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Why are these weeds such a problem??

Both **Crofton Weed** and **Wandering Jew** have been declared noxious weeds under the provisions of the Noxious Weeds Act (1993) in our area.

We therefore have not only a want to remove these weeds but also a responsibility under the Noxious Weeds Act.

Crofton Weed is poisonous to horses causing respiratory problems and death.

It spreads extremely rapidly, producing 10 000 to 100 000 windborne seeds per plant per year.

It is an aggressive invader, degrading natural environments and eco systems.

Wandering Jew, is notorious for its ability to blanket the entire ground in forest and smother smaller plants and prevent regeneration of larger ones. Whenever a part of a stem breaks off from the node and contacts soil, it may begin to take root, making the Wandering Jew capable of spreading at extreme speeds.

It can over run native grasses, resulting in an imbalance in biodiversity.

Kikuyu can be your friend or foe. In a livestock grazing system it can provide nutritious feed for animals over the summer months.

In a bushland environment it is a problem. Spreading over the ground by forming runners, it too can occupy large amounts of land. It shades small native grasses and shrubs and prevents them from germinating.

Integrated Weed Management Control Strategies.

Manual Removal

Crofton Weed generally grows along the banks of the rivers, creeks and drains and therefore is quite easily removed manually due to its wet root system.

Gloves should be worn to prevent allergic reactions .

This method was sufficient enough to remove all mature size plants.

Rakes, Hoes and shovels were used to dig out the **Wandering Jew**. All plant material was placed in black garbage bags due to its ability to easily develop roots from each node on the stem.

Chemical Control

Kikuyu was sprayed with '**Round Up**'. Roundup is a broad spectrum herbicide that contains the active ingredient glyphosate, Roundup is a foliar spray which works by injecting enzymes into weeds, which is absorbed through the leaves of the plant, and destroys the growing plant. The herbicide is effective in controlling a range of weeds.

With **Crofton Weed** this should be kept to a minimum and as a last resort. With the plant growing close to water systems, spraying poses a big risk of chemical entering the creek or dam.

Herbicides should be applied prior to flowering.

Remember to wear protective clothing to prevent absorbing the chemical and read and follow instructions on the chemical label.

Biological Control

A method we may consider using in the future is the introduction of an insect called *Procecidochares utilis*. A recommended biological control for **Crofton Weed**.

Mulch

After manual removal and spraying a 30 cm layer of wood chip mulch was applied to the whole area. Two large council truck loads were wheel barrowed from the adjacent paddock into the site. This prevents the

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weeds from regenerating and prevents evaporation which will help our newly planted native species.

Revegetation

2 200 native grasses and shrubs were planted as tube stock. The aim is if we can continue to keep the weeds down using the above methods these native species will spread seed and revegetate the site naturally.

A petrol, hand held auger was used to drill all the holes.

A handful of water crystals were placed in the hole.

Tube stock was transplanted into the hole.

Mulch was placed around the base of the plant, keeping it away from the stem to prevent fungal diseases.

Suitable species planted in our site:

Eucalyptus tereticornis- The Eucalyptus tereticornis tree can grow up to 50m high. Its features include a smooth bark, which is white or grey, which can shed easily.

Eucalyptus tereticornis- This tree grows up to 35m. It has bark that is smooth, patchy, matte, white, grey, grey-brown, salmon or orange that shed in large plates or flakes. The fruit is cylindrical in shape and 5-10mm long.

Callistemon citrinus- A Stiff erect shrub, usually 1-3 m high. It has spikes approximately 6-10cm long and 40-70mm in diameter.

Acacia decurrens Willd- A Tall shrub/ small tree that are 3-10 m high or sometimes taller, with bark smooth to deeply fissured and a brown or dark grey to blackish colour.

Callicoma serratifolia- Tall shrub or tree to 20 m, with young stems often reddish with long hairs.

Melaleuca hypericifolia- A shrub that is around 6 m high with a corky to somewhat papery bark.

Lomandra longifolia Labill- A tufted perennial herb.

Backhousia myrtifolia- A shrub or tree with finely flaky bark and young branchlets with spreading hairs. The fruit is 6mm long, barely larger than its flower.

Juncus – Several varieties were planted along the creek and dam banks to replace Crofton Weed and Wandering Jew.

Helen Tong (Yr 7):Peggy Xie, Joanna Fan, Daisy Chan, Denise Tang(Yr 8): Alan Ng, Bowen Li, Calvin Cheung, Gene Ling (Yr 9).

Benefits of our Strategy

In adopting an Integrated Weed Management strategy we have been successful in controlling weeds in our site.

Combining Chemical and Manual control, Mulching and Revegetation has proven to be effective in achieving our objectives.

The site still requires regular maintenance of spot spraying weeds with 'Round Up' and manual weed removal. As the seasons change we also identify new weeds and will apply our strategy to combat these also.

It has been ten months since the weed removal and rehabilitation and we are seeing the now mature grasses develop flowers. These are the beginnings of successful revegetation.

An Integrated Weed Management Strategy is also an environmentally friendly way of controlling weeds. Minimal and controlled chemical usage is used to create an area beneficial for the reproduction of both native flora and fauna.

Native plants will provide food and habitat for wildlife and create a healthy eco system. Our site combines both an aquatic and terrestrial eco system and our rehabilitation strategies aid in the preservation of both.

We have also prevented weeds from becoming a problem down stream by controlling them at the beginning, directly at the outlet from the storm water drain.

Above all we have created an environment suitable for students who come through the school after us, to learn about native plant species. It will be an ongoing job controlling weeds in this area and many students will have an opportunity to develop skills in plant identification and practical application as we have.