



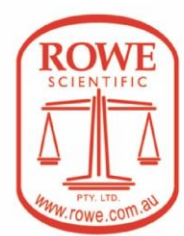
Prize Winner

Scientific Inquiry

Year 3-4

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Scotch College



SCIENTIFIC INQUIRY REPORT

Title: Helping our Creek

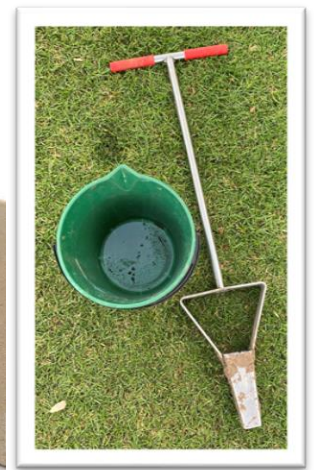
Aim: To find out if placing weed matting on Brownhill Creek banks will help the creek. Brownhill Creek flows through Scotch College's Junior School - Mitcham campus. The banks of the creek have been eroding as they do not have many plants growing on them. Our science teacher had organised for the jute weed matting to be installed.

Hypothesis

I predict that the jute weed matting, placed on one side of the creek bank, will help the newly planted native plants grow along the bank of Brownhill Creek as well as reduce the soil erosion.

A list of equipment/materials

- Jute weed matting (650gsm, each roll size 1.83m x 25m).
 - Tools to attach the weed matting into the bank (used and done by groundsmen)
 - Native plants
 - Hamilton planters
 - Buckets
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- Camera (iPad/iPhone)
 - Notebook
 - Pen



Research

Jute weed matting is 100% organic and biodegradable. It will decompose by bacteria and other living organisms of the creek. The weed matting will not pollute the creek. It is commonly used to protect soils in areas exposed to wind or heavy rainfall. The matting has a life expectancy varying from 10 – 18 months depending on climatic conditions. It is often used to stabilise embankments and stop weeds growing during revegetation. It also reduces the amount of water lost.

Plants provide protective cover on the land and prevent soil erosion. Plants slow down water as it flows over the land and this allows much of the rain to soak into the ground. Plant roots hold the soil in position and prevent it from being blown or washed away. The native plants on the bank of the creek will help slow down rainfall that falls onto the banks. The plant roots, when stronger, will hold the soil of the sand bank from washing away. Brownhill creek has flooded over the past few years.

Method

Weed matting was placed over one side of the bank of the creek. The variable that was changed was putting weed matting over the other side of the creek bank.

I took photos of both sides of the bank before the weed matting was put in place by the school groundsmen. I took closeup photos on each side to notice soil erosion caused by rainfall.

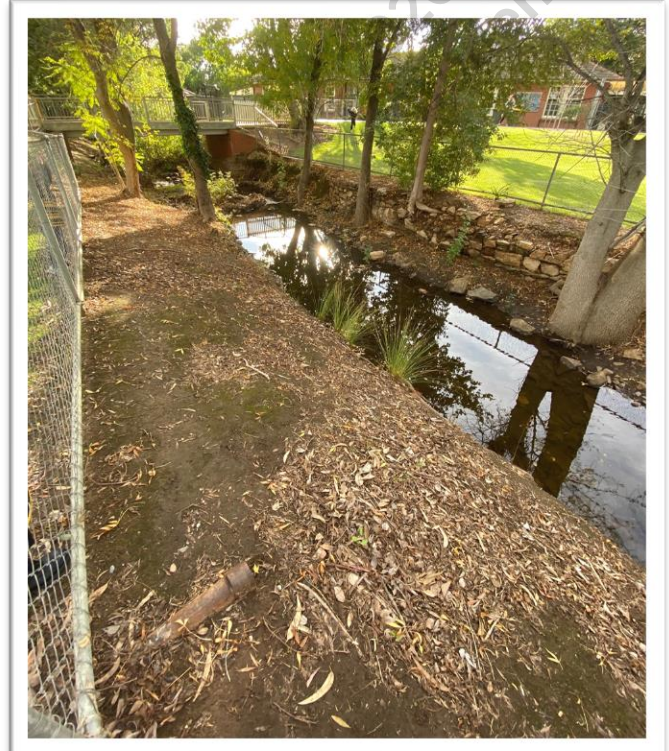
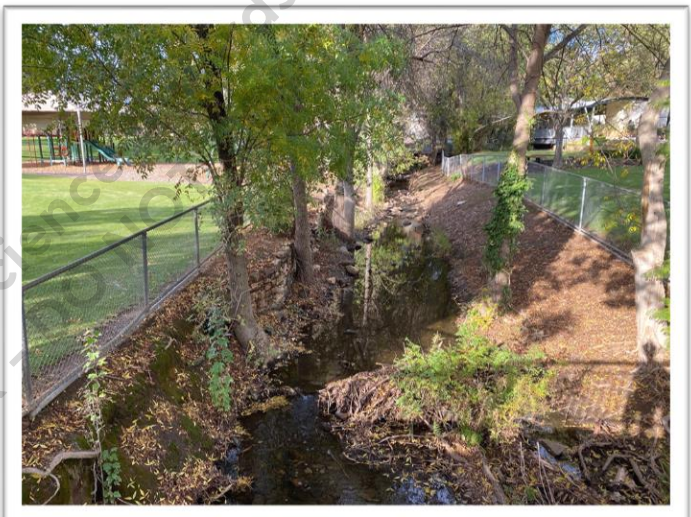
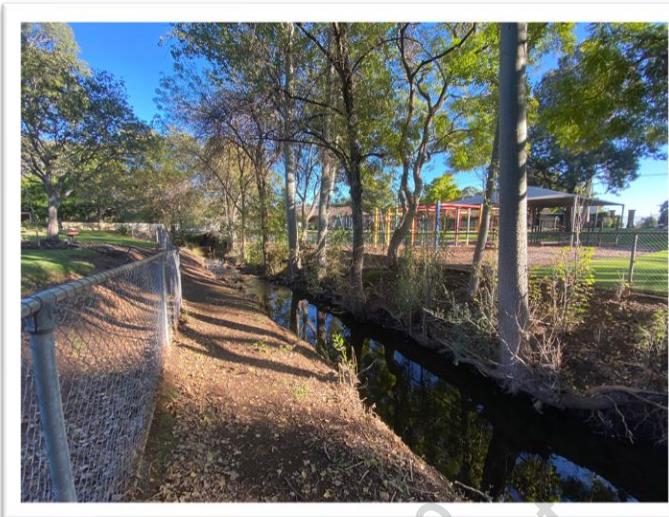
I then took photos weekly from the same points. I also took photos after each planting session.

Results

The results can be seen in photographs. I made notes of what I observed when I took the photos.

Date: 29th April 2020

Photos:



Observation notes: Banks of the creek before the weed matting was put in place. The photos show how bare the banks for the creek are.

Thoughts: The creek banks do not have many native plants on them. This is not the case for the whole creek (outside of our school). The parts of the creek that flow through Brownhill Creek Conservation area have plants growing right up to the edge of the water. There is also more wildlife.

Date: 4th May 2020

Photos:



Observation notes: Soil erosion around the tree roots are clearly seen.

Thoughts: Many trees and plants on the bank have their roots exposed. Soil has been washed away. Hopefully having the weed matting in place will slow down soil erosion. Tree and plant roots need soil.

Date: 6th May 2020

Photos:



Observation notes: One bank of the creek with the jute weed matting . The groundsman placed the mat into the ground using metal pegs.

There are slits already in the weed matting. This will make it easy to plant native plants into the bank.

The matting will cover the small plants' roots and support it as it grows.

Thoughts: It's great to have a scientific experiment happening in the middle of our campus!

Date: 12th May 2020

Photos:



Observation notes: During and after first planting session. Mr Pace placed the plants where he wanted the Year 5 students to plant them. The students used Hamilton planters to dig holes for the native plants.

Note: I did not take these five photos. I am in Year 3 and it was the year 5 students who did the planting.

Thoughts: I'm sure the Year 5 students had a lot of fun planting them and will like to watch them grow.

Date: 19th May 2020

Photos:

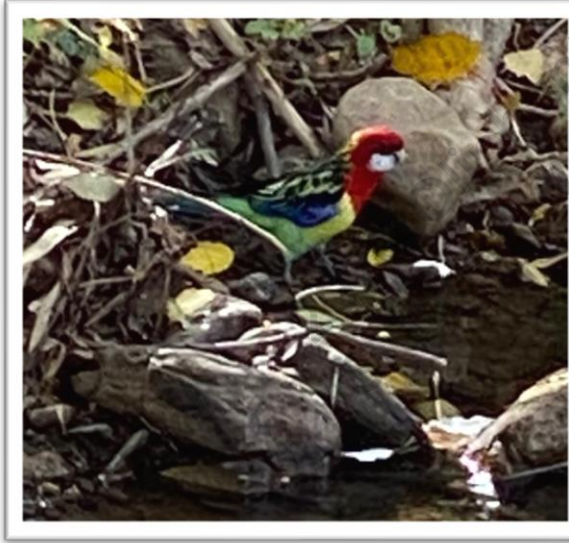


Observation notes: The plants are growing well. It had rained for two days in the last seven days. The plants also get lots of sunlight.

Thoughts: The weed matting also holds some moisture. This will also help the plants.

Date: 26th May

Photos:



Observation notes: The plants are growing very well.

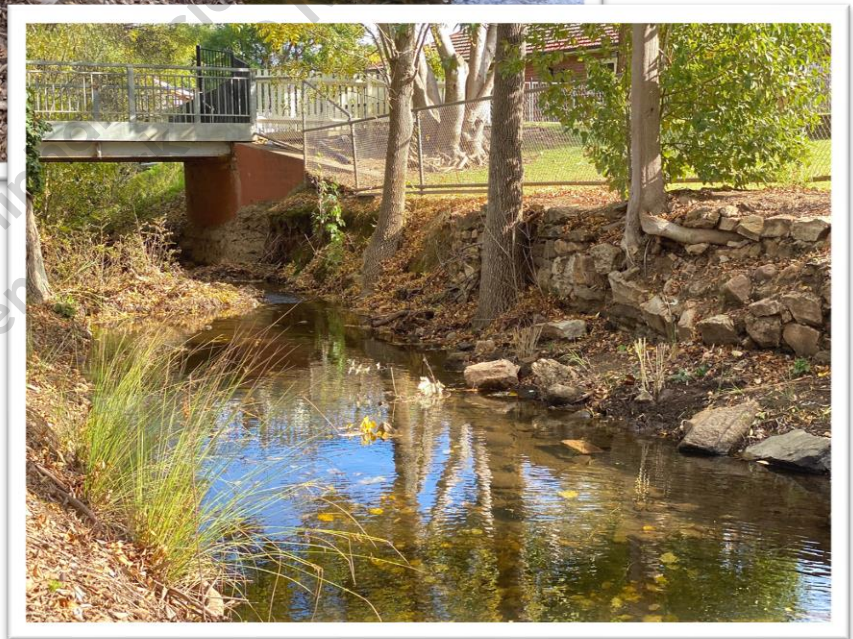
This Eastern Rosella (scientific name: *Platycercus eximius*) seemed to enjoy the creek as it took a bath.

Thoughts:

Hopefully when the native plants have grown, they will attract more wildlife and insects.

Date: 2nd June

Photos:



Observation notes: The plants are growing very well. Even though there was no rain over the past seven days, the soil under the weed matting felt moister than the soil on the other side of the bank (without weed matting).

Thoughts: I would like to measure the soil moisture with an instrument. This will make my observations more accurate and reliable.

Discussion

The weed matting has helped the native plants grow and not get washed away. The soil erosion also seems to be less on the bank side with the weed matting. The weed matting has helped the plants establish (roots grow) and not get washed away. The plant's roots also hold the soil in position, which makes it harder to wash away accidentally. When it rained, the soil on the creek bank that was covered by the weed matting was protected by having weed matting on it. The soil is also protected from direct rainfall, as plants help break in the impact of raindrops before they hit the ground. This helps prevent soil runoff.

The weed matting doesn't let sun through it, so no weeds could grow under it. The native plants have been able to grow without weeds competing with them.

Evaluation

To make the investigation more accurate, we should have planted the same native plants on the other side of the bank (without jute weed matting) to make it a fair experiment. I do think that this would have been a waste of native plant seedlings because they may have been washed away. This would be a waste of money. That is why the weed matting is being used – to help the plants establish before it breaks down (biodegrades). I should have also recorded soil erosion on both sides of the bank – with and without weed matting. I am also going to use a tensiometer – a device to measure soil moisture content. This will make my measurements more accurate and reliable.

Assistance given: My mum showed me how to airdrop photos onto a laptop. I then copied and pasted them in this report. My mum also taught me how to reference.

Conclusion

My investigation has only run for 7 weeks. So far, my hypothesis is correct. Having weed matting on the banks will help our creek because preventing erosion with native plants helps the natural landscape. Native plants also need less special care and maintenance and attract natural wildlife and insects.

I will continue this investigation for the rest of this year. I predict the results will be clearer after more time has passed. In time, the other bank of the creek will be covered with weed matting and more native plants will be planted. The matting on the first bank may already be degrading – which will be fine as the plant roots would be well established and not need the support from the weed matting.

References

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