CORANGAMITE CMA

Citizen Science Data Summary

CURDIES

Water Quality Summary

2011 to 2020

This document is a summary of the report titled *'An Analysis and Interpretation of Citizen Science Data from the Curdies Landscape Zone'* which assesses data collected by citizen scientists from sites in the Curdies River, Scotts Creek and the Curdies River estuary. The purpose of the report is to inform and increase the knowledge of citizen scientists, and the broader community of the health of waterways in the Corangamite region.

The report assesses data from 2011 to 2020. All data, summary statistics and graphs were downloaded from the EstuaryWatch and Waterwatch data portals. The water quality data was analysed to determine trends over time and across the catchments and compared against Victorian State Environment Protection Policy (SEPP) Waters environmental quality objectives.

The number of monitoring events at each site varied across the catchment. A total of seven Waterwatch and two EstuaryWatch sites are assessed. Of the Waterwatch sites, one site on the Curdies River was irregularly monitored from 2014 to 2017 (six events), one site was monitored as part of the fish eDNA monitoring project

in 2019 (one event) and five sites were monitored on Scotts Creek, a major tributary of the Curdies River from 2011 to 2014 (eleven events) following high rainfall in the local catchment to assess impacts on the waterway at these times. Two EstuaryWatch sites were monitored monthly from 2013 to 2020. Due to the limited amount of monitoring in the riverine site a complete waterway condition assessment was not possible.

CURDIES

Curdies River at Shenfields Corner
Site: CO_CUR011

EC | DO | pH | Turb | RP

Limited monitoring - see report.

Scotts Creek at Road Bridge towards Timboon
Site: CO_SCO010

EC | DO | pH | Turb | RP

Limited monitoring - see report.

Scotts Creek at Woodheap Corner
Site: CO_SCO025

EC | DO | pH | Turb | RP

Limited monitoring - see report.

Scotts Creek at Rowes Rd
Site: CO_SCO005

EC | DO | pH | Turb | RP

Limited monitoring - see report.

Scotts Creek at Murfitts Rd
Site: CO_SCO020

EC | DO | pH | Turb | RP

Limited monitoring - see report.

Curdies River at confluence with Limestone Creek above Timboon-Camperdown rail trail trestle bridge
Site: CO_CUR060

EC | DO | pH | Turb | RP

Limited monitoring - see report.

Boggy Creek Road Fishing Jetty
Site: Cu2

Top	DO	pH	Turb
Bottom	DO	pH	Turb

Scotts Creek at Peters Bridge Rd
Site: CO_SCO015

EC | DO | pH | Turb | RP

Limited monitoring - see report.

Dorey Street Floating Pontoon
Site: Cu1

Top	DO	pH	Turb
Bottom	DO	pH	Turb

LEGEND

- Waterwatch monitoring site
- EstuaryWatch monitoring site
- Waterway
- Town

WATER QUALITY

- Excellent water quality
- Good water quality
- Marginal water quality
- Poor water quality
- No data available

EC Electrical Conductivity (µS/cm) is used as a measure of salinity in water

DO Dissolved Oxygen (% saturation) is a measure of the concentration of oxygen dissolved in water

pH pH (pH units) is a measure of the acidity or alkalinity in water

Turb Turbidity (NTU) is a measure of the clarity of water

RP Reactive Phosphate (mg/L) is a measure of the concentration of reactive phosphate, a component of the total phosphorus in water

AQUATIC MACROINVERTEBRATES

- Site is exceptional
- Site is healthy
- Site is probably mildly polluted
- Site is impacted
- Site is heavily impacted
- No data available

The rating system is used to display the water quality of a site using indicators for each segment, as determined by SEPP (Waters). These ratings have been developed to align with SEPP (Waters) environmental quality objectives. Blue and green ratings meet objectives whilst blue ratings indicate excellent water quality usually found in undisturbed waterways. Yellow ratings indicate the water quality does not the objectives and may impact on the beneficial uses of the waterway. Whilst red ratings indicate the beneficial uses are most likely impacted.

Aquatic macroinvertebrate surveys are conducted at many Waterwatch sites across the Corangamite region. The macroinvertebrate community of a site is assessed using a biotic index that uses the pollution tolerance levels of different macroinvertebrate types.

The monitoring undertaken in the upper catchment of the Curdies River (2014 to 2017) indicate the waterway to be in marginal to moderate condition, whilst displaying low salinity and turbidity, and relatively healthy pH levels, low oxygen levels on occasions potentially indicate high instream oxygen demand.

Monitoring in Scotts Creek following rainfall events (2011 to 2014) indicate high sediment and phosphorus loads are carried in the runoff into this tributary during these times, likely linked to unrestricted stock access and reduced riparian vegetation along the waterway.

Further down the catchment monitoring undertaken during the fish eDNA project (2019) suggest improvements occur with low salinity and turbidity, and improved oxygen levels indicating the waterway to be in moderate condition. All riverine sites indicate there to be high phosphorus inputs to the Curdies River, also likely associated with farming practises in the area. High phosphorus inputs can lead to excessive macrophyte and algal growth, whilst high sediment inputs can smother submerged aquatic vegetation and habitat for fish and aquatic macroinvertebrates.

In the Curdies River estuary (2014 to 2020) the water quality was moderate to good, displaying mostly healthy oxygen levels, oxygen levels were marginally below SEPP (Waters) objectives in the top waters of the upper estuary and exceeded the upper limit on only one occasion in the lower estuary indicating potential algal growth. The pH levels were mostly healthy though marginally exceeding the upper SEPP (Waters) objective and mostly low turbidity was observed though marginally exceeding the SEPP (Waters) objective in the lower estuary. Being an intermittently open estuary, salinity levels varied throughout the estuary being fresh to brackish in the upper estuary and brackish to saltwater in the lower estuary. During most openings of the estuary mouth, usually in winter the estuary is flushed of saltwater by increased freshwater river flows, tidal influences reintroduce salt water to the estuary and after a short period, as river flows decline, the estuary mouth closes.

The Corangamite Catchment Management Authority work with land managers, communities, other organisations and government to protect and improve the health of the region's natural resources. Supporting local communities and increasing knowledge of their local environment is a key objective for the Corangamite CMA. The Corangamite CMA support, train and manage many local citizen scientists participating in projects within the region.

Citizen scientists of the Waterwatch and EstuaryWatch programs have been monitoring the water quality within the Corangamite region for the past twenty-six years and fourteen years respectively. There are currently 62 active volunteers monitoring the water quality at 125 Waterwatch sites and 61 active EstuaryWatch volunteers monitoring 11 estuaries in the region. These Citizen Science programs deliver an extensive range of waterways education experiences to the community and work in partnership with local governments, friends groups and other stakeholders to promote the conservation and protection of local waterways.

There have also been many additional programs conducted with the support of citizen scientists collecting monitoring data, several of which were instigated by the local communities to gain a better understanding of potential threats to their local environment. eg Curdies River eDNA fish survey, Upper Barwon Landcare Network (UBLN) eDNA platypus survey, Barwon Estuary Monitoring Pilot Program (BEMPP), the National Waterbug Blitz, the Victorian Index of Estuary Condition (IEC) (2018 – 2019), and the Fluker Post Project. In addition, schools have been engaged with the freshwater education program River Detectives.

To become involved in a citizen scientist project contact:

Corangamite Catchment Management Authority
t. 03 5232 9100 e. info@ccma.vic.gov.au
w. www.ccma.vic.gov.au

For more information visit:

www.vic.waterwatch.org.au | **www.estuarywatch.org.au** | **www.waterbugblitz.org.au**

CORANGAMITE CMA

WATERWATCH Corangamite Communities Caring for Catchments

EstuaryWatch

VICTORIA State Government

Scan QR code to view the full data report.