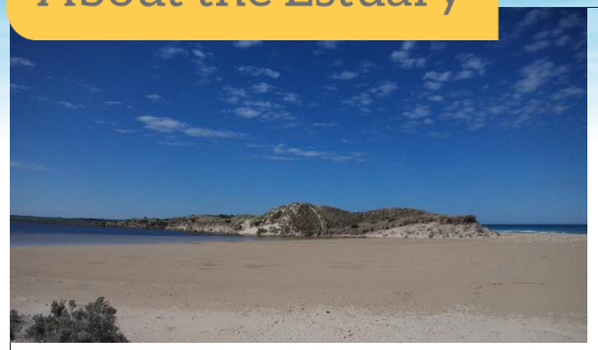
MERRI RIVER ESTUARY 2015

An interpreted summary of data

Date range:
01/01/2015 – 31/12/2015

About the Estuary



The closed estuary mouth where the Merri River exits to the sea via Rutledge's Cutting on September 12 2015.

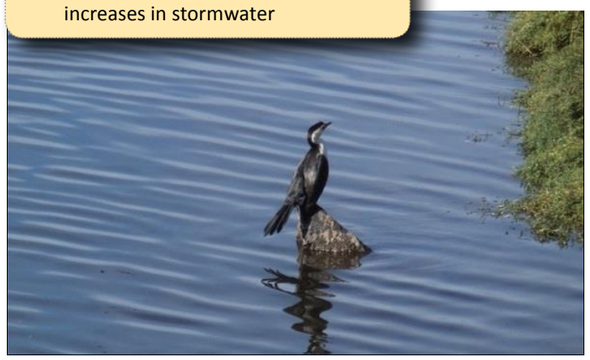
The Merri River estuary is located in Warrnambool in southwest Victoria. The river has two openings to the sea, one at Stingray Bay and one at Rutledge's Cutting. The river was diverted in an attempt to prevent sedimentation in Lady Bay. The Stingray Bay channel flows into the Merri Marine Sanctuary. Little Penguins, Short-tailed Shearwaters and seals can be found in the sanctuary. The Rutledge's Cutting channel flows through Saltwater Swamp and Kellys Swamp. There are 15 species of bird recorded in Kellys Swamp that are listed under the Japan and Australia Migratory Bird Agreement (JAMBA) and Chinese and Australia Migratory Bird Agreement (CAMBA).

The Merri River estuary is a popular spot for walking, bird watching, horse riding, rowing, canoeing and fishing. Seasonal algal blooms are one of the main threats to the social usage of the Merri River estuary.

Threats to estuary health

Threats to the Merri River estuary

- Poor water quality
- Invasive fauna and flora
- Livestock access
- Inappropriate artificial estuary openings
- Urban sprawl/residential development and subsequent increases in stormwater



A Pied Cormorant spotted near the bridge on the Merri River estuary.

What can you do?

The Merri River EstuaryWatch team.

- Join the Merri River EstuaryWatch group
  contact: ghcma@ghcma.vic.gov.au
- Register the estuary as a clean-up site for Clean Up Australia Day.
  www.cleanupaustralia.org.au
- Join a local environment group such as Making a Difference (MAD) for the Merri or Fishcare to find out about working bees and information sessions.
  www.glenelg-hopkins.landcarevic.net.au/madftmerri
  www.fishcare.org.au
- Share what you have learnt from this annual summary with a friend or family member.

Glenelg Hopkins Catchment Management Authority
79 French St (PO Box 502) Hamilton Victoria 3300
(T) 03 5571 2526 (F) 03 5571 2935
(E) ghcma@ghcma.vic.gov.au
www.ghcma.vic.gov.au

Summary of data

This brochure summarises twelve months of EstuaryWatch estuary mouth condition and physical and chemical data. Merri River EstuaryWatch volunteers monitor two physical and chemical sites at each monitoring session. In 2015, volunteers conducted monitoring sessions in 8 of the 12 months.

In 2015 the river mouth at Rutledge's Cutting remained closed to the sea for the entire year. No closures were recorded for the Merri River at Stingray Bay.

Over the 12 months salinity in the estuary ranged from 0.6 - 30.6ppt. During the summer months the lower estuary was mostly brackish. For the whole year, salinity at the upstream site (M2) resembled that of influent fresh river water, no salt water penetrated up the estuary to this site. As river flows increased salinity levels reduced nearer the estuary mouth and were completely fresh in September. The increasing seasonal river flows stratified the waters of the lower estuary leading to reduced dissolved oxygen level in the brackish bottom waters, low levels were recorded from April to August in the lower estuary (lowest DO 0.7% saturation). The upper estuary maintained healthy dissolved oxygen levels throughout the year. The pH levels were stable throughout the year ranging from 6.6 – 8.6 pH units. The temperature of the water ranged from 23.1°C in summer to 9.4°C in winter.

EstuaryWatch records at the Merri River Estuary extend from 2013 and can be viewed at www.estuarywatch.com.au

Estuary Fact File

Type of Estuary:
Wave dominated and extensively modified

Location: -38.372136, 142.440723

Nearest town:
Warrnambool

Estuary length:
Section flowing into Stingray Bay 1.5km

Section flowing into Rutledge's Cutting 2.75km

River length: 110km

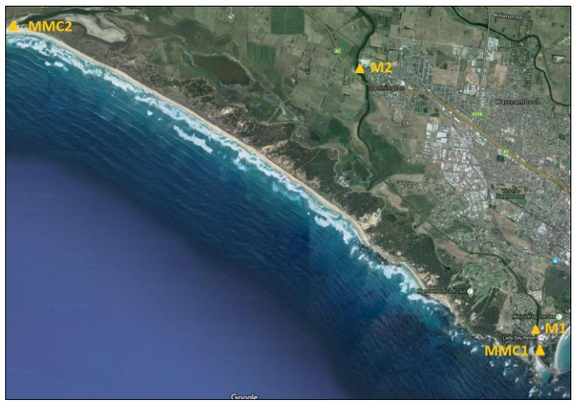
Mouth state:
Intermittently open

Description: The Merri River has two channels to the sea, one at Rutledge's Cutting and one and Stingray Bay.

EstuaryWatch is a community based estuarine monitoring program, aiming to:

Raise awareness and provide educational opportunities to the community in estuarine environments, and enable communities and stakeholders to better inform decision making on estuarine health.

EstuaryWatch volunteers are supported by EstuaryWatch coordinators. Volunteers meet with their coordinator every six months to conduct Quality Assurance/Quality Control (QA/QC) refresher training. These sessions ensure that EstuaryWatch monitoring methods are consistent across the state and data collected by volunteers is credible.



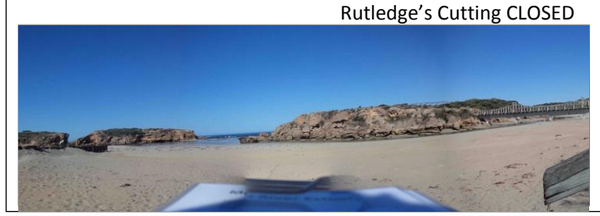
Aerial photo of the Merri River estuary including the location of the EstuaryWatch sites. Source: Google Maps satellite image.

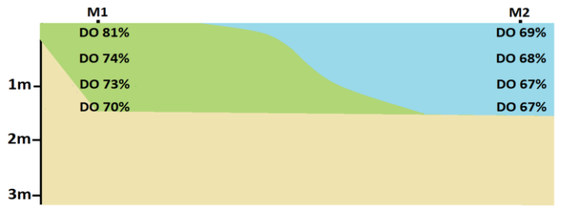
Estuary Snapshots

For all four monitoring sessions chosen for the EstuaryWatch Snapshots, photo point photos and a longitudinal profile of the estuary from site M1 (Stanley Street Bridge) to M2 (floating pontoon at the end of The Esplanade) is displayed. The longitudinal profile shows the depth, salinity and percent saturation of dissolved oxygen (DO) at each monitoring site from the surface of the water column to the bottom.

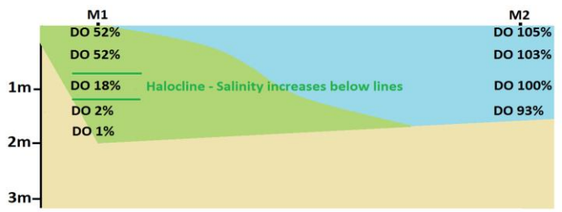
fresh water *brackish water* *salt water* *sediment*

Date: 10/01/2015 Estuary mouth state: Stingray Bay OPEN
Rutledge's Cutting CLOSED



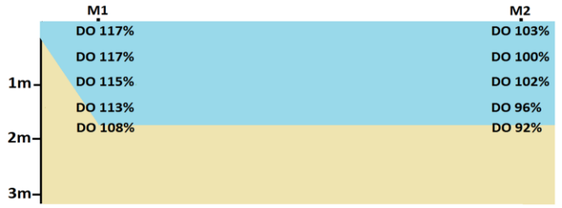


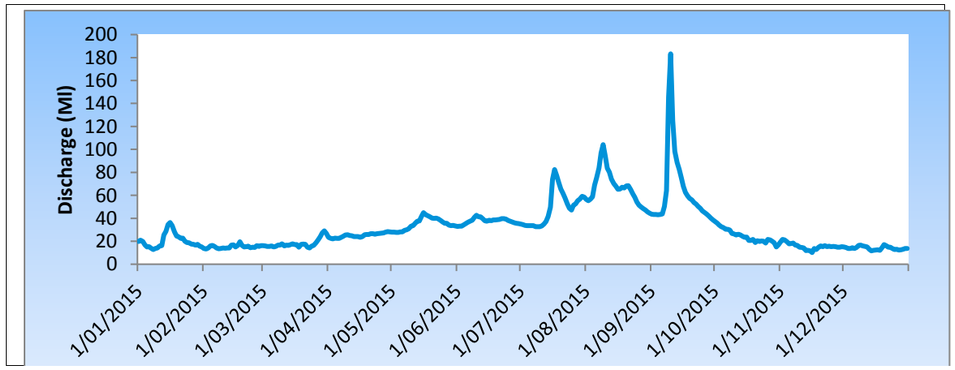
Date: 11/04/2015 Estuary mouth state: Stingray Bay OPEN
Rutledge's Cutting CLOSED



Date: 18/07/2015 Estuary mouth state: Stingray Bay OPEN
Photo: Estuary mouth MMC2 Rutledge's Cutting CLOSED

Date: 12/09/2015 Estuary mouth state: Stingray Bay OPEN
Rutledge's Cutting CLOSED





Total daily freshwater flow in Mega litres (Ml/day) recorded at Woodford on the Merri River.

Increased river inflows from May to September reduces the salinity in the Merri River estuary at Stingray Bay.

Data sourced from DELWP Site 236205 Merri River at Woodford.

Water quality guidelines for riverine estuaries

In 2011 the Environmental Protection Authority (EPA) established a framework for assessing the environmental condition of riverine estuaries. These guidelines can be used to assist management decisions to protect or improve the health of estuaries.

A broad range of estuary types were used to develop the guidelines.

Keep in mind that not all Victorian estuaries have been sampled and measurements have not been collected under all environmental conditions — for example, following flooding bushfires or storm surges.

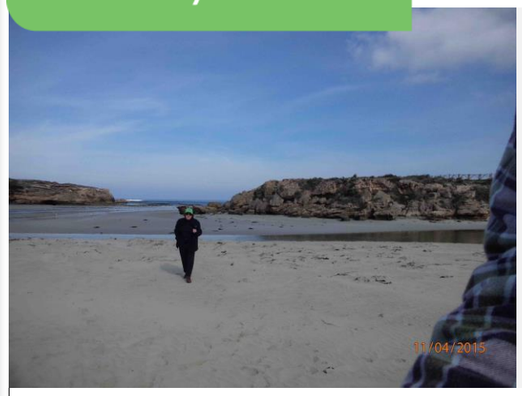
Below is a table to assist you to interpret the EstuaryWatch data discussed in this summary. The guidelines detail what you would expect from a single monitoring session on an estuary in Victoria.

INDICATOR	SINGLE SAMPLE	
	surface	bottom
Dissolved Oxygen (DO) % saturation	70–110%	15–110%
Turbidity (NTU)	18	26
pH (pH units)	6.9–8.3	6.8–8.2

EstuaryWatch volunteers also measure the salinity (ppt) throughout the water column. A rough guide for salinity in estuaries is 0ppt (freshwater) to 35ppt (seawater).

To find out more about the parameters EstuaryWatch volunteers use to measure estuary condition, *Interpreting Estuary Health Data*, EstuaryWatch Victoria is a fantastic resource.

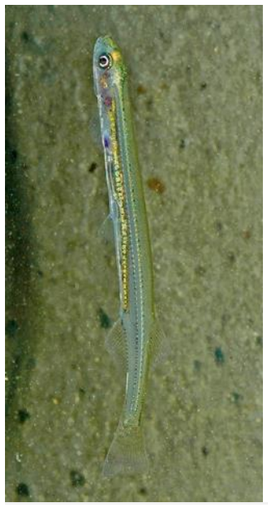
Estuary Events



EstuaryWatch members recording details of the Merri River estuary mouth at Stingray Bay on April 11 2015

In 2015 most of the Glenelg Hopkins region experienced severe rainfall deficiencies. Low rainfall and soil moisture patterns resulted in below average river flows entering our estuaries during 2015. Consequently, the bulk of these systems have displayed intermittent opening and closing cycles, several months ahead of typical seasonal trends.

It is also very interesting to note that the standard summer wind patterns (afternoon south-easterly winds) have been apparent through much of October. Such wind patterns result in the natural deposition of beach blown sand into our estuary mouths, and when combined with low stream-flows, have a strong influence on estuary mouth closing cycles.



Get to know your local estuary species

Common Galaxia, *Galaxias maculatus*

The Common Galaxias adults live in calm waters of low-elevation streams, during autumn they migrate downstream to spawn. Thousands of small eggs are laid in vegetation on the margins of estuaries at spring tides, and often spend up to two weeks out of water until the next spring tide. The larvae then leave the estuary and spend 5 to 6 months at sea as juveniles before returning to the estuary as whitebait moving upstream to the freshwater to mature.

See more at: http://australianmuseum.net.au/common-galaxias-galaxias-maculatus#sthash.tCABw6N7.dpuf

Photo: Whitebait stage Common Galaxias. Photographer: Rudie Kuiter ©