EstuaryWatch & Waterwatch

Citizen science in Victoria's waterways

Annual Achievements Report 2018-19

EstuaryWatch

WATERWATCH Victoria

VICTORIA State Government | Environment, Land, Water and Planning

Citizen scientists involved in the 2018-19 programs contributed a total of 9,498 hours to care for our waterways.
This contribution provides an economic value of the 2018-19 volunteer effort of more than $319,227.

Contents

Introduction

The EstuaryWatch and Waterwatch Annual Achievements Report 2018-19 provides a statewide update on the activities of the Victorian waterway citizen science programs, describes how community monitoring programs are used to inform waterway management decisions, while strengthening community engagement in waterway stewardship.

The Victorian Government has delivered record funding for improving waterway and catchment health across regional Victoria, including citizen science programs, through a $222 million investment from 2016-2020. Waterwatch and EstuaryWatch, which are both citizen science programs, support and encourage groups and individuals to become actively involved in monitoring the health of our rivers, wetlands and estuaries.

Citizen science encourages community awareness and knowledge building and improved information for waterway management. This year we celebrated 25 years of Waterwatch, a milestone which exemplifies the long-term commitment of the community to protect and enhance the health of their waterways.

The Victorian Government is a strong supporter of community-based natural resource management through programs including Waterwatch and EstuaryWatch and other waterway citizen science initiatives. Through Action 3.8 in Water for Victoria, the Government is supporting community partnerships to address local waterway priorities.

Citizen science programs are an important component of Water for Victoria and the Victorian Waterway Management Strategy and demonstrate the important role communities have in improving Victorian waterways.

Catchment Management Authorities (CMAs), water authorities, local government and other delivery partners play a crucial role in successfully facilitating on-ground citizen science programs across Victoria. There continues to be strong community support for getting involved in caring for our waterways and catchments across the State, through citizen science and other activities. By working in partnership with individuals and community-based natural resource management groups, we can achieve better, more lasting change.

Aboriginal Acknowledgment

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.

2018-19 Snapshot

The Victorian Index of Estuary Condition (IEC) was undertaken in the Corangamite region – the program aims to assess and report on the condition of estuaries across Victoria, assisting in their management and provide a baseline for assessing long-term changes in estuary condition.

Barwon Estuary Monitoring Pilot Program commenced - a citizen science program with existing EstuaryWatchers and new volunteers, to trial the monitoring of recreational water quality indicators, whilst keeping the community informed about public health impacts.

EstuaryWatch

Discovering the frogs of Bundoora.

Fluker Posts installed in West Gippsland – encouraging the community to capture photos of waterways to create a visual recording and to assist in management decisions.

Jul **Aug** **Sep** **Oct** **Nov** **Dec**

WATERWATCH Victoria

National Water Week – Waterwatch celebration activities inspired individuals, communities and organisations to work together to value our water - "Water for me, Water for all".

Waterbug Blitz at Heyfield Wetlands.

National Waterbug Blitz Spring Launch volunteers identified macroinvertebrates using 'Agreed Level Taxonomy', methodology which gives citizen scientists a way to identify live animals without a microscope, and the data can then be used to estimate the health of their local waterway.

Waterwatch EstuaryWatch Quality Assurance/Quality Control (QAQC) fortnight ensured the integrity of community water quality data across the state.

25 Years of Waterwatch – Minister for Water, Lisa Neville, joined volunteers in celebrating this momentous milestone.

Bayside Alive Tree Planting Day at St Leonards - fun and informative Waterwatch activities and opportunities for the community, as well as over 900 new trees for the environment.

World Frog Day – 1,100 participants took part in a frog census in Melbourne.

Clean up Australia Day – Clean Up for a Platypus in Belgrave.

Litter Trackers Project launched – a Victorian-first citizen science project GPS-tracked bottles released around Melbourne to track litter.

World Wetlands Day celebrations to raise awareness of the important values to our environment and community.

Pesticide Detectives Pilot Program launched - RMIT worked with volunteers from EstuaryWatch, Waterwatch in the first ever Victorian pilot to investigate the occurrence and concentrations of pesticides in Victoria waterways.

A Little Nature Play in Whittlesea where children learn and explore.

Jan | Feb | Mar | Apr | May | Jun

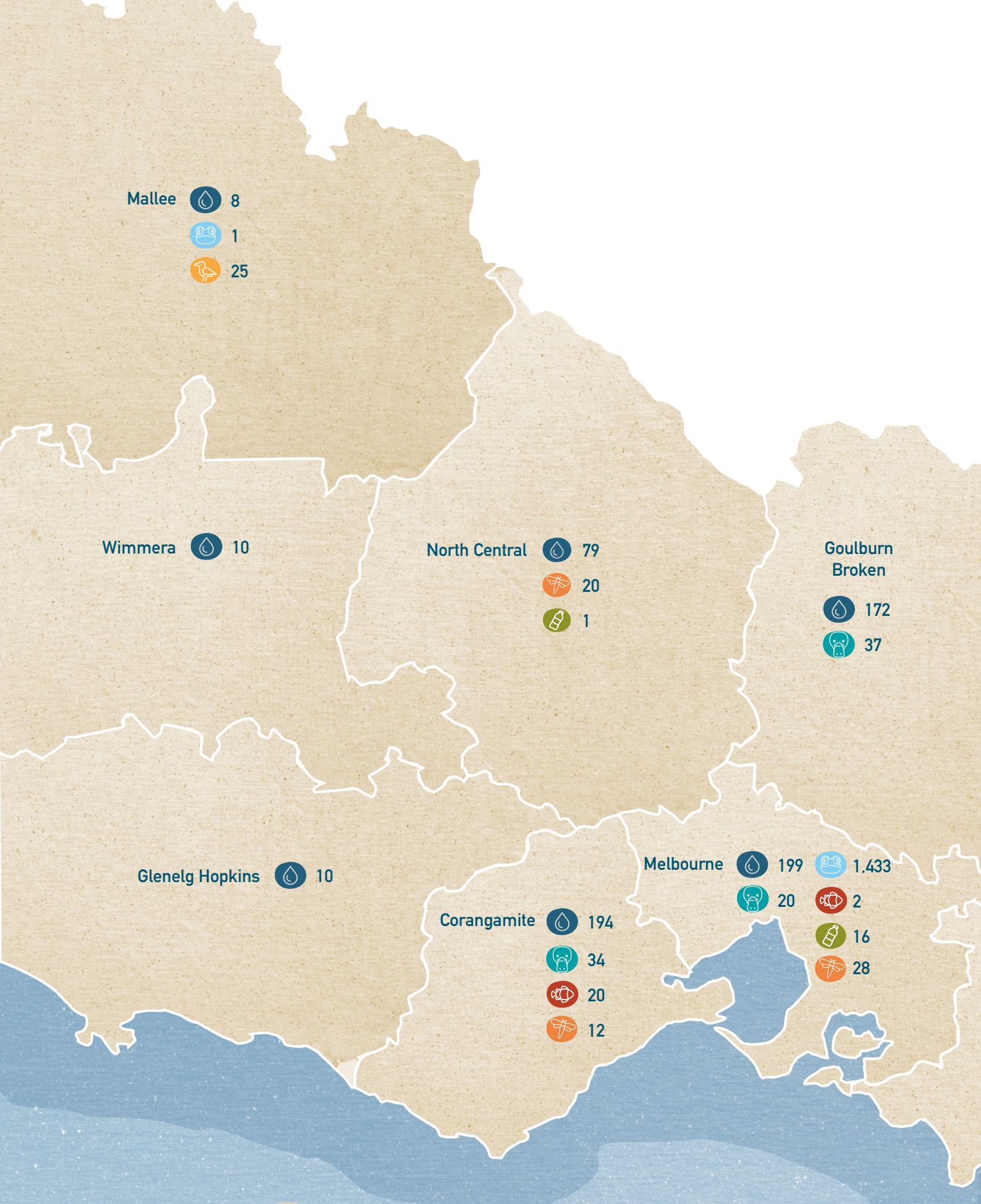
Statewide database training and interpretation workshops increased the capacity and knowledge of citizen scientists, improving waterways stewardship.

National Volunteer Week recognised the contributions of over 1,500 citizen scientists, in Victorian waterways.

National Waterbug Blitz Autumn Launch.

The Long Walk Deadly Race on the Maribyrnong River. Participants learned about indigenous history and waterbugs.

Saltwatch Week – Australia's longest running community monitoring helping communities understand the salinity problem in our waterways.



12,499
Event Participants

134
Active Groups

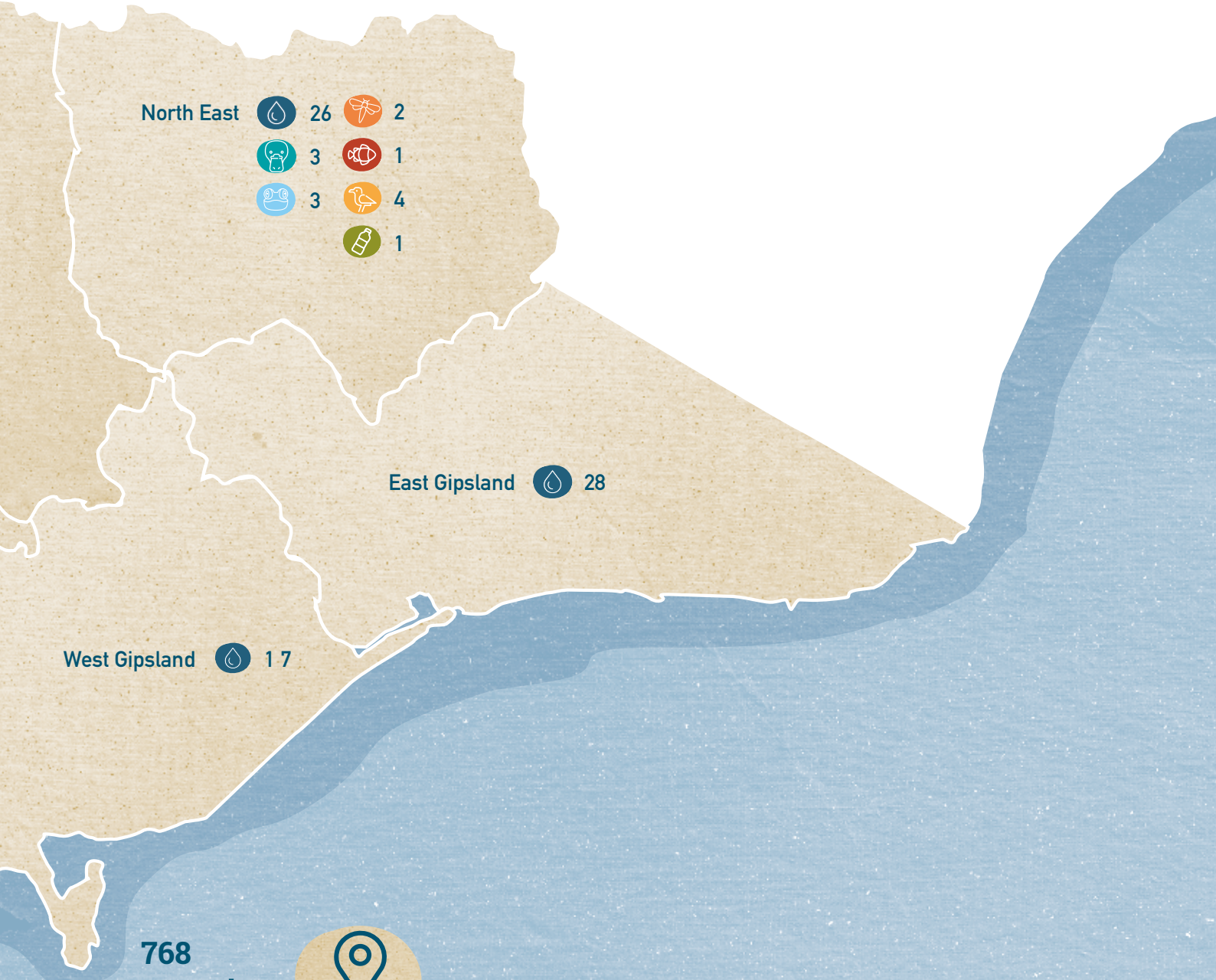
2,005
Active Volunteers

2018-19 Snapshot

Where and What we are monitoring

Type of Monitoring Sites

- Birds
- Water
- Frog
- Litter
- Waterbugs
- Platypus
- Fish



768
Active Sites

Waterwatch

Since 1993, Waterwatch Victoria has been connecting local communities with waterway health and sustainable water management issues. The Waterwatch program continues to build on its established and valued role as a key community engagement program, connecting local communities with waterway managers and to encourage stewardship.

Waterwatch volunteers over the past 25 years have left a wonderful legacy. The Minister for Water, Lisa Neville, recognised their contribution when attending the 25 years of Waterwatch celebration in August 2018.

"Thank you to Waterwatch volunteers across Victoria who put in countless hours of their own time to support the health of our environment and waterways. This is a great example of initiatives funded by the government that are run by the community and support the community."

"The 25-year milestone exemplifies the long-term commitment of the community to protect and enhance the health of their waterways – so that they will remain healthy for generations to come."

As the program reached its 25-year milestone, it continues to enhance its program to provide credible, relevant and accessible data to increase knowledge and inform management decisions.

The Waterwatch Data Portal and the Waterwatch Victoria Data Confidence framework informs users of Waterwatch data of the breadth of monitoring purposes across the program. It is designed to introduce users of data to the wide range of monitoring purposes. In developing a state framework based around monitoring purpose, river health data collected under different Waterwatch programs can be recognised and valued, for its contribution to education, as well as to natural resource management.

- Learn how citizen scientists are making a difference to waterways in Victoria or find out how to become a volunteer: http://www.waterwatch.org.au
- To view Waterwatch data on your local waterway, visit the Waterwatch Data Portal: http://www.vic.waterwatch.org.au/water_data_portal.php

Thank you to the many thousands of volunteer monitors who have contributed to Waterwatch since 1993.

EstuaryWatch

Citizen scientists actively participate in the monitoring of estuary health, collecting valuable data on the condition of their local waterway and assisting in the monitoring and management of waterways. In 2018-19, more than 100 active EstuaryWatch committed to regular estuary mouth condition monitoring, physical and chemical monitoring and event-based monitoring across Victoria.

The EstuaryWatch program was part of two exciting initiatives to understand and care for estuaries across Victoria;

The Index of Estuary Condition (IEC), a program that aims to assess and report on the condition of estuaries across Victoria, assisting in their management and provide a baseline for assessing long-term changes in estuary condition was undertaken by citizen scientists in the Corangamite region in November 2018-March 2019.

https://www.ari.vic.gov.au/research/rivers-and-estuaries/index-of-estuary-condition

The Pesticide Detectives Pilot Project, a project investigating pesticides in waterways was launched in Victorian estuaries at the end of April 2019. Citizen scientists, including EstuaryWatch and Waterwatch volunteers, in collaboration with Aquatic Environmental Stress Research Group (AQUEST) based at RMIT University played an important role in the collection of reliable and representative environmental samples for pesticide analysis and in completing site assessments.

https://www.rmit.edu.au/research/research-institutes-centres-and-groups/research-groups/aquest/pesticide-detectives

Learn how citizen scientists are making a difference to estuaries in Victoria, or find out how to become a volunteer: https://www.estuarywatch.org.au/

Pesticide Detectives volunteers monitoring the upper reach of the Gellibrand River estuary.

Quality Assurance/Quality Control (QAQC) is an annual event designed to ensure the integrity of community water quality data. Citizen scientists are sent mystery samples to analyse, and their results are compared to the actual sample. Participants are trained to collect and analyse samples using the Waterway and Estuary health Data manual and record their findings in a data portal.

2,727
Students are citizen scientists

101
Schools Involved

81
Teachers being trained

2
Virtual learning sessions

With 12 participating schools

14
Training events

With 53 schools and 81 participating teachers

"The added value to our students is evident from their feedback. They feel that our collaboration allowed them to become better primary science teachers, more immersed in their community and in their local environment. These gained knowledge and skills, they will take with them, wherever they teach."

Dr Efrat Eilam
Victoria University

River Detectives

River Detectives is an education initiative of Catchment Management Authorities that supports teachers and leaders to encourage young people to connect to their local waterways. Besides monitoring habitat, water quality and waterbugs at their local waterways, young people learn about catchment and waterway health.

In 2017, the River Detectives program received Victorian Government funding to pilot a statewide program, targeting 60 schools across four CMA regions including North Central, Wimmera, North East and Corangamite, together with Melbourne Water. The program provided access to professional learning opportunities, water science and macroinvertebrate monitoring kits, and an online platform for classroom resources and data capture. The pilot was a huge success, engaging over 100 schools and groups and more than 4,000 students. In 2018-19, the River Detectives program engaged 2,727 students as citizen scientists.

During April and May 2019, an exciting new partnership project began between River Detectives, Waterwatch Victoria, Melbourne Water and Victoria University. Masters students (Primary Teaching) were tasked with developing a practical online unit of work for primary school teachers, working together in groups to develop their works, with each consisting of five lesson plans following each stage of the '5E Instructional Model' (Engage, Explore, Explain, Elaborate, and Evaluate). This was followed by presentations to the panel made up of Victoria University lecturers, Waterwatch Victoria and Melbourne Water staff. The project provided a great example of how funds can be leveraged through good partnerships. Dr Efrat Eilam from Victoria University said the collaboration was very positive for her students, "The added value to our students is evident from their feedback. They feel that our collaboration allowed them to become better primary science teachers, more immersed in their community and in their local environment. These gained knowledge and skills they will take with them, wherever they teach". Sasha Wells, statewide EstuaryWatch Waterwatch Facilitator says, "The Waterwatch River Detectives Vic Uni Presentation event was a great success! The standard of presentations was outstanding and left us all very inspired to think of the future learnings and opportunities to come from this partnership". So, what's next for this successful partnership? The top lesson plans will be made available online for use by schools involved in the statewide River Detectives program.

For more information: https://www.riverdetectives.net.au

Litter Trackers

In a Victorian-first citizen science project, Melbourne Water's collaborative Litter Trackers project saw RMIT University scientists working with schools and community groups to deploy 100 GPS-tracked bottles, in 20 locations across Melbourne's catchments, to reveal precisely how litter makes its way from our streets to our beaches.

Melbourne Water's Litter and Waterwatch Coordinator, Naomi Dart, says Litter Trackers is a terrific learning tool for students and the wider community. "People often don't realise that the rubbish they drop in their suburban street ends up right here in our rivers and streams carried by stormwater through our waterways. The Litter Tracker technology shows us this in real time."

In an exciting development, the North Central CMA River Detectives will be delivering Litter Trackers projects in the region, launching in August 2019.

For more information: https://bit.ly/2JVg1qf

National Waterbug Blitz!

Spring 2018 saw the Waterwatch Program strongly involved in the launching of the National Waterbug Blitz, Australia's first nationwide waterway monitoring event. The Waterwatch Victoria has been successful in getting thousands of schools, community members and organisations involved in water quality testing and water bug surveys over the past 25 years. However, during this time, there has not been an established nationally coordinated collection and collation of waterbug data in Australia, until now.

John Gooderham of The Waterbug Company has been developing an improved approach to how scientists and Waterwatch citizen scientists can use a similar methodology to identify waterbugs and collect data that is of good quality and robust for use in riverine assessments.

This approach has been rolled out through the National Waterbug Blitz project, with the aim to reinvigorate the Australian community's awareness, concern for, and care of, their local waterways. Waterwatch Victoria has pivotal to the success of this citizen science project by actively contributing to as a part of the working group, as well as the coordination of data and training events.

The project entails upgrading the existing Waterbug App for waterbugs for Australia and data entry via app; creating an online waterbug database, which receives data from citizen scientist via The Waterbug App and can also house historical and other agency collected data on waterbugs; National Waterbug Blitz events in 2018 and 2019; social research on waterway health citizen science projects participation; project reporting and evaluation by June 2020.

To date, The National Waterbug Blitz has over 100 users throughout Victoria. Nationally, Victoria has the highest level of training compared to other states, and at the end of the 2018 sampling, 20 new sites had been established throughout Victoria.

For more information: www.waterbugblitz.org.au

West Gippsland

Matt Khoury at Wreck Creek Fluker Post.

Regional Highlight:

EstuaryWatch Fluker Posts: Monitoring Change at Wreck Creek and Powlett River

Fluker Posts, which facilitate photos of waterways, were installed at Wreck Creek (Inverloch) and the Powlett River (Kilcunda) in November 2018 and have since gathered many images that showcase seasonal changes in estuary mouth condition, water level heights, recreational activities and, of course, some cool pictures of birds. The installation of the Fluker Posts was so simple, taking less than a day to fit the posts, and the outcomes have been so rewarding.

The West Gippsland CMA and its partners were very excited about the opportunity for the community to help with the study of the changing environment and community use in these environmentally sensitive locations through the Fluker Post project.

Local media embraced the project, and publicised it through radio and printed media with clear instructions on how to use the posts, and upload photos onto a central website. In seven months the posts attracted a grand total of 71 images that already demonstrate some interesting seasonal changes at these dynamic environments.

Both the Powlett River and Wreck Creek estuary mouths close their connection to the ocean after periods of low catchment flows. This is a very important natural process, which can impact surrounding infrastructure and properties but is essential for maintaining surrounding wetlands and supporting wildlife. The Fluker post adds an additional way of monitoring this and other natural processes.

5 Active Groups

17 Active Sites

24 Active Volunteers

Screw Creek Creature Feature.

Regional Highlight:

The Estuaries Unmasked Creature Feature at Screw Creek, Inverloch

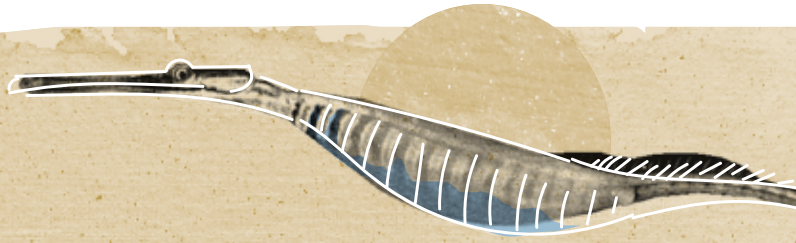
The Estuaries Unmasked Creature Feature is always a hit with our citizen science community. This event series has been running for several years, in different locations, to raise community awareness and garner support to protect these environments. Attendees are encouraged to get up close and personal with fish and other aquatic fauna (i.e. stored in fish tanks after being caught through electrofishing and netting activities), and learn more about the birds and terrestrial mammals that rely upon natural estuarine processes and functions for survival.

Screw Creek is part of Anderson Inlet, and contains some highly valuable saltmarsh and mangrove environments. Being a permanently open estuary that receives a daily tidal cycle, this system is very different to those in which this event has been held in the past (i.e. intermittently opening and closing estuaries). This event was run in partnership with Fishcare Victoria and was targeted towards both the general community and anglers, with 70 people in attendance.

Thirteen different species of fish (including the endangered Pipefish) were featured, including an introduction to their lifecycle patterns and habitat requirements, some fish research netting demonstrations, an introduction to the creek and its surrounding habitats, and a discussion from both the WGCMA and Fishcare about the threats to Screw Creek and Anderson Inlet (i.e. Spartina, introduced aquatic creatures, poor water quality etc). Participants are given a rundown of the work that different organisations are doing in the area to protect these environments, along with an introduction to the things they can do to help.

For more information: https://www.wgcma.vic.gov.au

151
Event
Participants



Glenelg Hopkins

Regional Highlight:

Monitoring Estuary Health in Warrnambool

Estuaries are complex environments with fluctuating concentrations of fresh and salt water. Highly productive, they act as nurseries for many fish and other animals. In the Warrnambool area, the Hopkins and Merri estuaries can experience rapid change in water quality and conditions as river mouths periodically open and close to the sea.

These estuaries hold great social, cultural and economic importance. Citizen scientists have monitored the Glenelg Hopkins estuaries since 2010. Besides capturing snapshots of the physical changes of river mouths as shaped by tides, winds and river flows, they have monitored water quality changes by measuring salinity, dissolved oxygen, temperature, pH and turbidity.

The Hopkins and Merri Rivers meet the sea in three different places along the Warrnambool coastline. These estuaries are surrounded by a mosaic of wetlands significant to many migratory bird species, urban and commercial development, and farmland. Occasionally artificial mouth openings are necessary. Glenelg Hopkins Coastal Natural Resource Management Planner, Jarred Obst, said that having access to accurate water quality information was vital when considering interventions.

"Estuaries are exciting places where people like to live and play. They are also biological hotspots. Careful management is essential to help protect both the needs of communities and the species that rely on these habitats to breed and grow," he said.

The Hopkins River estuary is a site of great environmental, social and cultural importance.

> **"Thanks to the efforts of 12 EstuaryWatch members over a number of years, we now have a long-term dataset for the Hopkins and Merri estuaries. It's great to be able to draw on this reliable water quality information when contemplating estuary openings to manage environmental risks."**
>
> **Jarred Obst**
> Glenelg Hopkins Coastal Natural Resource Management Planner

2 Active Groups

9 Active Sites

11 Active Volunteers

Regional Highlight:

Citizen Science Caters for All Ages

The skills of Merri EstuaryWatch volunteers were put to good use when they hosted Diploma of Conservation Land Management students during their monthly monitoring session. As part of their studies at South West TAFE students investigated water quality issues and the physical and chemical properties of different systems.

The monitoring partnership provided a great opportunity for the Merri EstuaryWatch citizen scientists to discuss with a new audience the merits of the EstuaryWatch program and value of the data collected. The TAFE students learnt about EstuaryWatch and monitoring methodology, estuary process and water quality, and the complexities of managing estuaries. They measured the water profile of the Merri River estuary and observed river mouth conditions at Stingray Bay and Rutledges Cutting, including abundant birdlife.

The event lead to the recruitment of a new member for the Merri EstuaryWatch team. Tom Sheehan joined the citizen science ranks to learn more about estuary processes and impacts on water quality.

"I've always had a keen interest in the river systems around our area and how activities on the land can affect the water quality in our rivers and estuaries," he said.

For more information: https://www.ghcma.vic.gov.au

Tom Sheehan, James and Elanor Cowell conducting EstuaryWatch monitoring and bird watching at Merri River estuary.

"I was involved with Waterwatch in primary school and I've been interested in aquatic habitats since then, as well as the links between catchments, rivers and the sea. I have children that will use our rivers and estuaries. I want these environments to be in the best condition they can. This is something that I can help to monitor."

Tom Sheehan
Merri EstuaryWatch team member

46
Event
Participants

Corangamite

Regional Highlight:

Barwon Estuary Monitoring Pilot Program

In 2018 the Barwon Heads community expressed an interest in establishing a public health driven, water quality monitoring program for the Barwon River Estuary to understand the health of the waterway and patterns in estuary water quality. The Barwon Estuary Monitoring Pilot Project was developed to trial the monitoring of public health and recreational water quality indicators and educate the community about public health impacts. The pilot was delivered by the Corangamite CMA with support from EPA Victoria and ALS laboratory.

Sixteen volunteer citizen scientists were recruited and trained to collect water quality information from eight sites in the proximity of stormwater outfalls and areas of high recreational use. Over a five-month period between December and May, they tested water quality indicators including, ammonia, pH and turbidity, as well as recording general observations of the appearance of each site. The community volunteers also collected samples for microbial (enterococci) testing at a laboratory.

Microbial data (enterococci) was variable throughout the monitoring period. There was no ammonia recorded at any of the sites and pH and turbidity were within the expected range for a healthy estuary. A longer-term data set, particularly enterococci information, is required to support decision-making.

Barwon estuary monitoring pilot project volunteers.

BEMPP has exceeded all expectations and project targets and there has been positive feedback about the project as a community engagement tool. The BEMPP volunteer citizen scientists were highly motivated and regularly engaged their local community to promote the project. Local events such as Festival of the Sea, Barwon Heads Association meetings as well as print and social media channels were all used to highlight the Barwon River Estuary project.

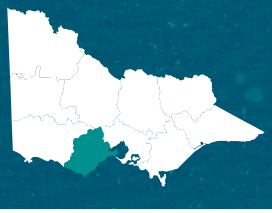
There is strong community enthusiasm to continue to monitor water quality in the Barwon River Estuary and to explore other tools used to predict water quality for recreational users.

For more information: http://www.estuarywatch.org.au/cb_pages/barwon_estuary_monitoring_pilot_project.php

32 Active Groups

194 Active Sites

140 Active Volunteers



Regional Highlight:

Assessing Estuary Condition

The Index of Estuary Condition (IEC) is a standardised method of monitoring that assess and report on the condition of estuaries across Victoria, assisting in their management and provide a baseline for assessing long-term changes in estuary condition.

Over the warmer months of November 2018 to March 2019, Corangamite CMA project officers and citizen scientists contributed to this research by measuring these water quality tests:

- Water quality parameters dissolved oxygen, pH, electrical conductivity and temperature.
- Suspended materials as measured by turbidity and secchi depth.
- Phytoplankton as represented by the concentration of chlorophyll a in the water.

There was an opportunity for citizen scientists to get involved in this work through the participation of EstuaryWatch groups, Waterwatch monitors, Corangamite CMA staff and interested community members.

DELWP presented the IEC program at three information sessions in Peterborough, Aireys Inlet and Torquay. The Corangamite CMA invited EstuaryWatch groups and interested community to participate in IEC assessments over the summer months and in return, citizen scientists provided valuable local knowledge of site access and also hands-on assistance while gaining skills and knowledge.

Citizen scientist Jane Morrow from the Barwon EstuaryWatch group said "I've really enjoyed being involved with EstuaryWatch. Its great fun and terrific knowing our work, in a small way, is helping to keep our waterways in good condition."

Water quality testing in the Corangamite region.

Barwon estuary monitoring pilot project volunteers.

This citizen science contribution will help inform decision making for estuary management into the future.

For more information: www.ccma.vic.gov.au

3,737
Event Participants

Melbourne

Regional Highlight:

West Footscray Fire and Stony Creek Rehabilitation

In August 2018, West Footscray/ Tottenham was the site of an industrial fire. A warehouse containing chemicals caught fire and burned for two weeks, causing contaminated runoff to enter Stony Creek. This impacted the health and wellbeing of the community across West Footscray, Kingsville, Yarraville and Spotswood. It also caused the loss of numerous plants, animals and fish.

In the aftermath, Melbourne Water, Maribyrnong City Council, Environment Protection Authority Victoria and the community have worked closely together to help Stony Creek recover and recently finalised a plan to guide the long term rehabilitation of the waterway.

During the initial recovery works, Frog Census data collected by volunteers helped guide the actions of contaminated plant removal to reduce the impact specific to the species found locally. Water quality, macroinvertebrate and bird data collected by volunteers form a significant part of the known ecological condition of Stony Creek and have been incorporated into the 10-year rehabilitation plan.

There are signs that the system is recovering, observed by monitors and members of the community. Calling frogs have since been recorded through the Frog Census app, and tadpoles have been observed in sections of the creek in early 2019. Juvenile fish have also been spotted in several areas downstream of the fire site, indicating suitable conditions for both survival and breeding.

Newly constructed habitats have created a refuge for frogs and macroinvertebrates to help speed up recolonisation of the waterway and re-establish important links in the food chain.

Waterwatch monitors and the extended community will continue to be an integral part of the rehabilitation process of Stony Creek, by tracking the progress of the creek as plants and animals bounce back from almost total eradication, influencing the planning and implementation stages, and assisting in evaluating the success of on-ground actions.

More on the Stony Creek Recovery and Rehabilitation works can be found at https://yoursay.melbournewater.com.au/stony-creek-rehabilitation

Run-off into Stony Creek after the Footscray/ Tottenham fire in August.

Baseline data collected by citizen scientists over many years has provided the target for rehabilitation of the Stony Creek, and demonstrates the value of Waterwatch volunteers.

74 Active Groups

199 Active Sites

1,665 Active Volunteers

Participants at the Darebin Parklands Spiritual Trail walk.

For more information www.melbournewater.com.au/community-and-education/waterwatch-programs

Regional Highlight:

Cultural Catchment Connections: Aboriginal Spiritual Healing Walk and Talk on the Darebin Creek

Uncle Trevor Gallagher (A Gunditjmara Elder with Wurundjeri Woi Wurrung speaking rights) guided a walk along the Darebin Parklands Spiritual Trail in May, presenting information on Aboriginal history, culture, contributions and perspectives of the Darebin Creek. Along the way, Waterwatch Coordinator Julia Cirillo pointed out current waterway issues, looked for aquatic creatures that call the creek home and tested the water quality while explaining what can be done to improve the ecological health of the Darebin Creek.

The event was hugely popular with over 60 bookings when the booking system was shut down two weeks before the event. There was lots of great feedback with participants overwhelmingly wanting to see more of this type of event and loving the methods that Uncle Trevor employed to present local Aboriginal perspectives which included story-telling, dance and audience participation. They also enjoyed the interactive nature of the water testing and water bugs.

This event was a successful partnership between the Aboriginal community, local council and the broader community. The local custodians, the Wurundjeri people, have always maintained strong cultural connections with waterways within the Yarra Catchment. This includes spiritually, as a food source, lore and story-telling. Participants went away with a stronger sense of this connection, and a greater awareness of Indigenous perspectives on the importance of waterways in the past, present and hopes for future management.

This project is a key example of Waterwatch engaging with people to establish greater understanding of the pressures on urban waterways, including how to determine the current water quality and overall ecological health.

6,388
Event Participants

Mallee

Regional Highlight:

Frog Monitoring

A group of little Sunraysia scientists are doing their bit for research and conservation of Australian frogs. The 5th Mildura Cub Pack visited Kings Billabong to coincide with FrogID Week (November 9-18), which encourages citizen scientists to get outdoors and record the sounds of frogs in their area using the FrogID app.

The children first listened to some common frog sounds before they set out armed with devices with the FrogID app and a booklet on the different frogs in the area to record their own sounds. The sounds recorded on the app are analysed by Australian Museum scientists to track and map the health of frog populations across Australia.

Cub leader Kerri Retallick said the trip introduced the children to frogs and gave them a deeper understanding of their environment.

While Ms Retallick said the group's outings were normally a chance to switch off from technology and reconnect with nature, the FrogID app added to the children' experiences

"We're lucky to have such beautiful places in our backyard."

Susan Saris, Engagement and Education Officer at Mallee CMA, followed up this outing to explain to Cubs more about the Murray River system and how water and flooding impacts frog populations.

"Frogs are a sign of a healthy environment, and now with the FrogID app anybody can help to record frog data so that we can take care of frog populations and their environment," she said.

For more information: www.frogid.net.au

Mildura Cubs at Kings Billabong undertaking frog monitoring.

"The cubs really enjoyed it, getting out and learning about their home environment. We've been out to Kings Billabong before, but this is the first time we've been there listening for frogs, so that was really interesting."

Kerri Retallick
Cub leader

4 Active Groups

34 Active Sites

22 Active Volunteers

Regional Highlight:

Bird Monitoring

Wimmera-Mallee community members are playing a vital role in monitoring the health of their environment and the wetlands in their own backyard. Supported by the Mallee CMA, a group of ten citizen scientists last week took to their local wetlands for a bird monitoring workshop. The project aims to collect data on the presence of birds at various wetlands in the Wimmera-Mallee.

Wimmera resident Helen Barber with Mallee CMA Project Officer Stephanie Creer monitoring birds at Barber wetland.

Mallee CMA Project Officer Environmental Water Jennifer Munro said it could be extremely time consuming and cost prohibitive to accurately assess an ecosystem's biodiversity. This citizen science project harnesses the power of the community to monitor our feathered friends, which are an indicator of general environmental health, including habitat condition and ecosystem function. Birds could be particularly good environmental indicators in Australia because they live in most Australian environments and habitats, are generally easy to observe and are relatively well-known.

"The data collected from this project will be used to increase local understanding of the benefits environmental watering is delivering to Wimmera-Mallee wetlands and can be used by the Mallee CMA to report to State Government on the outcomes of specific environmental watering events."

Armed with new bird spotting scopes, tripods and birding field guide books, workshop participants were walked through BirdLife Australia's bird monitoring methodology and practiced using BirdLife Australia's app and online data portal for recording and storing bird surveys. Among the participants were locals Helen and Keith Barber, who have a particular interest in wetland birdlife, with their property near Birchip being home to Barbers Swamp wetland.

"The skills from the successful workshop will mean that we can use our scopes and bird books to become citizen scientists and monitor these precious wetlands," Ms Barber said. "It's brought in a new dimension to what we do."

While the Barbers have always taken a keen interest in the biodiversity of their area, Ms Barber said she hoped the workshop would raise awareness and encourage others to become more involved in conservation and monitoring efforts.

For more information: www.malleecma.vic.gov.au

22
Event Participants

North Central

Regional Highlight:

Reimaging the Bendigo Creek

Over 350 River Detectives from 10 schools in the Bendigo region are involved in monitoring the health and water quality of the Bendigo Creek.

Over 40 River Detectives from 5 schools in the Bendigo region are involved in monitoring the health and water quality of the Bendigo Creek. Not only do the River Detectives perform physical and chemical tests, they also monitor the waterbugs in the waterway. Waterbug samples are important in determining the overall health of the waterway.

Students were engaged throughout the year to become actively involved in the City of Greater Bendigo's Reimagining Bendigo Creek Project. Workshops were held to incorporate the student's visions into the project's Strategic Plan and a Litter Tracker launch also provided a focus on the Bendigo Creek. This gives students some ownership over the future of the creek, encouraging them to become the waterway health stewards of the future. An event towards the end of the year will see River Detectives students come together with Traditional Owners to celebrate the Bendigo Creek, share knowledge and participate in cultural activities.

Through the River Detectives program, educators are trained by Waterwatch staff to connect their students to local waterways, by actively monitoring habitat, water quality and waterbugs. The data they collect is provided to the Victorian Waterwatch database and is used to inform management decisions to improve and maintain the health of waterways and catchments.

Learn how River Detectives are making a difference to waterways and catchments, visit www.riverdetectives.net.au/

Students workshop their visions for the Bendigo Creek.

5 Active Groups

79 Active Sites

54 Active Volunteers

Regional Highlight:

A new army of Citizen scientists keeping a watchful eye on the Upper Coliban catchment

The high priority Coliban River, Kangaroo Creek and the Wombat Forest, and adjoining tributaries, are at risk by a drying climate and peri-urban development in this popular tree-change destination. The Healthy Coliban Catchment Project is a long-term project led by North Central CMA, focused on improving overall catchment health by controlling weeds, installing riparian fencing, providing off-stream watering for stock and establishing vegetation. The project also aims to engage and empower the local community through capacity building programs and this is where citizen science comes in.

The Healthy Coliban Citizen Science program kicked off with eight enthusiastic locals who have put their hand up to volunteer their time, with a special mission; to establish a baseline of water quality data for the Healthy Coliban Catchment project and to become better informed custodians of the catchment. Project officer Britt Gregory said "understanding this baseline is really important for on-ground works programs. A team of volunteers contributing regular, important scientific information means we can get a much broader picture of water quality and other aspects of waterway health. There is so much ground to cover - we simply can't do it alone".

As the Healthy Coliban Catchment Project progresses, not only will we be able to track the project success more easily, but we will have a great bunch of knowledgeable local custodians helping to spread the word about the importance of caring for their local waterways. The first get together for the group included training in water testing equipment, allocating monitoring sites and an opportunity for volunteers to share their reasons for wanting to get involved:

Citizen scientists learning to assess waterway health by monitoring waterbugs.

"I have some time available, I want to gain more knowledge and help with collecting data"

"I'm a curious person and keen to stay involved to see what will happen (with water quality and catchment improvements)"

"I'm keen to be involved in an on-ground project and to learn more about our local waterways and the catchment"

"I am optimistic for improvement and keen to advocate for change"

"I feel it's my responsibility to care for the condition of the rivers. I would love to see more people in more places swimming!"

The Waterwatch team are really pleased to have even more passionate locals on-board. By working together with the community, we can only have better project and environmental outcomes.

For more information: http://www.nccma.vic.gov.au

825
Event Participants

Waterwatch recognises and values the ongoing contribution of Aboriginal people and communities to Victorian life and how this enriches us.

Goulburn Broken

Regional Highlight:

Monitoring the health of Macquarie Perch in the King Parrot Creek

The Goulburn Broken catchment is home to 7 of the 11 known populations of the endangered Macquarie perch (Macquaria australasica) in Victoria. The King Parrot Creek has one of the strongest populations of the fish. During the summer of 2018-19 the King Parrot Creek stopped flowing below the township of Strath Creek for only the second time in 50 years, including through the millennium drought.

As the creek was reduced to a number of refuge pools, dissolved oxygen (DO) levels became a concern for the fish isolated in these pools.

When waterways cease to flow, DO can rapidly deteriorate and has the potential to lead to fish deaths. Algal growth in the warmer waters is another consequence of cease-to-flow and can further deplete DO levels. Monitoring DO levels therefore became crucial in the creek. If they dropped to <3 mg/L further action is required including possible translocating part of the population to more secure refuge pools with the creek for safe keeping.

We were able to utilise the knowledge and skills of the local King Parrot Creek Waterwatch monitors to help us with monitoring DO levels in a number of the refuge pools. David Wakefield and Laurie McMillian visited the creek 2-3 times a week to test the pools' oxygen levels. Their help in this project was vital to keeping an eye on the health and resilience of this important King Parrot Creek Macquarie perch population.

Fortunately, the Macquarie perch made it through the long hot summer and the creek is flowing again thanks to the rain in autumn/winter 2019.

Macquarie Perch.

Waterwatch volunteers at King Parrot Creek.

2 Active Groups

172 Active Sites

61 Active Volunteers

Regional Highlight:

Citizen Science help with Platypus Monitoring in the Goulburn Broken catchment

Little is known about the status and stability of platypus populations across the Goulburn Broken, which is why we're working with the Australian Platypus Conservancy (APC) on a citizen science project that records platypus sightings using a simple visual surveying method.

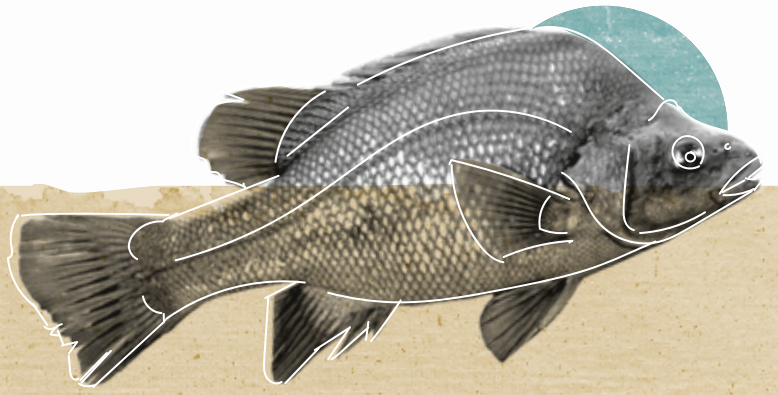
Volunteers, whilst going about their daily activities, record platypus sighting on the APC app. Waterwatch volunteer, GB Morae, stated that "I attended a platypus talk held by Goulburn Broken CMA, which was very interesting! I will turn my monitoring site into a platypus monitoring site too, I have seen platypus there whilst taking my water sample."

In the past year, 19 new monitoring sites have been established, with 37 sites across the catchment. And the results are flowing in – there have been over 1156 sightings of platypus so far!

This information will help to plan appropriate conservation actions. As the platypus is an excellent indicator of the environmental qualities of our waterways, monitoring numbers will also help assess changes in the health of our rivers and creeks in response to changes in water and land use and climate.

For more information: www.gbcma.vic.gov.au

Platypus in Goulburn Broken Catchment.



490
Event
Participants

North East

Regional Highlight:

Maintaining a healthy environment for native fish in Mullinmur Wetland, Wangaratta

Volunteers at the Wangaratta Sustainability Network (WSN) are monitoring the Mullinmur Wetland in Wangaratta to assess the water quality in the wetland and determine how well the new stormwater filtration wetlands are working which flow into the Mullinmur.

Mullinmur Wetland, an ox bow lake, is located on the southern floodplain of the Ovens River in Wangaratta in an urban environment. School groups regularly visit the site with the Wangaratta Sustainability Network (WSN) as part of their curriculum.

The WSN are using the Waterwatch program to monitor the water quality of Mullinmur Wetland so it remains suitable for native fish populations. This data can be used to initiate pumping environmental water from the Ovens River to improve water quality if declines are noted.

The Waterwatch monitoring is also being used as an indicative measure for how efficient the newly constructed wetlands adjacent to Mullinmur are working to filter water from a nearby plant nursery (with potentially high nutrient loads) and the nearby housing estate before it flows into Mullinmur Wetland.

The integration of Waterwatch in the student program at Borinya and Galen College in Wangaratta will educate students on the importance of water quality to waterway and wetland function.

Member of the Wangaratta Sustainability Network taking water quality samples.

This project is demonstrating the value of the Waterwatch program by improving community awareness and delivering valuable data linked to local needs.

2 Active Groups

26 Active Sites

20 Active Volunteers

Regional Highlight:

Expanding the Waterwatch program in the North East

Waterwatch monitoring in North East Victoria in the past was focused on the upper Ovens River. Due to the remote location of many of the North East Region Waterways, the CMA with assistance from DELWP, has recruited new volunteers to assist in monitoring the water quality of the Upper Mitta Mitta - priority waterway in the North East region.

Macroinvertebrate identification training for Friends of the Mitta.

With funding from DELWP–the CMA in 2018 set out to recruit volunteers in new regions and delivered trainings in water quality testing and macro-invertebrate assessments. This program has been successful in establishing new monitoring sites on some of the priority waterways, including one on the Bundara River. The site is supported by the Friends of the Mitta, a proactive NRM community group in the region that has recently undertaken major willow control works on local waterways with CMA support.

As part of their induction, the Friends of the Mitta volunteers were provided with a specialised training on the Bundara by Dr. John Gooderham, a leading macroinvertebrate specialist. They were also provided with bugs and water quality testing equipment.

The Upper Mitta Mitta River system comprises a number of tributaries that contribute to the waters of Lake Dartmouth, a critical water storage for the Murray-Darling Basin. The catchment supports a high level of recreational usage from the non-resident tourist and fishing community. The Mitta Mitta River has been declared a Heritage River, recognised for a number of values including scenic landscapes, canoeing and significant riparian flora and fauna. Lake Dartmouth and the Mitta Mitta River are two of the eight nationally important wetlands listed in the region.

This new monitoring will contribute to a better understanding of waterway health of the Bundara and inform management of its catchment, including management of threats such as weeds and fires. It will also enable an understanding of the water quality changes the water undergoes as it moves from the less disturbed upper catchments.

For more information: www.necma.vic.gov.au

681
Event
Participants

Wimmera

Regional Highlight:

River Detectives collaboration continues

This year Wimmera Waterwatch support for schools has continued to link with the cross-regional River Detectives program, tree planting events along local waterways, and an Aboriginal Water Project focused on documenting and sharing information on Aboriginal cultural uses and values of the Wimmera River system.

Environmental sessions at a Horsham property on the Wimmera River, for example, engaged around 35 local Aboriginal and Torres Strait Islander students from the Goolum Goolum Aboriginal Cooperative Kookas Club in waterway health discussions and plant identification as well as tree planting.

Another day of outdoor learning on the banks of the Wimmera River south of Horsham engaged 95 students from Haven Primary School and Holy Trinity Lutheran College in similar activities to improve habitat linkages and protection of the riverbank.

River Detectives is an education initiative of Catchment Management Authorities that supports teachers and leaders to get young people connecting to their local waterway. The River Detectives program nurtures community partnerships and offers a unique opportunity for communities that depend on healthy waterways to become actively involved in monitoring their local waterway and taking action.

Goolum Goolum Kookas students participate in environmental activities with Wimmera CMA and Landcare staff on the banks of the Wimmera River.

Wimmera schools and youth community groups can apply to be a part of the River Detectives program which, if successful, allows your group to lend a water quality monitoring kit, for the teacher or leader to attend training sessions and the ability to access more activities, resources and an interactive data recording portal on this website.

For more information on River Detectives, visit www.riverdetectives.net.au

1 Active Groups

10 Active Sites

8 Active Volunteers

Regional Highlight:

Platypus in the Wimmera

Platypus monitoring, along with fish and vegetation monitoring continues to take place in the Wimmera, proving valuable in terms of informing the effectiveness of environmental watering actions along with providing good engagement outcomes for the community.

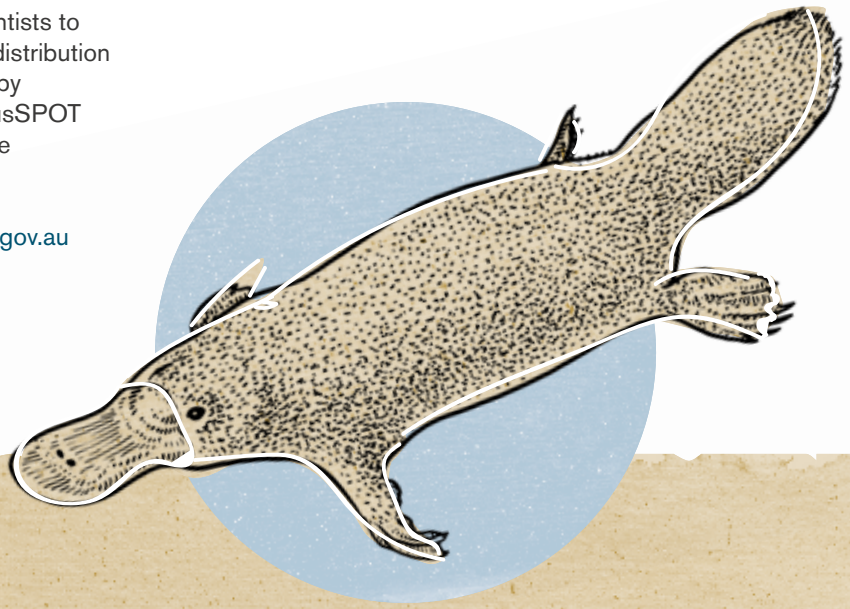
Over the last decade, wildlife ecologist, Josh Griffiths from CESAR, has worked together with the Wimmera CMA and community partners such as Project Platypus to conduct intensive research, population surveys of platypuses and the recent addition of eDNA sampling in the Wimmera Catchment. Whilst this vital information has been gathered over this time, to improve management and conservation outcomes for the platypus, more needs to be known about current and historic distributions.

The Wimmera platypus population is resilient yet extremely fragile, and as far as we're aware, it is the only surviving population in the Wimmera River system. Monitoring in 2018 saw the discovery of a new adult male in the MacKenzie River, and 2019 brought further hope to the region with of a new female platypus found and named 'HOPE' by the local community.

Wimmera CMA is calling on citizen scientists to assist in better understanding platypus distribution and enable more effective conservation by submitting platypus sightings via platypusSPOT online at www.platypusspot.org or via the platypusSPOT app.

For more information: www.wcma.vic.gov.au

Wildlife ecologist John Griffiths with new female platypus, 'Hope'.



145
Event Participants

East Gippsland

Regional Highlight:

Reviving Waterwatch in Mallacoota

This year the Waterwatch program in East Gippsland has continued supporting seven volunteer groups through training opportunities and equipment maintenance/replacement.

Excitingly, Waterwatch has been re-established in Mallacoota with the formation of two new groups. The groups will re-commence monitoring at several existing sites which are currently inactive, building upon historical water quality datasets. The establishment of Waterwatch in the area has provided the opportunity for school children from Mallacoota P12 to get a taste of citizen science, learning about local waterways and water quality monitoring.

Staff members from the EGCMA met the new volunteers for a Waterwatch information and training day to familiarise the new recruits with equipment and introduce them to the online Waterwatch Portal which is used for reporting test results, mapping sites and analysing data.

“Partnering with community to undertake water quality monitoring is an important function of the EGCMA and we’re enthusiastic to work with local volunteers to foster and encourage participation.” said Trevor de Freitas, Project Coordinator at the EGCMA. “Monitoring supports the work we do and the community is able to keep eye on what’s happening in their local patch”.

Trevor de Freitas, from the EGCMA joined community members for a Waterwatch training session in Mallacoota recently.

7 Active Groups

28 Active Sites

8 Active Volunteers

Heath and Karen were keen to dive in to identify bugs at Heyfield Wetlands as part of the National Waterbug Blitz.

Regional Highlight:

Waterbug Blitz

Waders had nets at the ready as community members participated in Waterbug ID training sessions as part of the National Waterbug Blitz at Swifts Creek and the Heyfield Wetlands.

Presented by leading waterbug expert John Gooderham, the events taught interested locals the tools to investigate how healthy their waterways and wetlands are by exploring and identifying what bugs live in them.

The citizen science project encourages individuals and local groups to explore their local freshwater creeks, rivers, wetlands and dams to learn about the world of waterbugs, contribute to improving waterway health and share their knowledge with their communities.

Participants were keen to get outdoors and identify some of the more fragile critters living in our waterways and proudly earned a yellow 'identification' bandana for their efforts.

For more information: www.egcma.com.au

14 Event Participants

Celebrating 25 Years of Waterwatch

Waterwatch's 25-year celebration was a great showcase of Water for Victoria in action. The event celebrated citizen science and the importance of community participation in the management of Victoria's waterways and catchments. The 25 years of Waterwatch celebrations were a fantastic opportunity to recognise and thank Waterwatch monitors and coordinators for their commitment to the Waterwatch program. Please find below the incredible list of people who have inspired us this year.

25 YEARS
David Hodgkins

20 YEARS
Stuart McCallum
Barbara Baird
Russell and Marie Ford
Judy & Stuart Reid
Jill Breadon
Nigel Philpot
Cathy Willis
Lyn Meredith
John and Ruth Penny
John Poppins
David Livingston
Jeanie Clark

15 YEARS
Anne McLaughlin
Kathy Mahoney
Joanna Simmonds
Doug Bottcher
John Nielsen
Barry and Anne Noye
Ann Shovelton
Janet Hagen
Rob & Jan Hayes
Helen Repacholi
Rita Seethaler
Allan Stute
Mel Watts
Peter Repschlager
Frank Pitt
Michael Clark

10 YEARS
Wendy Kerry
Matt Daniels
James Hay
Frits Wilmink
Ian Penna
Colin Cook
Peter Slater
Valerie Stahn
Helen Schofield
Jill Ebbs
Geri Foerg
Martine Foerg
Peter and Jenny Sedgwick
Gael Butler
Joyce Henry
Kevin Jacka
Heather Ingpen
Judi Marshman
Elissa Page
Louise Perrin
Jeff Swain
Kirsten Hogan
Danielle Beischer
Margaret Baber
Adrian baber
Lynda Chambers
Austin McLaughlin
Fritz Uhl
Tony Carter
Judi Millar
Alphonse Benoit
Sue Bendel
David Rosenwax
Kevin Macguire
Joy Lau
Graham Cox
Brian Parkinson
Don Bartlet
Irene Baker
Melissa Laing
Trevor Hausler
Nicole Lowe
Julia Cirillo
Peter Grenfell
Ron Cosgrave
Matt Kennedy
John and Veronica Groat
Marion Da Costa
John and Jan Dods
Ron Cosgrave
Anne and George Perkins
Jim Lawson
Keith McPherson
Cathy McCallum
Paul Poort
Veronica Palmer
Bernard Carroll
David Hartsman
Phillip Hawkins
Helen Whittaker
Diane Farmer
Joelle Champert
Jenny Davies
Carolyn Roscholler
Peter Smart
David Steele
Gordon Bennett

EstuaryWatch
www.estuarywatch.org.au

Waterwatch Victoria
www.vic.waterwatch.org.au

River Detectives
www.riverdetectives.net.au

National Waterbug Blitz!
www.waterbugblitz.org.au

Litter Trackers
https://www.rmit.edu.au/about/our-values/sustainable-development-goals/goal-3/the-litter-trackers

Pesticide Detectives
https://www.rmit.edu.au/research/research-institutes-centres-and-groups/research-groups/aquest/pesticide-detectives

Saltwatch
http://www.vic.waterwatch.org.au/salt_data_portal.php

Fluker Post Project
www.flukerpost.com

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or vicwaterwatchestuarywatch@ccma.vic.gov.au

M: 0459 835 628.

Delivery Partners 2018-19
Corangamite CMA
East Gippsland CMA
Goulburn Broken CMA
Goulburn Valley Water
Mallee CMA
Melbourne Water
Manningham Council
Merri Creek Management Committee
Banyule City Council
North Central CMA
North East CMA
West Gippsland CMA
Wimmera CMA

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