What is being done?

North Central Waterwatch and the NFRP projects are working towards increasing native fish populations and ecological health of these waterways. The government is supporting community partnerships over the next four years through Waterwatch and other citizen science initiatives to address local waterway priorities.
The priorities are being addressed as part of the Victorian Government's $222 million investment over the next 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.

Loddon River

- Implementing the Loddon River Environmental Water Management Plan (EWMP); providing flows for fish spawning and movement, instream habitat, and river red gums.
- Targeting fencing, riparian revegetation works and providing off-stream watering for stock.
- Investigating options to restore deep pools.
- Constructing 'The Chute' fishway, and optimising the Kerang Weir fishway.
- Constructing 'fish havens' with community volunteers to increase woody habitat downstream of Kerang Weir.

Box–Pyramid Creek

- Providing environmental flows for fish spawning, movement and habitat connectivity over winter, particularly for large bodied species (Murray cod, golden perch, silver perch).
- Targeting fencing, riparian revegetation and providing off-stream watering for stock.
- Constructing the Box Creek fish lock (GMW Connections Project).
- Installing 32 instream woody habitat complexes ('snag piles'), providing fish with much needed habitat for resting, breeding, and feeding.

Gunbower Creek

- Implementing the Gunbower Creek EWMP; providing flows for fish spawning and recruitment, connecting habitats over winter and increasing movement.
- Delivering a Murray cod spawning and recruitment hydrograph.
- Working with local industry and irrigators to construct the first self-cleaning irrigation channel screen in Australia to prevent fish loss into irrigation channels.
- Targeting fencing, riparian revegetation and providing off-stream watering for stock.
- Developing the Gunbower Forest Carp Management Plan (GFCMP).

Little Murray River

- Targeting fencing, riparian revegetation works and providing off-stream watering for stock.
- Constructing vertical slot fishways at Little Murray River and Fish Point Weirs (GMW Connections Project).
- Developing a Flows Operation Plan that provides fish spawning, movement and habitat (GMW Connections Project).
- Re-snagging between Little Murray River and Fish Point Weirs (GMW Connections Project).

Loddon River at Appin South (Site 2)

Pyramid Creek at McKenzie Rd. (Site 10)

How to get involved

Contact your local **Waterwatch Coordinator** at the
North Central Catchment Management Authority

Via post: **PO Box 18, Huntly VIC 3551**
Phone: **03 5448 7124**
Main Office: **628–634 Midland Hwy Huntly Victoria 3551**
Email: **info@nccma.vic.gov.au**
Or follow us on:

Download our **NatureBlitz** App

Download on the App Store | GET IT ON Google Play

Pyramid Creek at McKenzie Rd. (Site 10)

North Central Waterwatch & Native Fish Recovery Plan Annual River Health Snapshot Report 2016

Understanding and reporting on the condition of our waterways is important for guiding waterway management decisions and demonstrating management outcomes.

North Central Waterwatch and the Native Fish Recovery Plan (NFRP) projects work with the local community, or citizen scientists, so they have the knowledge and skills required to collect valuable information on the ecological condition of waterways in the Native Fish Recovery Plan program area.

The report provides a baseline assessment of river health with results used to track progress against the Native Fish Recovery Plan's objectives, which are:

- restoring and maintaining key habitats (i.e. riparian vegetation)
- reducing pollutant loads (sediment and nutrients) entering waterways
- improving and maintaining water quality
- restoring and maintaining key ecosystem processes
- restoring and maintaining resilient and healthy aquatic communities (i.e. fish populations)

Citizen scientists teamed up with aquatic ecologists to undertake intensive training over five days while collecting data from 22 sites across the Gunbower and lower Loddon region. The aim of the training was to understand the use of macroinvertebrates as indicators of river health. The ALT method has been developed with citizen scientists and community groups in mind. It involves identifying invertebrates using features visible to the naked eye.

Most sites did not meet ALT objectives and were considered in poor ecological condition reflecting the history of degradation at these sites. Implementation of the Native Fish Recovery Plan will work towards improving these systems although large scale improvement in ecological condition will take a great deal of time and action from the community. Commitment from community volunteers who measure change over time is a valuable and positive step towards improving river health. Let's have a look at the results.

Being a citizen scientist is a great opportunity to volunteer and connect with the community and the environment.

What do the results mean?

The results in this report are based on the analysis of macroinvertebrate monitoring data collected in spring 2016. The report provides an assessment of the current condition of four main waterways in the program area; Loddon River, Box-Pyramid Creek, Gunbower Creek and Little Murray River.

Three indices were calculated from the macroinvertebrate data and assessed against ALT reference condition values for each index. Reference condition values are the values expected at a site if it was in an unmodified state. This approach provides a standardised way to compare ecological condition between sites. Reference values were calculated using Environment Protection Authority Victoria's reference site data aggregated to ALT level. The reference sites were 'least disturbed' in the Murray and Western Plains bioregion.

Gunbower Creek at Shelley's Rd. (Site 17)

Colour Coding

Sites have been colour coded and interpreted as follows:

- Meets or exceeds ALT objectives for a healthy ecosystem (>30th percentile of index values for reference sites). Key processes and/or water quality may be slightly impacted however most habitats are intact.
- Close to meeting ALT objectives for a healthy ecosystem (5th—30th percentile of index values for reference sites). Many key processes are not functional; water quality and/or habitat are moderately impacted.
- Does not meet ALT objectives for a healthy ecosystem (<5th percentile of index values for reference sites). Most key processes are not functional and water quality and/or habitat is severely impacted.

Symbol

- **Taxa richness** is the number of different types of macroinvertebrates at a site; sites with higher taxa richness are generally in better ecological condition.
- **PET index** is the number of different types of stoneflies, mayflies and caddisflies at a site; low diversity of these sensitive macroinvertebrates may indicate ecological disturbance at a site.
- **ALT Signal index** indicates the pollution tolerance of the macroinvertebrate community at a site. Each type of macroinvertebrate is assigned a value between one (tolerant) and 10 (sensitive) based on pollution tolerance or intolerance. The ALT signal index is the average of these values.

A site in good ecological condition, based on the ALT objectives, meets the following targets:

TAXA richness	PET index	ALT signal
16	4	3.8

Little Murray River

Three sites along the Little Murray River were monitored. Overall scores indicate the system does not meet the ALT objectives for ecological health. The ALT objectives for taxa richness and PET index were not met at any site; two sites met the ALT signal with one site falling just short of the acceptable range.

Why? **The ALT signal score was high (met the objective) for the Little Murray system, indicating water quality is not a key limiting factor. The monitoring indicated that poor macroinvertebrate index scores in the Little Murray River likely reflect a highly altered natural flow regime, low instream aquatic vegetation and other aquatic habitat such as snags and leaf packs. The riparian zone is degraded in parts particularly in the lower sections of the river.**

The overall results for the Little Murray River	Taxa richness	PET index	ALT signal
	9.3	1.7	3.8

Box–Pyramid Creek

Five sites along the Box–Pyramid Creek were monitored. Overall scores indicate the system does not meet the ALT objectives for ecological health. The ALT objectives for taxa richness were not met at any site; PET index scores were low at all but one site. ALT signal scores were poor at three of the five sites. One site on Pyramid Creek consistently had the highest ALT index score; this site has a well-established riparian zone.

Why? **Macroinvertebrates are possibly responding to highly variable flow regimes, poor riparian condition along large areas of the creek, high turbidity and a lack of refuge areas from fast flow including instream habitat such as snags, root masses, and submerged plants. Some sections of the creek downstream of Milnes Bridge have wider riparian zones in reasonable condition; this is reflected in better ALT index scores. The improved ALT index scores highlight the importance of investment in improving riparian habitats.**

The overall results for the Box–Pyramid Creek	Taxa richness	PET index	ALT signal
	11.6	1.2	3.0

Pyramid Creek at McKenzie Rd. (Site 10)

Gunbower Creek

Five sites along Gunbower Creek were monitored. Overall scores indicate the system does not meet the ALT objectives for ecological health. One site met the ALT objectives for taxa richness with one site falling just short of the acceptable range. The PET index and ALT signal scores were low at all sites.

Why? **Although results from sampled sites in Gunbower Creek showed a diverse range of habitats (e.g. plants, leaf packs and snags), the macroinvertebrate index score indicates the sites are in poor ecological condition. The condition may be due to poor water quality from nutrient enrichment, land-use impacts from surrounding intensive agriculture, and a highly altered flow regime. A site downstream of the Koondrook track had markedly higher taxa richness, surrounded by forest, with intact riparian zones and more available instream woody habitat.**

The overall results for the Gunbower Creek	Taxa richness	PET index	ALT signal
	12.4	0.6	2.9

Loddon River at Canary Island (Site 3)

Loddon River

Nine sites were monitored in the lower Loddon River. Overall scores indicate the system does not meet the ALT objectives for ecological health. The ALT objectives for taxa richness were met at five sites; all sites were upstream of the Kerang Weir. The ALT objectives for taxa richness were met at five sites, all sites upstream of the Kerang Weir. The remaining four sites had very low taxa richness scores and therefore did not meet the ALT objectives. The PET index score was very low at all but one site. The ALT signal score was poor at five sites, while four sites were close to meeting objectives.

Why? **Macroinvertebrate communities in the lower Loddon River have likely been affected by a highly altered flow regime, decreased over-bank flooding, poor water quality (such as high turbidity and low dissolved oxygen levels), degraded habitat from infilling of pools with sediment, and poor riparian condition through past clearing and stock access. While instream woody habitat densities upstream of Kerang Weir are near natural levels, there are areas downstream of the weir that have been channelized and de-snagged in the past. Where riparian improvements have been delivered in the Loddon system, the water quality and macroinvertebrates may take time to recover to a good condition.**

The overall results for the Loddon River	Taxa richness	PET index	ALT signal
	14.7	1.4	3.3

Gunbower Creek at Shelley's Rd. (Site 17)