



Waterwatch & EstuaryWatch
Citizen science in
Victoria's waterways

Melbourne

Regional Report

2019-2020



Environment,
Land, Water
and Planning

Victoria sustains a vibrant history of community-based environmental monitoring and citizen science programs, including the Waterwatch and EstuaryWatch programs. These programs are instrumental in informing waterway management decisions while strengthening community engagement and fostering environmental stewardship and advocacy. Catchment management authorities, water authorities, local government and other delivery partners play a crucial role in facilitating the programs.

Through the EstuaryWatch and Waterwatch programs, citizen scientists are supported and encouraged to become actively involved in local waterway monitoring and on-ground activities. Citizen scientists involved in the 2019-2020 programs contributed a total of **232,580** hours to care for our waterways, equivalent to 31,011 volunteer days. This contribution provides an economic value of the 2019-2020 volunteer effort of **\$9,707,889**. For more information, see the Waterwatch & EstuaryWatch Citizen science in Victoria's waterways Annual Achievements Report 2019-2020.

Aboriginal Acknowledgement:

EstuaryWatch and Waterwatch proudly acknowledge Victoria's Aboriginal community and their rich culture and pays respect to their Elders past, present and emerging. 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.

The Melbourne region has three delivery partners. If you are interested in participating in citizen science in the region, please contact your local delivery partner.



Regional Stats



8,225

Event Participants



164

Active Groups



397

Active Sites



6,548

Active Volunteers

Litter Trackers: Chasing Bottles to Bays and Beaches

Ninety-five per cent of litter that washes up on Port Phillip Bay beaches starts by being dropped onto suburban streets.

From cigarette butts to plastic bottles, most litter from our streets is washed into the stormwater system by rainfall. Subsequently, it gets caught in waterways or travels to our bays and washes onto our beaches.

To discover exactly how rubbish makes its way from suburban streets through stormwater drains and to our waterways and beaches, Melbourne Water partnered with the AQUEST Research Group at RMIT University to carry out a ground-breaking Litter Trackers project.

Launched in May, GPS-tracked bottles were tossed into creeks and rivers all over Melbourne, from Werribee to Gisborne to Healesville to Frankston. The project was the first of its kind for Victoria, and only the second time that litter has been GPS-tracked in Australian waterways.

RMIT University scientists worked in collaboration with Melbourne Water, local primary and high schools and community groups to deploy 100 GPS tracked bottles in 20 locations across Melbourne's catchments.

Online interactive maps allowed anyone to follow the bottles and discover how litter travels through our waterways. The results showed that some litter makes it all the way to the bay whilst other times it gets caught and remains very close to where it was dropped.

Project leader Dr Kavitha Chinathamby said Litter Trackers gives all of Melbourne the chance to see the true environmental scale of our litter problem and shows how we can all be part of the solution.

"Litter reduces water quality, harms fish and animals, and ruins our city's natural beauty. To build a more sustainable and liveable future for Melbourne, we need healthy waterways – and that means we need to tackle our litter problem at the source. Through Litter Trackers, everyone



RMIT's Dr Kavitha Chinathamby (right) and Moreland City Council Mayor, Cr Natalie Abboud, watch as Antonine College student Jude Elkadi tosses a GPS-tracked bottle into the Merri Creek at Coburg as part of the Litter Trackers project. Credit Melbourne Water. Credit CCMA.

can get on board with driving this change and create a cleaner, healthier future for our waterways and bays." Dr Chinathamby said.

Melbourne Water's Waterwatch Lead Yvonne Cabuang says Litter Trackers is a terrific learning tool. "Melbourne Water spends millions of dollars a year removing litter from our waterways. This project is an important reminder for everyone to bin their litter," Ms Cabuang said.

Throughout 2019-20, data was collected from 20 rivers and creeks and attracted more than 400 participants including 18

schools and 20 community groups. As part of the project, classroom materials and teacher resources have been developed to educate school children about littering and its environmental impacts.

These education resources are available at Melbourne Water - Litter Trackers project.

You can see how far the litter travelled by heading to the RMIT Litter Tracker website to view tracking data and videos of the litter's journey.

New Frog Monitoring Method for Billabongs Environmental Watering

Billabongs of the Lower Yarra River are watered as part of the Yarra River environmental entitlement. One of the key values of these billabongs are frogs, with ten species recorded historically for the area.

Up until now, frog monitoring has largely relied on frog call recognition to determine which species are present. These data have usually been obtained from song recorders, which record calls for set periods and are then analysed by an ecologist. Some citizen science data has been recorded and as Waterwatch Coordinator James Frazer tells us, "Citizen scientists have supported the billabong program for the past three years, with some volunteers monitoring sites for over 20 years. That said, coverage of reports has been low at some sites, so there has been a need to formalise and scale-up".

In addition to species presence, the success of the billabong watering program for frogs

is determined by watering at the right time with the right amount to ensure frogs can complete lifecycle stages and reproduce. The timing and duration of watering required for breeding vary between species, and the water holding capacity also differs between billabongs.

Effective monitoring of frogs was identified as a gap in the Environmental Water Resources Strategy, with the Lower Yarra Billabongs identified as the ideal location for a pilot study.

To obtain more data on species presence, Waterwatch worked with the Melbourne Water Environmental Water team to enhance the existing Melbourne Water Frog Census app to geo-fence the Lower Yarra Billabongs. This allowed the team to highlight billabongs of interest (such as those about to receive water) within the app and recruit volunteer effort to these sites. A geo-fence is a virtual boundary for a geographical area, in this case a billabong.

The collaboration between Waterwatch and the Environmental Water team has two

main benefits; allowing the effective collection of data on the billabongs and communicating the environmental watering program to over 1,800 Frog Census volunteers. All citizen science data collected by volunteers is analysed by ecologists to ensure correct frog species identification.

In addition, Ecology Australia has been engaged to develop a conceptual model and monitoring protocol of frog responses to watering. This involves a combination of call identification, tadpole monitoring, nocturnal surveys, and water level and quality monitoring.

The conceptual model will guide the appropriate watering regime for each billabong, depending on what species are present, and the monitoring program will allow us to determine whether the watering has resulted in successful frog reproduction in each of the billabongs.

The monitoring protocol will allow us to add water when the frogs need it. This is important for the stages in a frog's lifecycle, such as if tadpole metamorphosis is incomplete and the billabong is drying out. Further refinement of watering recommendations to specific billabongs is another benefit. As each billabong has different conditions, it is necessary to monitor during watering events, until we have a greater understanding of how each billabong and their frog communities respond to the watering.

Along with geo-fencing of the app, other app upgrades include a reporting function that will allow users to download frog data sets direct from the app; frog report verification - this will confirm species ID and include assessor comments; and other bug fixes. The upgrade will be launched in Spring 2020.

With the Frog Census app for Apple or Android, you can record frog calls at any river, creek, wetland or other type of waterway. Credit Melbourne Water.

