

## About the Estuary



The Anglesea River estuary with the township of Anglesea in the background.

Anglesea, as a seaside holiday resort, is both a permanent home for residents and a great coastal escape for holiday makers, day visitors and those on weekends away. Tourism is the primary driver of the town and the seasonal use of the estuary reflects this, with peak use periods in the summer months.

The Anglesea River is 20.6km long and has two tributaries, Salt and Marshy Creek. The catchment is dominated by the Anglesea Heath, a rich and diverse plant community.

The Anglesea River estuary can be defined as an ICOLL (intermittently closed and open lake or lagoon). When open, the estuary flows into Bass Strait. When closed, flooding can occur in low lying areas. The dominant process shaping the estuary mouth condition is the net eastward longshore transport of sand which traps the sand in the mouth of the estuary.

## Threats to estuary health

Threats to the Anglesea River estuary

- Altered water regimes
- Altered physical form
- Poor water quality
- Acid sulphate soils
- Invasive flora and fauna
- Reduced connectivity



Permitted artificial estuary opening conducted on May 13.

## What can you do?



EstuaryWatch volunteers at Anglesea River estuary mouth photo point site 2 (site Ap2).

- Join the Anglesea River EstuaryWatch group  
[www.estuarywatch.org.au](http://www.estuarywatch.org.au)
- Register the estuary as a clean-up site on the Clean Up Australia day.  
[www.cleanupaustraliaday.org.au](http://www.cleanupaustraliaday.org.au)
- Join a local environment group such as ANGAIR to find out about walks, working bees and workshops that might be happening in Anglesea.  
[www.angair.org.au](http://www.angair.org.au)
- Share what you have learnt from this annual summary with a friend or family member.

# ANGLESEA RIVER ESTUARY 2016

## An interpreted summary of data

Date range:  
01/01/2016 – 31/12/2016

## Summary of data



This brochure summarises twelve months of EstuaryWatch estuary mouth condition and physical and chemical data. The Anglesea River EstuaryWatch volunteers monitor five physical and chemical sites during each monitoring session. In 2016, volunteers conducted 12 monthly monitoring sessions and 3 additional monitoring sessions.

The Anglesea River is an intermittently open estuary. In 2016 there were three permitted artificial estuary openings recorded, March 10 (1.68m AHD), May 6 (1.63m AHD) and May 13 (1.78m AHD), and potentially three natural openings on July 6 (1.71m AHD), July 29 (1.71m AHD) and September 13 (1.72 AHD). Estuary mouth closures were recorded at many other estuaries in Victoria during 2016. The lowest water temperature recorded in 2016 was 8.3°C on June 15, likely due to river inflows of winter rainfall. The highest water temperature recorded was 31.3°C on November 23 at the culvert on Coalmine Road (Site A5), an increase in temperature and salinity with depth was observed at most sites on many occasions. Over the 12 months salinity levels throughout the estuary remained brackish ranging from 1.1 – 32ppt. Dissolved oxygen levels were mostly in the healthy range (median 91% saturation) though some extremely high values were recorded from October to December. The pH ranged from 3.4 – 8.6 pH units. **EstuaryWatch records at Anglesea River estuary extend from 2007 and can be viewed at [www.estuarywatch.org.au](http://www.estuarywatch.org.au)**

## Estuary Fact File

**Type of Estuary:**  
Riverine

**Location:** -38.410162,  
144.187359

**Nearest town:** Anglesea

**Estuary length:**  
2.618 km

**River length:** 20.595 km

**Mouth state:**  
Intermittently open

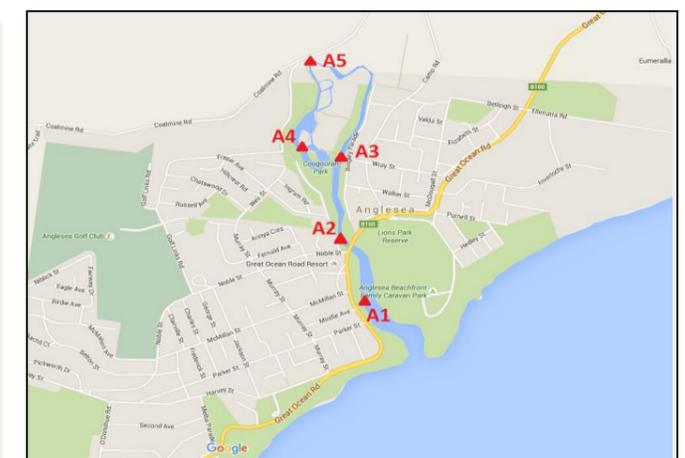
**Description:** The Anglesea River estuary is part of the Anglesea River catchment in south-west Victoria and sits in within the Otway Basin. The estuary has high social value.



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

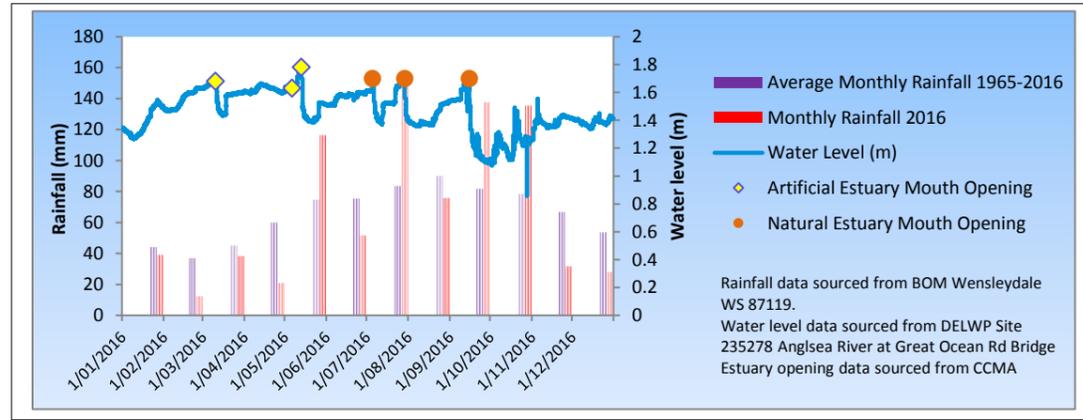
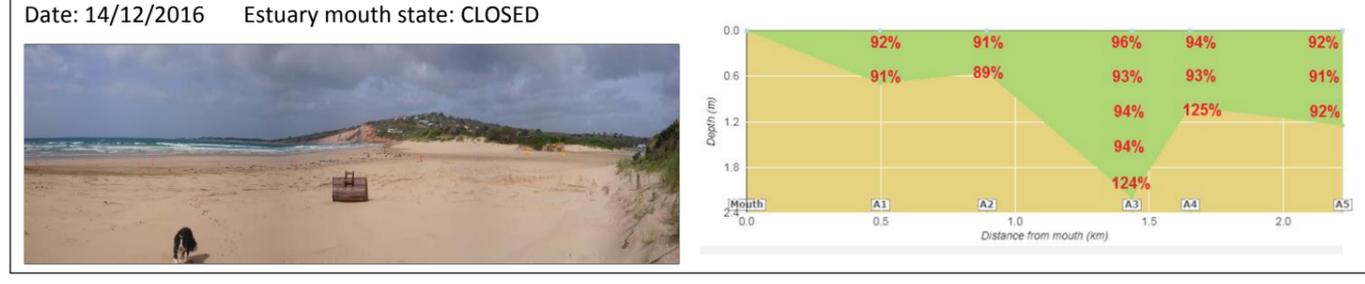
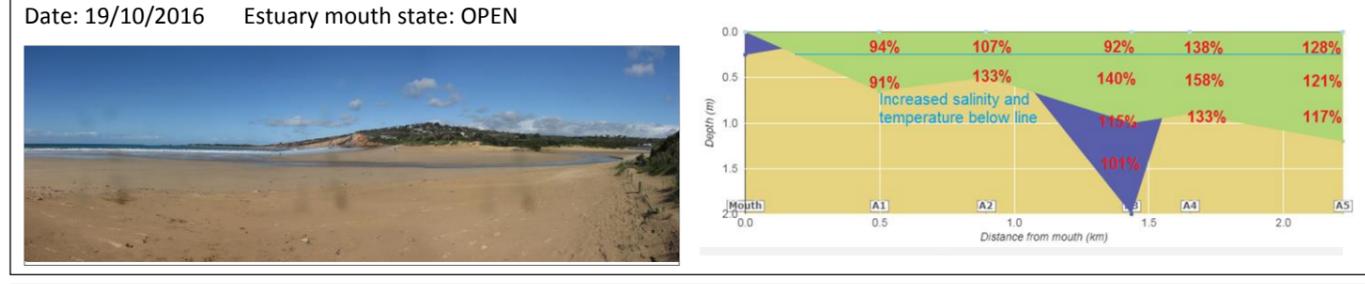
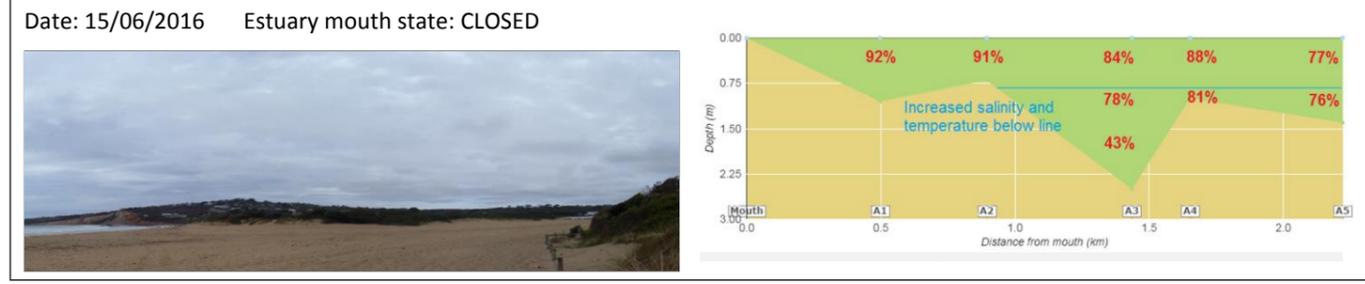
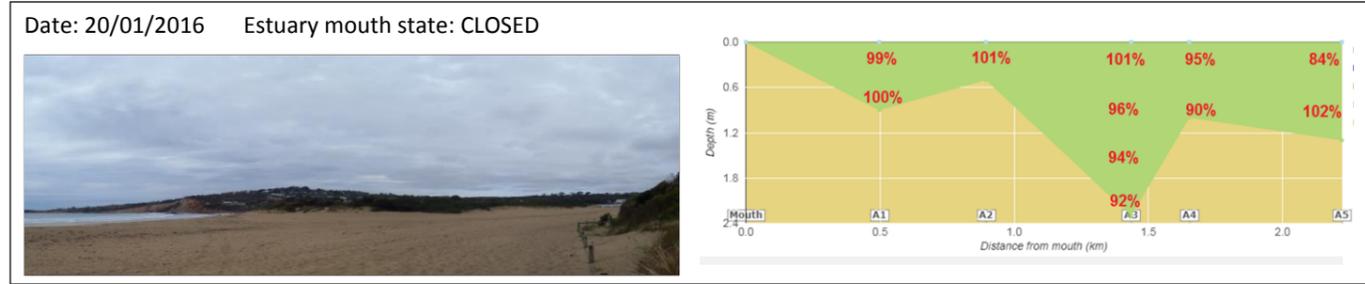
*Raise awareness and provide educational opportunities to the community in estuarine environments, and enable communities and stakeholders to better inform decision making on estuarine health.*

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.



Map of the Anglesea River estuary and the location of EstuaryWatch water quality monitoring sites. Source: Google Maps

For all four monitoring sessions chosen for the Estuary Snapshots, photo point photos and a longitudinal profile of the estuary from site A1 (Anglesea Visitors Centre) to site A5 (Culvert at Coalmine Rd) 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. Of additional interest is the increase in salinity and temperature below a certain depth.



A comparison of long term average monthly rainfall with 2016 monthly total rainfall, including estuary water level. Also displayed are the estuary mouth openings both natural and artificial for the Anglesea River estuary.

## 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



Dead bream found at the mouth of the Anglesea River on September 20.

On September 20 2016, a large number (in the 100's) of dead or dying fish were observed at the mouth of the Anglesea River estuary. A large numbers of fish were also observed leaving the mouth of the estuary and entering the sea.

EstuaryWatch monitoring one day later revealed extremely low pH levels at all monitoring sites within the estuary. pH levels ranged from 3.4 – 4.3 pH units. The acidic water, from catchment sources was washed into the river system by the above average soaking rainfall experienced prior to the event. The Anglesea River experiences occasional acidic or low pH water quality events, these events are natural occurrences and have been responsible for fish deaths in the past.



## Get to know your local estuary species

### Southern Shortfin Eel, *Anguilla australis*

Southern Shortfin Eels pass through estuaries during several phases of their lifecycle. The adult eels spend up to 20 years in freshwater rivers, lakes and dams, before migrating to the sea to breed in the Coral Sea of north-east Australia. Following successful breeding the transparent leaf-like larvae are transported southwards via the East Australian Current, and grow into glass eels before migrating to estuaries in south-eastern Australia. Glass eels are often observed entering Victorian estuaries during their migration to freshwater, the young eels are able to climb barriers such as waterfalls and dam walls.

See more at: <https://australianmuseum.net.au/southern-shortfin-eel-anguilla-australis>

Photo: A Southern Shortfin Eel, *Anguilla australis*, in the Morwell National Park, Victoria, 25 Oct 2015. Source: Matt Campbell / Bowerbird. License: CC BY Attribution