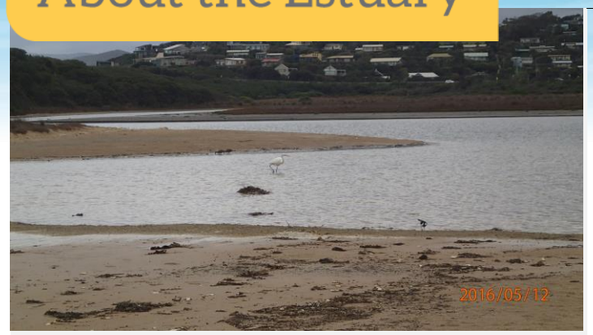
PAINKALAC CREEK ESTUARY 2016

An interpreted summary of data

Date range:
01/01/2016 – 31/12/2016

About the Estuary



Water birds enjoying the beautiful Painkalac Creek estuary.

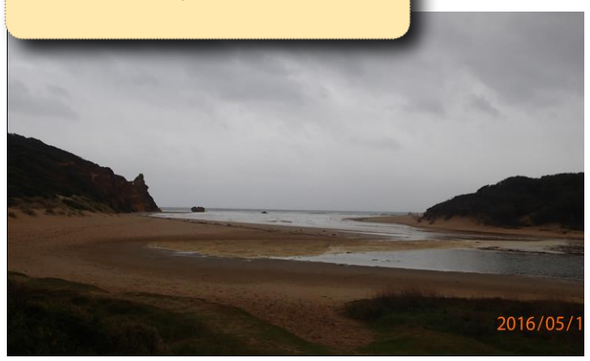
The Painkalac Creek estuary is a beautiful coastal lagoon system located in south-west Victoria along the Great Ocean Road at the township of Aireys Inlet. The estuary opens intermittently but the majority of the time is closed to the sea. Discharges from the Painkalac Reservoir largely control river flow to the estuary. The Painkalac Creek passes through the reservoir site approximately 7km upstream from the estuary mouth.

Painkalac Creek has high environmental, social and economic value. The river is registered as an Important Bird Area (IBA). IBA's are sites of international importance for bird conservation. The estuary is a popular spot for swimming, canoeing, sightseeing and walking. Recreational fishing is also popular in the estuary with catches of Estuary Perch, Black Bream, Mullet, Flounder and Luderick.

Threats to estuary health

Threats to the Painkalac Creek

- Degraded estuarine vegetation
- Disturbance of acid sulphate soils
- Artificial estuary openings
- Flow Deviation
- Stock access
- Bed instability



The breaching of the beach berm enabling sea water to enter the Painkalac Creek estuary on May 11 2016.

What can you do?

EstuaryWatch volunteers participating in a seine netting demonstration in the Painkalac Creek estuary November 11 2016.

- Join the Painkalac Creek EstuaryWatch group
  www.estuarywatch.org.au
- Register the estuary as a clean-up site for Clean Up Australian Day
  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 Aireys Inlet.
  www.angair.org.au
- Share what you have learnt from this annual summary with a friend or family member.

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Summary of data

This brochure summarises twelve months of EstuaryWatch estuary mouth condition and physical and chemical data. Painkalac Creek EstuaryWatch volunteers monitor four physical and chemical sites during each monitoring session. In 2016, volunteers conducted monitoring sessions each month and one additional session.

The Painkalac Creek estuary is an intermittently open estuary. In 2016 there was one permitted emergency artificial estuary opening recorded on July 22 (2.2m AHD) and one natural opening during August. The estuary mouth remained closed for the first half of the year, isolating the estuary from the sea. Estuary mouth closures were recorded at many other estuaries in Victoria during 2016. Over the twelve months salinity levels indicate the estuary waters to be mostly brackish, with the exception of October and November with sea water entering the estuary when the estuary mouth was open. The salinity ranged from 0.6 – 31.2 ppt. The dissolved oxygen levels ranged from 1.2 – 129 % saturation during the year, the lowest level was observed on September 9 in the very bottom waters at The Bend (site P4) at a time when the estuary was stratified. The highest level was recorded in the very bottom waters from Woods Property (site P5), the most upstream site, likely due to algal growth on the bottom substrate. The pH levels ranged from 4.9 – 9.0 pH units. ***EstuaryWatch records at Painkalac Creek estuary extend from 2007 and can be viewed at www.estuarywatch.org.au.***

Estuary Fact File

Type of Estuary: Riverine

Location: -38.467631, 144.100414

Nearest town: Aireys Inlet

Estuary length: 3.6km

River length: 20.3km

Mouth state: Intermittently open

Description: The Painkalac Creek begins in the north-eastern end of the Otway Ranges at an elevation of 430m in the deeply dissected rolling hills. It flows in a mostly easterly direction for 20.3km and enters Bass Strait on the south-west side of Aireys Inlet.

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.

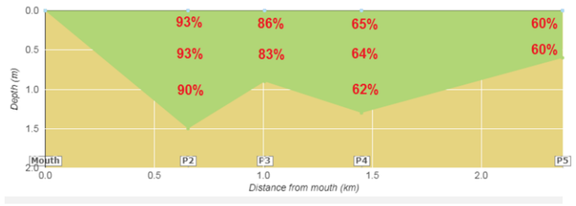
Map of the Painkalac Creek estuary and EstuaryWatch monitoring sites.

Estuary Snapshots

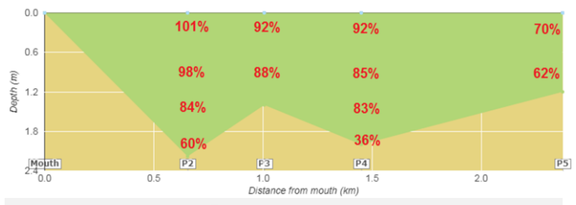
For all four monitoring sessions chosen for the Estuary Snapshots, photo point photos and a longitudinal profile of the estuary from site P2 (Great Ocean Road Bridge) to P5 (115 Bimbadeen Drive) is displayed. The longitudinal profile shows the depth, salinity and percent saturation of dissolved oxygen (DO) at each monitoring site from the surface of the water column to the bottom.

fresh water (0.0-0.5ppt) *brackish water (0.5-30ppt)* *salt water (30-35ppt)* *sediment*

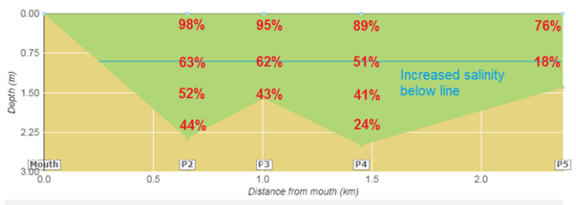
Date: 13/02/2016 Estuary mouth state - CLOSED



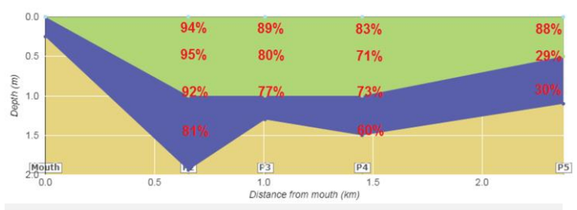
Date: 10/07/2016 Estuary mouth state - CLOSED

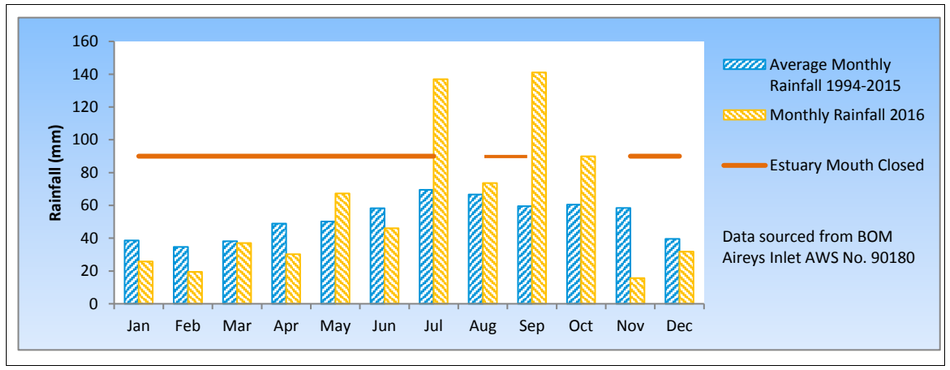


Date: 10/09/2016 Estuary mouth state - PERCHED



Date: 8/10/2016 Estuary mouth state - OPEN





A comparison of 2016 monthly total rainfall and the average monthly total rainfall (1994-2015).

The average annual rainfall (1994-2015) was 629mm, the 2015 total rainfall was 715mm. The highest total rainfall was recorded in September (141mm). Data sourced from the BOM.

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.

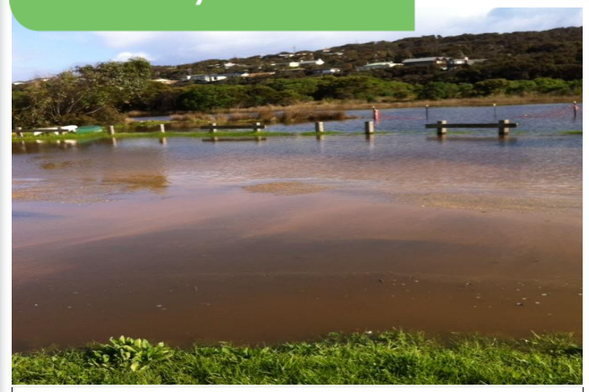
Below is a table to assist you to interpret the EstuaryWatch data discussed in this summary. The guidelines detail what you would expect from a single monitoring session on an estuary in Victoria.

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



Flooding of the Painkalac Creek estuary floodplain in July 2016.

On July 22 the Surf Coast Shire undertook an emergency artificial estuary mouth opening. Prior to the opening increased rainfall in the Painkalac Creek catchment resulted in full width flows over the spillway of the Painkalac reservoir and increased inflows to the estuary with significant flooding of the estuary floodplain.

Rainfall for July prior to the event was 82mm, with an additional 29mm on the day of the opening and 10mm on the following day (July 23). The average rainfall for September is 70mm. Just prior to the opening the water level in the estuary reached 2.2m AHD. The water level was slow to drop after the artificial estuary opening due to high freshwater flows. On the following day the estuary water level was 2.12m AHD at 13:32 and 1.97m AHD at 14:40.

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