Annual Achievements Report 2022-23

Citizen science in Victoria's waterways

EstuaryWatch Victoria

WaterWatch Victoria

Contents

Introduction

Victoria has been at the forefront of community-driven environmental stewardship for three decades, with its remarkable WaterWatch and EstuaryWatch programs.

These initiatives, founded on the principles of citizen science and volunteer engagement, have played a pivotal role in nurturing and safeguarding Victorian waterways. Through the programs, everyday citizens transcend their roles as observers to become advocates and stewards of their local waterways and estuaries. They establish a connection between community and water while uncovering trends in water quality through reliable, long-term datasets.

Citizen scientists involved in the 2022-2023 programs contributed a total of 92,030 hours to care for our waterways, equivalent to 12,720 volunteer days.

This contribution provides an economic value of the 2022-2023 volunteer effort of $3,841,332.

Traditional Owner Acknowledgement

EstuaryWatch and WaterWatch proudly acknowledges Victoria's Aboriginal community and their rich culture and pays respect to their Elders past and present. We acknowledge Aboriginal people as Australia's first peoples and as the Traditional Owners and custodians of the land and water on which we rely. We recognise and value the ongoing contribution of Aboriginal people and communities to Victorian life and how this enriches us. We embrace the spirit of reconciliation, working towards the equality of outcomes and ensuring an equal voice.

WaterWatch and EstuaryWatch were born out of shared concern for local waterways and now involve a network of volunteers, scientists, and advocates. The dedication of these individuals and groups has improved the understanding of how waterways work, benefiting both the environment and the communities they serve.

As WaterWatch celebrates its 30th anniversary, a refreshed visual branding has been created. This new look reflects the shared values between EstuaryWatch and WaterWatch while modernising the programs' ever-growing identity.

This journey wouldn't have been possible without the consistent funding and collaboration of the Department of Environment, Energy, and Climate Action (DEECA). Their support, along with the program partners, has been instrumental in expanding the programs' reach and impact.

The collaboration between authorities and community is what creates meaningful impact for Victoria's waterways and the people, plants, and animals that depend on them.

These programs are funded through the Victorian Government's $248 million investment over four years to improve catchment and waterway health across regional Victoria. This investment is a key component of Water for Victoria — the government's plan for management of our water resources now and into the future.

Waterway Citizen Science

WaterWatch began in 1993 and, in 2023, celebrated its 30th anniversary.

The work that EstuaryWatch and WaterWatch volunteers deliver is invaluable to the long-term management of waterways in Victoria.

Their tireless efforts have established long-term water quality datasets for many priority waterways. This data gives waterway managers critical information to help inform management decisions.

Local volunteers in regional communities also play an important role in bridging the gap between invested community members and environmental authorities.

Since 1993, 1581 sites have been monitored by over 4,300 WaterWatch citizen Scientists.

Outstanding Service Award Ceremony and Recipients

30 Years of Waterway Citizen Science was marked by a statewide celebration taking place at St Anne's Winery near Bendigo during March 2023.

The event recognized the contribution of citizen scientists across the state with an Outstanding Service Award ceremony that celebrated their dedication and contribution to the program.

It was a rainy but beautiful day in the North Central catchment as citizen scientists and coordinators from across the state gathered to recognize the incredible efforts of WaterWatch and EstuaryWatch volunteers.

The afternoon began with a Welcome to Country and smoking ceremony from Djaara, Elder Aunty Marilyne Nicholls, followed by a speech from North Central CMA CEO, Brad Drust, who then presented the Outstanding Service Awards to the citizen scientists that made the trip to Bendigo.

A big thanks goes out to North Central CMA for hosting everyone in their beautiful part of the world and for a fantastic sit-down dinner to celebrate WaterWatch in their region.

Kevin Smith, Goulburn Broken volunteer, Outstanding Service Award recipient

Congratulations to the following volunteers and groups on receiving their Outstanding Service Award

Corangamite	Peter Slater, Russell & Marie Ford, Wye River WaterWatch and EstuaryWatch Group
East Gippsland	Alistair Mailer, Ken & Marg Bradley
Glenelg Hopkins	Gary Ryan, Dina Selman, Ash Zanker
Goulburn Broken	Valerie La May, The Winton Wetlands Restoration Team, Kevin Smith, Honourable mention - John Nielson
Mallee	Russell Cox
Melbourne Water	The Crew at Daangean — Citizen Science, Yalukit Willam Nature Association, Anna Lanigan
Melbourne Manningham Council	David Rosenwax
Melbourne Merri Creek	Friends of Merri Creek Stream Team, Reservoir Frogs (Edgars Creek) WaterWatch Group, Westgate Park WaterWatch Group
North Central	Rob Loats, Ruth & John Penny
North East	Upper Ovens Valley Landcare Group WaterWatch, Mullinmur Billabong WaterWatch Group
West Gippsland	Stephen Broady, Friends of Tyers Park WaterWatch Group
Wimmera	Jeparit WaterWatch Group

Past, Present and Future of WaterWatch Panel Discussion

A panel discussion was held by EstuaryWatch WaterWatch Victoria as part of 30 Years of Waterway Citizen Science and National Volunteer Week 2023 to discuss the past, present and future of the water quality monitoring and community engagement program.

Four expert panelists joined an online webinar alongside Anthony Boxshall, RRR radio host and Melbourne University Professor who MC'd the discussion.

The panelists included:

Jeanie Clark - Long-time-volunteer from Jeparit WaterWatch Group and past Wimmera CMA WaterWatch coordinator

James Frazer — Past WaterWatch coordinator turned Environmental Water Delivery Lead in the Water Resources and Upper Yarra Team at Melbourne Water

Dr Patrick Bonney - Chair of the Victorian Chapter of the Australian Citizen Science Association and RMIT University social scientist

Kristen Lees — Corangamite CMA WaterWatch coordinator since 2012

There was plenty of insightful discussion between the panelists as they were quizzed on their perspectives of the benefits of WaterWatch to water authorities and communities, along with where they would like to see the program in another 30 years' time.

View the recording of the panel discussion here.

Monitoring

Type of Monitoring Sites

Birds
Waterbugs
Water Quality
Fish
Frogs
Platypus
Litter

Mallee
8 65 40 5

Wimmera
8

North Central
126 19 30

Goulburn Broken
17 12 21

North East
14 1 1 1 2 1 1

Glenelg Hopkins
6 4

Melbourne
138 4 5 11 14 16 4

Corangamite
105 25

West Gippsland
23 7

East Gippsland
7

14,332
Event Participants

125
Groups

2,739
Volunteers

To find out more, visit
WaterWatch Victoria or
EstuaryWatch Victoria

Delivery Partners

Thank you to all of the outstanding delivery partners that work within and alongside the EstuaryWatch WaterWatch program.

Stories from across the state

25 Groups

102 Volunteers

2,906 Event Participants

Corangamite

Case Study 1 — Caring for the Curdies

The Curdies River catchment in Southwest Victoria has seen many changes since European settlement, such as widespread deforestation and the historic and continued effects of farming. Impacts to the river and its estuary include elevated nutrients and increased sedimentation. WaterWatch and EstuaryWatch volunteers have undertaken short and long-term monitoring of the Curdies River since 2001 for WaterWatch sites and 2013 for EstuaryWatch sites.

Gavan Sinclair testing pH on the Curdies Consultative Committee Catchment Tour

Citizen Scientists are represented on the Curdies River Consultative Committee providing important water quality data and observations to the committee. This committee was established in 2022 to provide a transparent and effective platform for knowledge sharing, consultation, and collaboration to improve the health of the Curdies River.

In May 2023, five monitoring sites were tested to provide a Water Quality Snapshot of the Curdies in response to frequent outbreaks of cyanobacteria (commonly referred to as blue green algae). This data collection coincided with the Curdies River Consultative Committee tour of the catchment which gave everyone involved an opportunity to see how citizen scientists collect water quality and estuary data, and how it is used as an indicator of waterway health.

The Snapshot reported the following results,

- pH and electrical conductivity were in good to excellent condition in the estuary and streams
- Turbidity was acceptable in the streams but poor in the estuary
- Dissolved oxygen was acceptable in the estuary and upper Scotts Creek, but was only fair in Cooriemungle Creek and lower Scotts Creek
- Reactive phosphorus was acceptable in the estuary but poor in the streams.

While these results were only a snapshot in time, they demonstrate to those with a strong interest in the health of the Curdies River how important water quality monitoring is to track the impact of interventions and education programs.

The Curdies River Consultative Committee members are working together to deliver habitat restoration and nutrient management programs to continue to improve the health of the Curdies River. WaterWatch and EstuaryWatch Citizen Scientist volunteers will also continue to be there to not only record the journey, but to also provide critical water quality data to inform priority works and projects.

“As a volunteer it is very gratifying to know that the data we collect is being used to help make decisions about the management of the Curdies River and its catchment. And it’s fun!”

— Marg O’Toole EstuaryWatch Monitor

Top: Curdies Consultative
Above: Curdies River Committee
Below: Curdies Estuary

Corangamite

Case Study 2 — We Work Better Together - Citizen Science and Central Highlands Water

Corangamite Citizen Science has had a strong and productive partnership with Central Highlands Water since 2007. Each year, the organisations get together and look at where they can provide water quality data, add value to community events and share stories of the waterways that sit within their respective areas.

The Ballarat Begonia Festival is a much-loved fixture on Ballarat's event calendar with over 50,000 people attending. Over the years, the Begonia Festival has increased its focus on the environment and sustainability with Central Highlands Water sponsoring the festivals sustainability sector. Every year the Corangamite CMA has brought the Wonderful Waterbugs trailer to the festival and given the community of Ballarat the opportunity to look at the aquatic world beneath their waterways. Ballarat loves their water bugs with many families returning year after year to look at macroinvertebrates and learn about their local lakes and rivers.

"Central Highlands Water are proud to partner with the Corangamite CMA for the past 16 years. As we continue to work together, we are passionate about supporting a sustainable and healthy environment for our region."

— Central Highlands Water

Many WaterWatch monitors began their volunteer journey by coming to the Wonderful Waterbug trailer at the festival, picking up a magnifying glass, finding some bugs and asking "So what does this bug tell me about the water? And how can I get involved?".

Other activities Corangamite Citizen Science and Central Highlands Water have successfully partnered on include continued water quality monitoring of the Moorabool, Yarrowee and Leigh Rivers and National Water Bug Blitz training and events on these waterways.

In October each year, Corangamite CMA host a National Water Week Schools Celebration. Ballarat students take part in a round robin of water focused activities developed around the Australian Water Association's theme of the year. This event compliments the Central Highlands Water Poster competition for schools in the region. Many students have gone on to pursue a career pathway in water after their first introduction to catchment health at the National Water Week Schools Day.

This mutually beneficial partnership over the last 16 years has achieved an increase in community participation through waterway events and monitoring activities. This has led to important outcomes relating to increased community awareness and knowledge of waterway management and condition. Such knowledge and awareness results in positive waterway stewardship.

Top: Ballarat Begonia Festival 23
Above: National Water Week School Event 23
Left: Shannon and Kristen working together

1 Groups

1 Volunteers

East Gippsland

Case Study 1 — Fortifying Forge Creek for the Future

Forge Creek is formed by a chain of ponds that enters the Gippsland Lakes via Newlands Arm backwater. The ponds are often disconnected but during times of heavy rain, the ponds flow to form a continuous creek. It is home to many native fish such as Smelt, Flat-head Gudgeon, Galaxias and the endangered Pygmy Perch.

In 2011 the creek was being threatened by channel incision and had rock chutes installed to protect the highly valued system. Romawi Landcare Group have put in hours and hours of work to improve the health of the creek.

"Romawi Landcare Group will continue its work of monitoring, rehabilitation and revegetation, designed to enhance and protect the reserve's valuable environmental benefits".

— Alastair Mailer, WaterWatch volunteer and Outstanding Service Award Recipient

Through significant revegetation and regular water quality monitoring, they have reduced erosion, improved biodiversity, and gathered scientific data. The mass plantings have significantly improved the structure of the ponds, stabilizing the banks, slowing water flow, and ensuring water remains in ponds. The rock chutes have resulted in some ponds persisting even through major droughts.

Along with the important environmental works, Romawi Landcare Group have been consistently monitoring water quality along Forge Creek every month since 2011. They have seven sites, extending from Centre Goon Nure Road to the Newlands Arm backwater which ultimately leads to the Gippsland Lakes. From August 2022 to August 2023, they found that water quality is often different between sites, resulting from different land uses throughout the system. The wetter weather in 2022 kept the creek in good condition, but in 2023 the creek returned to its ephemeral dry state with little or no flow recorded except for the occasional heavy shower.

2 Groups **12** Volunteers **128** Event Participants

Glenelg Hopkins

Case Study 1 — Glenelg Hopkins CMA Annual Wrap Up

After a couple of challenging COVID-restricted years, a major highlight of the 2022/23 year for the Hopkins and Merri EstuaryWatch volunteers was the ability to move freely again and return to all aspects of the program.

For the Merri volunteers, this meant a return to their much-loved M1 site on Edwards Bridge, Warrnambool — a high profile location where their testing activities often spark highly informative and interesting community conversations about the program.

Both the Hopkins and Merri Groups have been able to ensure the validity of their data by completing annual QAQC testing, which has been particularly important considering how much of the volunteer-gathered data has been relied upon this year.

Merri EstuaryWatch volunteers trialling new lifejackets as part of their Annual QAQC testing at the M2 monitoring site, Merri River Dennington, June 2023. L-R Eleanor Cowell, James Cowell & Gary Ryan. Credit: Jarred Obst, GHCMA.

As often encountered in southwest Victoria, significant ocean storm and swell events shaped conditions along the coastline. Coupled with the region experiencing one of the wettest and prolonged spring flow seasons in recent years (with some of estuaries remaining in minor flood coming into December) the collected data on water quality profiles, mouth state, beach berm dynamics and bird observations, were all captured by EstuaryWatch volunteers. This data was also used by the Glenelg Hopkins CMA to increase knowledge and help inform waterway management decisions. The volunteers were provided with new uniforms to help keep them warm and dry during the period of wet weather, while also promoting the citizen science program.

Additionally, the volunteers have contributed to various aspects of the Glenelg Hopkins CMA's Flagship Waterway Program 'Rivers of Warrnambool' including project planning, monitoring and on-ground works. This is planned into 2023 and beyond, with an exciting eDNA monitoring partnership set to kick off in the spring.

The Glenelg Hopkins CMA is indebted to volunteers who give up their weekend time to monitor, engage and help keep the community connected to the region's important estuaries.

"We sincerely thank our EstuaryWatch volunteers for their efforts!"

— Glenelg Hopkins CMA

Case Study 2 — Volunteer Recognition

In 2022-23 the Hopkins and Merri EstuaryWatch groups had three members - Gary Ryan, Dina Selman and Ash Zanker - acknowledged for their volunteer efforts with 'Outstanding Service Awards'.

Dina and Ash were founding members of the Hopkins River EstuaryWatch group when it began in 2010.

Absolutely professional in her approach to the program, Dina's reliability in equipment maintenance and calibration, and data entry into the EstuaryWatch state portal, means the program in the southwest would not be where it is today without her commitment.

Fellow founding member, Ash, brings an extremely high level of motivation and enjoyment to the program and is influential as a motivator, not only in the group, but in the wider Hopkins community.

Ash takes the lead in estuary mouth and water level monitoring and data entry, often outside of standard monthly monitoring routines, particularly when needed to capture key events such as floods and ocean storms.

The unofficial lead role in the Merri EstuaryWatch group, Gary, is an outstanding volunteer. Gary maintains equipment, reagents, coordinates monthly monitoring sessions, is the key CMA liaison for the group and undertakes data entry into the EstuaryWatch portal. He is very much the glue that keeps the Merri EstuaryWatch group together, motivated and passionate. The program wouldn't be what it is today without him.

The Glenelg Hopkins CMA are indebted to all of their volunteers for their longstanding and on-going efforts, and look forward to continuing this program into the years ahead.

"It's been great fun checking out the river each month, as well as learning a thing or two."

— Ash Zanker, Hopkins EstuaryWatch.

Top: Hopkins EstuaryWatch volunteers, with Dina & Ash showcasing their 'Outstanding Service Awards', Hopkins River estuary (H2 monitoring site) Warrnambool, June 2023. L-R; Brad Clingin, Dina Selman, Ash Zanker, Kate Haberfield & Colin Magilton. Credit: Jarred Obst, GHCMA.

Above: Long standing and highly valued Merri EstuaryWatch member, Gary Ryan (right), with his 'Outstanding Service Award', and the Glenelg Hopkins CMAs Jarred Obst (left), Bendigo 30yr Celebration, March 2023. Credit: Anne Ryan.

3 Groups

30 Volunteers

Goulburn Broken

Case Study 1 — Winton Wetlands WaterWatch Monitoring Program

Volunteers, Friends of Winton Wetlands members and Winton Wetlands Committee of Management staff have contributed to the collection of WaterWatch data across 12 sites within Winton Wetlands Natural Features Reserve since 2011. The data collection sites range from natural ephemeral wetlands to main creek inflows, to man-made ponds along the old Lake Mokoan dam wall.

Data collection equipment was funded in 2016 through a Threatened Species Protection Initiative grant (DEECA formerly DELWP) for the Friends of Winton Wetlands called 'Friends, frogs and fishes', as well as a grant in 2018 to conserve freshwater turtles ("Sticking Our Necks Out for Turtle Conservation").

The information gathered at each site includes water temperature, pH, salinity, dissolved oxygen, turbidity and depth. Information is shared with the Goulburn Broken WaterWatch program database and is actively utilised by Winton Wetland's managers to see how the restoration of aquatic habitat at the site is progressing. The data also highlights the quality of water flowing into and out of the reserve to suggest whether there is a need for further management interventions.

The Winton Wetlands Restoration Team WaterWatch Group were the recipients of the Outstanding Service Award as an acknowledgement of their dedication and service to the program.

"For water quality, we took samples all over the wetlands and tested for PH and clarity. It was interesting to see the difference in clarity as the water levels at various sites changed. I also enjoyed visiting parts of the site that are not readily accessible to the public"

— Di Cornish, Winton Wetlands volunteer and local community member

Case Study 2 — Birdlife Murray Goulburn Bird Monitoring

For some 10 years, a team of passionate Birdlife Murray Goulburn volunteers, along with the Winton Wetlands Restoration Team WaterWatch group, conduct quarterly bird survey at 12 sites within Winton Wetlands natural features reserve. This long-term monitoring program has recorded over 200 different bird species across a range of different habitats.

The contribution of this highly skilled volunteer organisation is vital to the ongoing management and restoration of Winton Wetlands.

Long term monitoring information is also important to assess how restoration activities are impacting the site and its inhabitants. Bird diversity, abundance and breeding are great indicators of ecosystem health.

Additionally, specific information gathered such as the presence of threatened or rare bird species continues to accumulate evidence for the case for Ramsar listing of the site.

"BirdLife Murray Goulburn have been doing quarterly bird surveys at Winton Wetlands since May 2013. We have hardly ever struggled to get sufficient volunteers to form our six survey teams; though there was a slight hiccup during COVID.

Before the survey, the amount of work sometimes seems daunting, but we always end up on a high afterwards, although that might be partly from the team-bonding lunches."

— Pat Feehan, President Birdlife Goulburn Murray

3 Groups

32 Volunteers

241 Event Participants

Mallee

Case Study 1 — Creating Turtle Ambassadors

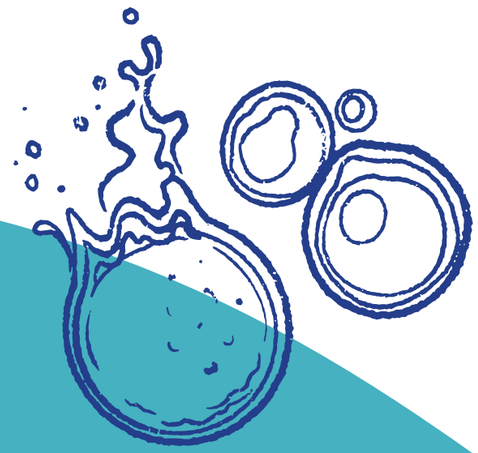
The Mallee is home to three turtle species, the Broad-shelled Turtle, Eastern Long-neck Turtle, and Murray River Turtle — all of which are listed under the *Flora and Fauna Guarantee Act 1988* as endangered or critically endangered. Nest predation is a major issue, affecting over 90% of turtle nests, with foxes and feral pigs being the main culprits. This has resulted in a low survival rate for hatchlings, which means few turtles are surviving to adulthood.

"Very interesting and inclusive, lovely conversations and an excellent experience for learning."

— Community member

In May 2023, the Mallee Catchment Management Authority (CMA) hosted 45 community members, along with a local Zoologist from EnviroEdu, at beautiful Kings Billabong as part of the Mallee CMA Citizen Science program. The event highlighted the importance of turtles in the ecosystem and offered the community knowledge and tools to help protect these precious species.

Community members enjoyed a hands-on interactive presentation with Broad-shelled Turtles Fuzzball and Clay, who were happy to display their carapace (upper hard shell), plastron (underside of shell), and scutes (hard scales on the shell), helping participants learn about their anatomy and colouring. Knowing the markings on turtles can help community identify species for monitoring. Information was also provided on diet, breeding habits, nesting times, egg incubation and predator threats.



Once Fuzzball and Clay were safety in their crates, participants enjoyed a stroll along the walking tracks of Kings Billabong to locate active or disturbed nesting sites. We were lucky enough to find a nest that had recently been hatched. This was evident by the clear hole in the ground, surrounding broken turtle shells and lack of predator scratch marks.

One participant with keen eyes did locate a deceased hatchling near the nest that Zoologist Sarah was able to identify as a Murray River Turtle. This species normally nests from late October to late December with eggs usually hatching in the first half of February.

Kings Billabong was inundated by the flood event from October to January, leaving us to speculate whether the turtles had laid their eggs and hatching was delayed due to water levels and soil temperatures or if laying was delayed until the flood water had receded.

While looking at the nest and hatchling, participants were shown how to use the mobile app TurtleSat and encouraged to download it, preparing them to log data next time they are visiting one of our wetlands. TurtleSat is a national app that helps track turtle sightings and nest discoveries.

Supporting and encouraging environmental volunteerism through access to subject matter experts is one way Mallee CMA is building the capacity of our citizen science volunteers.

Top: Participants learning how to protect turtle nests
Above: EnviroEdu and Fuzzball demonstrating for community

Case Study 2 — Recognising 12 Years of Volunteering

Russell Cox has been involved in volunteering activities for the Mallee Catchment Management Authority (CMA) for 12 years. To recognise 30 Years of WaterWatch Citizen Science and Russell's achievements, we spoke with him to understand what motivated him to start volunteering and why he has continued to monitor for so many years.

"I commenced my working career in 1974 in the Electrical Distribution Industry, specifically the State Electricity Commission of Victoria, working in the Management/Technical area before retiring permanently due to ill health in 2008. This technical knowledge provided me with some of the skills I need to assist the Mallee CMA to undertake WaterWatch testing.

I commenced volunteering in 2011 when one of Mallee CMA employees approached me to undertake WaterWatch monitoring, and being available, I said yes. This sort of activity out in the open air helps me to combat the down sides of my anxiety disorder. Initially I had five sites - three in Sandilong Creek which runs through the Riverside Golf Club, one on the Southern side of the golf course, and one in a creek off the Murray River behind the golf course.

In 2014, I was asked to include WaterWatch monitoring at Kings Billabong. There are three monitoring sites here, on the west site of the Levee Bank; at the Regulator; and near the Bridge at the Psyche Pumps.

As recorded in the WaterWatch Database I have undertaken over 500 site visits.

In addition to these site visits, in 2016 I volunteered to undergo training in how to collect, observe and record creature data (macro-invertebrates), which I monitor at Sandilong Creek.

In early 2018 another Citizen Science project commenced at the Mallee CMA which was Bird monitoring. After training I was asked to monitor the birds at Catfish Billabong, located on the Merbein Common. I conduct this activity in conjunction with my WaterWatch monitoring days.

I enjoy these Citizen Science volunteer activities because I have a natural interest in nature and the environment. One of the tools I use in these activities is photography which records the ever-changing environment that I visit when undertaking WaterWatch monitoring and bird data recording.

I also know and understand that the data I record assists the Mallee CMA make informed decisions about the environment with hard scientific and reliable data to back up their decisions. The data also contributes to an overall picture of these facets of nature across Victoria."

The Mallee CMA would like to thank Russell for his many years of ongoing service as a WaterWatch volunteer and for the invaluable data he provides.

"I'm doing something for the environment, I'm doing something for future generations and that is a good thing."

— Mr Russell Cox, WaterWatch Volunteer, Kings Billabong

Above: Mr Russell Cox presented with his Outstanding Service Award

Left: Mallee CMA Mr Russell Cox demonstrating water quality testing

74 Groups

2,438 Volunteers

10,243 Event Participants

Melbourne

Case Study 1 — Planting4Platypus

Modelling has indicated that without intervention, platypus are likely to go extinct in several of the Port Phillip and Western Port region's catchments.

One of the catchments where platypus are currently found is Diamond Creek. The waterway is part of the Yarra River Basin and is located in Melbourne's northeast. Land use in the upper part of the catchment is mainly farmland while the lower part is mostly surrounded by urban areas. The Diamond Creek catchment also has one of the highest rates of platypus entanglement in litter across the Melbourne region.

The WaterWatch team have been working closely with Friends of Edendale, Edendale Community Environment Farm and Nillumbik Shire Council to improve habitat and raise awareness of the threats to platypus in the Diamond Creek. One of these initiatives is 'Planting4Platypus' which has involved a series of planting events aimed at improving platypus habitat while also engaging with the local community to raise awareness of the presence of these elusive creatures and the threats they face.

"The enthusiastic assistance of Melbourne Water staff in supporting our newly formed Friends of Edendale group through the Planting4Platypus initiative has enabled our group to achieve the excellent results and positive community involvement along the Diamond Creek in Eltham."

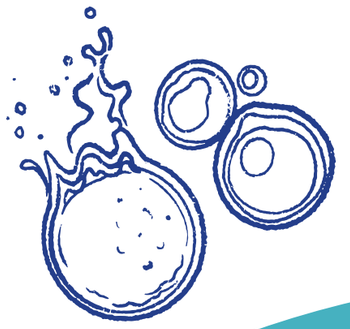
— Alan Thatcher, President, Friends of Edendale

These events have been very well received by the community and have been successful in bringing like-minded community members together with fantastic results. So far, these events have resulted in over 1,000 plants being planted in the ground along the Diamond Creek, which will have a direct improvement on the habitat of local platypus.

Harnessing the momentum and strong partnership formed between WaterWatch, Friends of Edendale, Edendale Community Environment Farm and Nillumbik Shire Council, planning for future community planting events is underway, targeting further areas along the Diamond Creek desperately needing habitat restoration. Working with key stakeholders towards a common goal in this area has been key to successful community engagement events and improving the community's knowledge of the environment.

Melbourne Water are thrilled to be part of this partnership and excited to see what can be achieved in helping to protect the iconic platypus.

Images: Planting4Platypus event



Case Study 2 — The Edgars Creek and Edwardes Lake Task Force

The Edwardes Lake is part of Edgars Creek, a sub-catchment of the Merri Creek, located in the northern suburbs of Melbourne.

The Edgars Creek and Edwardes Lake Task Force is a partnership between water authorities, Traditional Owners, community groups and local government. The partnership allows the groups to coordinate and advance initiatives with the purpose to enable and inspire the transformation of the Edgars Creek and Edwardes Lake. It has a whole of catchment approach to:

- improve water quality
- build flood resilience
- enhance the natural environment

Water monitoring shows that the water quality at Edwardes Lake is poor, which has been the result of the challenges of climate change, industrialisation, urban densification and stormwater pollution across the Edgars Creek Catchment.

The Task Force was officially established in January 2022 with a collaboration agreement which sets out the direction, aims and objectives for the Task Force.

Members of the Reservoir Frogs WW group are:

Teresa Aquino, leader

Kate Jost

Jiradett Kerdsri

Nam Ornin

Click here for further details on the Task Force

"Through the Taskforce we've been able to share our observations and concerns about the health of our waterways and work collaboratively on a plan to monitor, measure and hopefully improve local water quality."

— Volunteer Terry Aquino, leader of the Reservoir Frogs WaterWatch group, Task Force Member

The achievements of the Task Force so far include:

- Annual Task Force Report (with WaterWatch data collated and interpreted) with outcomes reported from all members
- Our Water- Our Story Edwardes Lake Community Festival that showcased and celebrated Edgars Creek and Edwardes Lake. Over 150 local residents attended with their families.
- WaterWatch monitoring is on the agenda with monitoring extended from 1 to 8 sites being monitored monthly. Council has funded the WW group with a water quality multiprobe tester to speed up the data collection each month
- A number of stormwater harvest wetland projects underway to reduce stormwater inflows into the Edgars Creek and to increase local biodiversity
- EPA visiting local Industrial businesses to ensure correct storage, spill containment and stormwater management
- Litter collection days run by the Friends of Edwardes Lake with litter data being added to the LitterWatch Vic CS page
- Friends of Edwardes Lake (FoEL) volunteers planted over 3,000 plants in the wetlands, Edwardes Lake banks and Edgars Creek riparian zone
- FoEL also ran Litter Collection days with litter data being added to the LitterWatch Vic Citizen Science page
- Taskforce members, FoEL volunteers and community members identified 325 species using the iNaturalist app

"Being a part of the Edgars Creek and Edwardes Lake Task Force, I have a vision to see ecosystem function improvements through improving water quality of the Edgars Creek Catchment."

— David Melli, Team Leader, Bushland Management, Parks and Open Space, City of Darebin, Task Force member

Above: Participants at the Our Water Our Story Edwardes Lake and Edgars Creek community festival enjoyed a Welcome to Country by Uncle Ringo Terrick of the Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation

Below: Kate Jost, President of Friends of Edwardes Lake (FoEL), taking water samples with the Reservoir Frogs WaterWatch group. Kate and FoEL's contributions have been integral to the formation and success of the Water Quality Team of the Edwardes Lake and Edgars Creek Taskforce

8 Groups

70 Volunteers

500 Event Participants

North Central

Case Study 1 — Monitoring Fish Species Using eDNA with Barapa Barapa and Wamba Wemba Traditional Owners

RiverScan is a citizen science program co-delivered by the North Central CMA's Native Fish Recovery Project (NFRP) and North Central WaterWatch.

Despite annual spring macroinvertebrate surveys being literally washed out due to widespread flooding in the region, staff were still able to get out on country with Traditional Owners to undertake monitoring activities in autumn when sites had dried out sufficiently.

In partnership with La Trobe University and Barapa Barapa and Wamba Wemba Traditional Custodians, North Central CMA staff undertook environmental DNA (eDNA) monitoring at 30 sites across the RiverScan and Ramsar Kerang and Gunbower project areas.

North Central CMA Project Manager and Freshwater Ecologist, Dr Peter Rose, and Wamba Wemba man Alex Stuart collect eDNA samples from Lake Tutchewop near Kerang — a Ramsar listed wetland

> "We are very excited to see what Nick and his team discover and look forward to future opportunities for citizen scientists to contribute to research as the use of e-DNA becomes increasingly accessible!"
>
> — Tania MacLeod, Citizen Science Coordinator

Dr Nick Murphy demonstrates the eDNA sampling methodology to North Central CMA staff and Barapa Barapa and Wamba Wemba Traditional Owners

North Central CMA staff were joined by Barapa Barapa elders Uncle Ron Galway and Aunty Joy Galway as well as Wamba Wemba man Alex Stewart for two days of collecting eDNA samples in early April under the guidance of Dr Nick Murphy from La Trobe University.

Given the turbidity of the water at many river and wetland sites, filtering the water samples through syringe filters was fairly time consuming, even with the help of caulking guns. After two days of elbow grease and several busted syringes, the team successfully collected 90 filtered samples (three from each site) for testing. Samples will now be analysed in La Trobe University's Department of Environment and Genetics laboratory for the presence of DNA from more than 30 native and introduced fish species including those in major decline such as river blackfish and olive perchlet.

The results will give project managers and researchers a clear indication of the fish species currently occupying the Lower Loddon River, Kerang Lakes and the Gunbower systems.

Above: Wamba Wemba man Alex Stuart applies muscle to collect an eDNA samples

Below: Dr Nick Murphy demonstrates how to collect a sample using a caulking gun in attempt to give our hand and arm muscles some respite

Case Study 2 — Frank Steele

Frank Steele is a dedicated North Central WaterWatch volunteer who has been diligently monitoring his adopted sites since 2012. All three sites are on Bullock Creek near Lockwood, in the Loddon River catchment west of Bendigo.

Frank has always been a keen conservationist, and first heard about WaterWatch through his involvement with the Upper Spring Creek Landcare Group, who had been monitoring Bullock Creek since 1995.

Given his professional background in analytical chemistry, Frank thought he suited the role of a WaterWatch volunteer perfectly.

"I became aware of the fact the Landcare group was doing some sort of survey on a couple of the local creeks. They asked for hands up, and I put mine up, and said 'right, I'd like to do that,' and I was lucky enough to get to look after Bullock Creek."

Before Frank began with the program, he didn't have much of an understanding of his local waterway. Since becoming involved in WaterWatch, Frank has become more aware of the natural variations, seasonal differences and long-term fluctuations that occur within just a small part of Bullock Creek. Given his scientific background, Frank understands the importance of regular monitoring, and how it can tell the story of a site.

"It's very important to monitor a creek even when it seems boring and dry. My records of Bullock Creek's dryness are going to be very significant for evaluating the effects of climate change."

— Frank Steele

He is glad to be contributing data and evidence to help in the response to climate change, as well as being able to indulge his love of environmental science during retirement. Being involved in the Great Australian Platypus Search in 2021 was a highlight of his time in WaterWatch.

While he didn't expect to find any evidence of platypus in Bullock Creek, Frank was nonetheless happy to get involved in collecting samples to be tested for the presence of environmental DNA (eDNA) to help map the distribution of platypuses in Victorian waterways.

"They were very specific about the points they wanted checked out, and it was quite a high-tech system they had for doing that evaluation. I thought that was a real buzz to be doing a platypus survey, right here in Bullock Creek in Bendigo."

Frank's commitment to our local waterways is the spirit which drives the WaterWatch program. The North Central Citizen Science team greatly appreciates both Frank's care for scientific consistency, as well as his stewardship of Bullock Creek. The creek itself might see a lot of seasonal change, but the accuracy of Frank's data certainly does not!

A digital version of Frank's story can be found here.

Top: Bullock Creek, Stewarts Bridge Lockwood, October 2022
Above: Bullock Creek, Stewarts Bridge Lockwood, April 2019

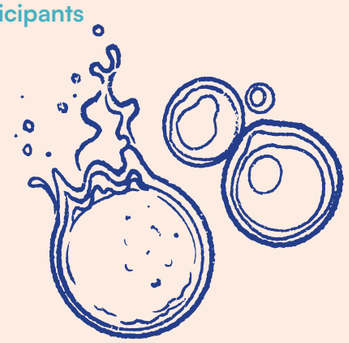
Left: Frank Steele Receiving his 10 years of service award earlier this year from North Central WaterWatch staff past and present - Cass Davis and Britt Gregory

3 Groups

7 Volunteers

115 Event Participants

North East



Case Study 1 — Turtle Talk Event at Mullinmur Wetland

A Welcome to Country from respected Bangerang elder Uncle Dozer Atkinson set the scene for a community gathering at Mullinmur Wetland in Wangaratta on a warm evening in March 2023.

People of all ages came to meet the three species of turtles found locally, Long-necked Turtle *Chelodina longicalis*, Broad-shelled Turtle *Chelodina expansa* and Murray River Turtle *Emydura macquarii* brought along by Graham Stockfeld of Turtles Australia.

Graham's engaging presentation covered all aspects of turtle biology and ecology, threats to their survival and what we can all do to help protect them. Kids and adults alike were delighted to see the turtles up close and have the opportunity to interact with them.

Graham carefully explained the different identifying features of each species and physical differences between the sexes. People were excited to learn they can record their turtle and nest sightings using the citizen science mapping tool TurtleSAT and if carefully moving turtles off the road they should always be taken to the side of the road the turtle was heading to.

When the conversation turned to locating and protecting turtle nests from predators, students from nearby school Borinya were on hand to share their experience finding the nests and hatchlings of Broad-shelled and Murray River Turtles on their school grounds. Under the guidance of a wildlife biologist, the students protected the nests they found and cared for hatchlings before releasing them into Mullinmur Wetlands.

Mullinmur wetland is largely managed by volunteers supported by partners Galen, Borinya, Bangerang Aboriginal Corporation, North East CMA, and the Rural City of Wangaratta. The focus is on enhancing the environmental, cultural and educational values of the site. The team includes dedicated WaterWatch volunteers who regularly monitor water quality parameters at four sites to keep an eye on the health of the wetlands and nearby Ovens River.

Ian Minns and Kelvin Berry from Wangaratta Landcare Sustainability shared a great overview of the activities that take place at Mullinmur and how the community can get involved. They also cooked a delicious BBQ that rounded off a fantastic evening that left people inspired to care for their local waterways.

Top: Baby turtle cuteness overload. Credit: Crystal Speakman

Above: Graham from Turtles Australia explains the anatomical differences between male and female turtles. Credit: Crystal Speakman

Left: The education hub at Mullinmur Wetland was packed with community members keen to learn about our local turtles. Credit: Vanessa Thompson

> "The community here has a real connection to our special waterways and all the species that call them home. It is wonderful to see so many people come along to learn about our local turtles and how we can protect them into the future."
>
> — Catherine McInerney, Senior Environmental Water Resources Officer, North East CMA

3 Groups

30 Volunteers

71 Event Participants

West Gippsland

Case Study 1 — "Kugerungmome Kids" Day with Powlett River Primary School

Cold and windy weather didn't get the better of 50 eager Powlett River Primary School students and staff when they joined West Gippsland CMA staff and partners to learn about the importance of the Powlett River and its catchment.

After a brisk walk to explore the river's mouth and learn about estuaries, representatives from Bunurong Land Council and Bass Coast Landcare Network shared their important knowledge with the children. To finish the day, the students participated in activities lead by West Gippsland CMA staff, where they learnt how citizens scientists can use simple methods to determine the health of a waterway.

The kids used pH strips and turbidity tubes to learn about the physical and chemical properties of water in a fun, hands on activity. They also learnt about the importance of macroinvertebrates (waterbugs) in the food chain and how the number of different species present show how healthy a waterway is. The students enthusiastically explored trays of macroinvertebrates with spoons and used a magnifying lens and a simple instruction sheet to identify and count them.

Some groups identified as many as five species during their short time studying the trays, including blood worms, shrimp and water treaders.

They also asked some great questions such as "Is this a fish or a tadpole?" "Do these bugs live in the sea?" and "Does this dead bug count?" These impressive questions led to some fantastic learnings and lots of fun.

The Powlett River catchment is a priority area for West Gippsland CMA and this day was part of the Powlett River/Kugerungmome Partnership Project. This project is funded by the Victorian Government's Our Catchments Our Communities program.

> "The kids loved it and have not stopped talking about it."
>
> — Wendy Nicol (Principal)

Top right: Stephen and the West Gippsland WaterWatch Coordinator, Tash Marty-Cripps at his Foster Creek site

Below: Everyone who attended the "Kugerungmome Kids" Day

Case Study 2 — Stephen Broady

Stephen has been a WaterWatch volunteer for the West Gippsland CMA for 13 years. He initially began testing water quality at Foster Creek but after several years he found that his thirst for investigating water quality was such that in 2013 he also began testing another site, several hundred meters from his home.

Testing locally helps Stephen feel a sense of stewardship for his local waterway. "You do feel... ownership sounds too strong, but you do feel a local connection to it."

Starting as a WaterWatch volunteer sparked a love of learning that has changed the course of Stephen's life by prompting him to study science at university. His studies help him better understand his water quality data.

His data has been a valuable resource allowing West Gippsland CMA to analyse valuable water quality information, particularly when his waterway was contaminated by wastewater from a treatment plant in 2021. During EPA investigations, West Gippsland CMA was proudly able to provide summaries of Stephen's data set to help establish a baseline of conditions in the creek. This contributed to the investigation, improving outcomes for all.

Stephen is a passionate, consistent volunteer and he is very proud of his long, comprehensive data set. As he says: "If there's anything I can kind of do to further the knowledge out of this river, whether it's for the EPA or for the CMA I'm happy to do it".

Stephen was recently presented with a WaterWatch Outstanding Service Award in the West Gippsland region at the 30 Years of Waterway Citizen Science celebrations in Bendigo. He is the kind of quiet achiever who has given so much to WaterWatch and West Gippsland CMA over the past decade and deserves this recognition.

> "It ended up putting me on the educational path because I kind of did this for a couple of years and I just thought this is alright... so I started on my cert three in conservation land management then my diploma then a bachelor after that."
>
> — Stephen Broady, WaterWatch Volunteer for the West Gippsland Catchment Management Authority (WGCMA)

1 Groups

4 Volunteers

Wimmera

Case Study 1 — Jeparit WaterWatch Awarded for Long Service at 28th Birthday Meeting

It's not often that you will find a citizen science award being presented in a nursing home, but that is what the Jeparit Hospital of the west Wimmera Health Service hosted for the Jeparit WaterWatch 28th birthday celebration in late May 2023. It was an ideal setting - not only could currently monitoring members be there, but also a retired member and resident, Col Clee, now 96, and the wife of another former member. To top it off, the Jeparit Primary School was close enough to easily send two students and a teacher.

Jeparit's long service award was formally presented by Joel Boyd, of the Wimmera CMA to the Jeparit WaterWatch group past and present members including the Jeparit Primary School River Detectives teacher, Heidi Lees and students.

Left-to-right: Martin Stone (JWW), Sue Atford (JWW), Joel Boyd (WCMA), Jeanie Clark (JWW), Heidi Lees (JPSRDs), Cianna Jenz and Bella Schultz (JPSRDs), Marie Livingston (JWW) and Col Clee (JWW).

"When you are monitoring you don't tend to think about how important it might be in the future to see how things have changed — or not.

We are fortunate that, as well as the Jeparit data monthly since 1995, Wimmera WaterWatchers collected data from many other sites from 1995-2009.

That WaterWatch data has now been around long enough for River Detectives schools to be referred to it. Anyone else can use it too as it is on open access at the WaterWatch Victoria website."

— Jeanie Clark

Long-time member, Jeanie Clark, said that she thought the vision of the founding members in May 1995, reported to the Jeparit River Environmental Group in August 1995, has been a part of how this group has kept going for 28 years with monthly monitoring of up to a dozen sites.

"To collect data that will form the basis of a database that will be in the public arena and available to all in the Jeparit community for years to come is quite an achievement."

The founding members of the group were Alan McKenzie, David Livinston, Col Clee, Stan Werner, Val and Jack Bathstra, and Phil Hensleight with the senior class at the Primary School and Jeanie Clark as a Wimmera coordinator.

Many other community members have been a part of this WaterWatch group over the years, helping it to continue to collect information about the river's water quality.

In the 90's and 2000's the group was made up of: Ray Kluge, Myra Waters, Frank Pitt, Gaby Ille, Gordon Bennet, Michael Clark, and teachers Helen Barton and Veronica Huff and their classes. During this time, data was displayed in graphs in the main street at Wayne Manton's Café and later at the Rendezvous Café, adorned by a pelican.

Since 2010, new members have joined: Martin Stone, Campbell Livingston, Wendy and Duncan Werner, and Sue Atford and Rob Pitt, and Heidi Lees at the Primary School, under the River Detectives program which has replaced WaterWatch education in schools.

Salinity has been of concern in the Lower Wimmera River and 28 years of data collected through the WaterWatch program tells an important story.

Through 1995 -1996 there were regular spring low salinity flows of rainwater quality, 1997-2000 saw spring flows lower salinity but not to the previous levels and between 2000-2009 the Millennium Drought resulted in a highly saline River (over 6,500 EC) and summer maximums reaching as high as 200,000 EC.

From 2010 until 2023 there has been a return to the wet years with low salinity flow and a clear seasonal pattern of rising and falling salinities.

The incredible amount of data and trends Jeparit WaterWatch group has identified since 1995 is a testament to all those involved and shows perfectly just how important WaterWatch groups can be to local communities and waterways.

Top: 1995 Monitoring on the river
Above: 2005 Jeparit WW Group

WaterWatch Victoria
www.vic.waterwatch.org.au

EstuaryWatch
www.estuarywatch.org.au

River Detectives
www.riverdetectives.net.au

National Waterbug Blitz
www.waterbugblitz.org.au

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