River Detectives Story of Change

Rutherglen Primary School, 2023

River Detectives is a cross-curricular citizen-science program connecting teachers and young people with their local waterway. Through water-quality testing, macroinvertebrate sampling, and habitat surveys, students learn about the importance of catchment health and their role in caring for it.

The program is available to schools and youth groups in five regions across Victoria.

A relatively small school of 170 students, Rutherglen Primary in north-east Victoria is nestled within a strong farming community known as one of Australia's best wine regions. Brimming with arts and culture, this thriving family-friendly community is only a stone's throw from the beautiful Murray River.

A new River Detectives school in 2023, Rutherglen middle-years students were introduced to the program in term three. When teacher Tash Middlin first heard about the program, she saw it as a fantastic opportunity for her students to engage in meaningful and relevant learning opportunities about their local environment, while covering several concepts across the curriculum.

"*We hope that student's knowledge of the water, plants, and animals will lead to them developing a greater understanding of their local environment and our communities' responsibility in helping to take care of it*.

Getting ready for water testing at Lake King.

"We test our local water body, Lake King, a five-minute walk from our school. Every second Thursday afternoon, our 3/4C class of 25 kids sets off with Education Support staff, and Principal Karryn Williams. The class has set groups to perform each of the tests in rotation so each student has an opportunity to experience and experiment all the equipment and processes. We recently received a water bug testing kit which we are excited to start using this month!"

Students explore Lake King.

In a fantastic partnership extension, the school has contacted its local Landcare group to explore joint ventures that could benefit the health of the lake and the surrounds, such as weeding and planting. Tash reflects how this has brought the community further into the school learning journey;

"*It's sparked conversation about the history of the lake, rekindled past relationships with local groups who care for the lake, and helped us to remodel the science program."*

Tash also notes how her students have become more aware and appreciative of Lake King and the plants and animals that call it home;

"*They're more aware of events that can affect the water quality and have also been able to put their scientific knowledge and understanding into practice in a real-world setting.*

Habitat values at Lake King, Rutherglen.

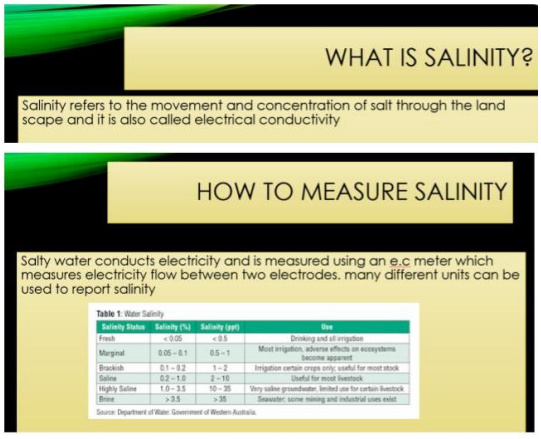
"They take notice of rubbish in the area and are more willing to clean it up; they are more aware of the fauna they see, from the birds on the lake to the ants moving around the dirt on the banks; they are more interested in thunderstorm events that frequent the area, and what happens when a deluge of water flows into the lake".

Local families are being brought along for the journey too, with updates and findings being shared on the school Facebook page and excited students discussing their activities at home.

Students also complete theory projects to complement the practical component, which have included a deep-dive presentation on each of the water testing elements, and a research project into the fish, birds, and macroinvertebrates that call Lake King home.

"The overall enthusiasm of the students has been the catalyst of all these changes - they constantly ask me, 'are we going to the lake today?' and if not, they are still eager to complete any of the theory as they see the relevance of it."

Tash enjoys engaging with the kids outside in a real-life setting where science is being performed right before their eyes in a way students can understand and relate to.



Excerpt of student slideshow about salinity.

"*The return for the love of science that this program has brought back into this school has been my highlight. It's sparked a push within our science teachers to promote and engage in more practical science programs for our students so they can learn the relevant curriculum topics in a more meaningful context. Oh, and of course another highlight was when NECMA came in to do a macroinvertebrate session with the kids – they still talk about it!"*

North East CMA River Detectives incursion.

"My favourite activity was looking at the bugs. It was fascinating to see how certain things can make the water change and see what water bugs live in different areas." - Ella

"Testing water is my favourite thing. The activities are really fun and also the equipment. Yes!" - Paige

"I loved that we went down to the lake and tested the water and made sure that fish can live in our waterway. I love finding out how clean the waterway is." - Alexi

Students on site doing a habitat survey of Lake King

"I loved that every second week we got to go down and test how fresh and clean our waterway is and we got to test using the different materials to check the waterway and tell it back to the River Detectives. I also loved how we got to do projects and experiments with the water." – Poppy

"I really liked how we go to know more about river testing and how to use all the tools." – Will

"I liked how you had to keep the water clean while you tested. With the salinity test, you get all the cool gadget things and with phosphorous you get to spin the wheel and see what the colour is." - Stella

After their introduction to the program in 2023, Tash says they will definitely continue with River Detectives;

"This program will now be integrated into our science program for the middle and senior years and will be embedded from the very beginning of the year. I feel excited and privileged to be given the opportunity to involve more students into real-life science, and to be a part of an ongoing community project that aims to monitor and protect such an integral landmark within Rutherglen".

Rutherglen Primary School also plans to collaborate more with their local Landcare group, with planting and weeding working bees already planned, as well as exploring other opportunities;

"A goal is to apply for a Junior Landcare grant so we can continue to care for Lake King, and to connect with Indigo Shire and its Environment and Sustainability team to get the word out into the community about the importance of caring for our waterbodies!"

Well done Rutherglen Primary School, we can't wait to hear all about your achievements in future years.

Students enjoying their regular visits to their adopted waterway.

For more information about River Detectives:

Email riverdetectives@nccma.vic.gov.au or visit www.riverdetectives.net.au

Photos supplied by Tash Middlin

River Detectives Story of Change

Mitta Mitta Primary School, 2022

River Detectives is a cross-curricular, citizen-science program connecting teachers and young people with their local waterway. Through water quality testing, macroinvertebrate sampling, and habitat surveys students learn about the importance of catchment health and their role in caring for it.

Since 2016, the program has been available to schools and youth groups in five regions across Victoria.

In the North East CMA region Michael McBrien is the teaching principal at Mitta Mitta Primary School, a small rural school of one Prep-Grade 6 class situated 81km south east of Wodonga, set amongst the hills downstream of Dartmouth Dam. The school dates back to the 1860's, serving the farming communities of Dartmouth and Mitta Mitta near Mt Bogong.

The school has been an active participant in the River Detectives program since 2017;

"*We are always on the lookout for citizen science activities to engage students in real study that extends beyond the school. Our school 'horse paddock' backs onto the Mitta Mitta River so it seemed like a good fit. Through our local Landcare Group we had been involved in several land based projects so River Detectives enabled the inclusion of the aquatic environment."*

Mitta Mitta Primary School has a long association with their local Landcare Group, planting native shrubs to attract birds, revegetating river banks and breeding dung beetles as part of an ongoing trial. Along with cluster school partners they participate in a sustainability unit each year maintaining vegie gardens and learning about composting.

The River Detectives program has become a regular fixture in the term schedule and the environmental monitoring they conduct is a normal part of the students' learning;

"Two times per term we head down to our local waterways to take water samples, do water quality tests and sample macroinvertebrates. We do it as a whole school activity with older students helping the new students with sampling and identification. The peer teaching allows them to take pride in their developing expertise.

We test at two sites, one on the Mitta Mitta River after it exits Dartmouth Dam and the other on Snowy Creek, a natural flow river. It's interesting to see the differences in diversity and seasonal change between the two sites.

Testing water quality at the Mitta Mitta River site behind the school

On cluster days, when we join small schools in our area, our students talk to their peers from neighbouring schools about our River Detectives monitoring and at least two other schools are now joining in the program."

The program has given teachers and students a far greater awareness of the aquatic environment and the creatures that call it home. They understand the relationship between land use, water use and the connections between the two different ecosystems.

The school's second site on the Snowy Creek at a public reserve in town

The program has instigated opportunities for further inquiry;

"We have been involved in the Great Australian Platypus Search eDNA project, using water samples to identify waterways with platypus populations. We continue to look for opportunities to be involved in citizen science projects such as the Backyard Bird Count and the Great Plastic Hunt."

Michael explains the impact the River Detectives program has had on the school and students;

"It has certainly increased awareness and appreciation of the local waterways and our role in caring for them. Students are proud of their knowledge of aquatic invertebrates and enjoy identifying them and discussing them with family and other schools that visit.

The program aligns with our Landcare involvement and helps us value the local environment."

For more information:

Email riverdetectives@nccma.vic.gov.au

or visit www.riverdetectives.net.au

River Detectives Story of Change

St Patrick's Primary School Wangaratta, 2020

River Detectives is a cross curricular citizen-science program connecting young people with their local waterway. Through water quality testing, macroinvertebrate sampling and habitat surveys students learn about the importance of catchment health. The website provides access to a wide variety of engaging resources inspiring teachers to embed River Detectives in school and community life.

Since 2016 the program has been available to school and youth groups in five catchment management authority regions across the state.

In the North East CMA region, Katie Pallot is a P-12 science teacher currently working as a specialist science teacher at St Patrick's Primary School in Wangaratta. She teaches the science program school wide and leads an extension program for students who have shown a particular aptitude, giving them a place to shine when they may have difficulty in other areas.

Katie and the school became involved in the River Detectives program at the start of 2019.

"St Patrick's has a sustainability team and student sustainability leaders however previously to 2019 the sustainability program was focused on changes the school community could make on school grounds to improve sustainability including increasing biodiversity and reducing waste."

With her science background, Katie could see the River Detectives program provided a great opportunity to look outward to the broader community and environment.

"River Detectives is run with students from Grades 1-6 involved in the extension program and offers them a chance to be involved in real life community action. The Wangaratta area is blessed with many waterways. Rivers and streams play an important role in community life and the life of families in their recreation time."

Katie comments that one of the best parts of the program is its versatility. The many components of the program mean that the three different groups she's worked with have been able to pull out different aspects and run with it;

"The Grade 1/2 extension students participated in the program first. They gathered data at three monitoring sites; One Mile Creek, King River and the Ovens River. Each week they visited one site to complete water quality tests and waterbug sampling with all three sites tested once in a three week period.

Students walk to the Ovens River site and I drive them to the King and Ovens River sites.

When the Grade 3/4 students participated in the program they were challenged to look at data more deeply, consider patterns, why they might be occurring and what they meant for the waterway.

At the beginning of this year, before COVID-19 struck, the Grade 4/5 students were involved. They were really loving the macroinvertebrate sampling so this had become a huge focus of their work."

Katie reflects on some of the highlights of their River Detectives experience;

"The Grade 1/2's were involved in a River Detectives webinar on native fish during 2019. They learnt about Mosquito Fish and became very interested and concerned about the impact of this introduced specie on native aquatic life. They completed research, developed a powerpoint presentation and delivered it passionately at a school assembly explaining the issue to the entire school and explaining why Mosquito Fish are so bad. Everyone listened intently to these junior students advocating for their local waterways.

The Grade 3/4's, after analyzing water data produced fantastic written reports summarizing their results and the impact of their water quality findings. Their work really demonstrated the level of confidence students had in their learning and how much they'd enjoyed it.

The Grade 4/5's enthusiasm for macroinvertebrates saw them develop great plans to produce a 'Sleep Geeks' video on this year's theme of water however this had to be cancelled due to lockdown."

Seeing students share their knowledge and report back to school assemblies is one of the most significant changes Katie has observed of her students' participation in the program.

"This generates quite a lot of interest among the rest of the school. I often have students approach me around the school asking 'can I be a River Detective too ?'"

Katie comments on the impact the program has had on the school, her own teaching and the students;

"To involve students in community-based citizen science, schools often synthesise/manufacture situations to create learning opportunities. The River Detectives program shows that here we are as citizens in Wangaratta surrounded by rivers and it is our responsibility to find out about them and share what we know about looking after them. We have a chance to participate in real citizen science to understand how water quality affects things, how our agricultural industry relies on good quality water and how everything in our environment is linked."

Katie has experienced evidence of student learning outcomes first hand;

"Apart from the work students have produced we have a lot of parents that provide great feedback about the conversations that are happening at home. Students are talking excitedly at home about the macroinvertebrates they've found at the river or the level of pH that was tested, etc. One particular student struggled with engagement at school but loved being part of the extension program. His parents were amazed to hear him talking so passionately about the waterbugs he'd discovered in the evenings around the dinner table."

During COVID-19 the program has been postponed and although they haven't had an opportunity to use the activity matrices developed by the River Detectives Team they will certainly use them in future.

Looking ahead Katie says, *"We currently have a Landcare Grant to boost biodiversity in the school yard. We have had support from our local council and landcare group with the provision of plants. Our goal in the future is to get involved in some rehabilitation activities at our local waterways. With my secondary science teacher hat on I also look forward to getting stuck into using the real data sets we have collected from all three waterways and looking at them with the Grade 6 maths extension group."*

For more information:

Email riverdetectives@nccma.vic.gov.au or visit www.riverdetectives.net.au