Terrestrial ecology monitoring: Vegetation and frogs

Terrestrial ecology monitoring includes vegetation and frog surveys. We capture information over time to develop a baseline dataset, used to assess changes over time and identify if pumping from the Anglesea borefield is contributing to these changes.

What we are doing

We conduct vegetation assessments in spring each year, at six sites in the Anglesea Swamp and four sites in the Anglesea Estuary. The data takes into account Ecological Vegetation Classes (EVC), which are used to determine the vegetation's relationship with water. This is a standardised way to classify the vegetation across Victoria, and provides a benchmark to measure potential change.

We also conduct frog surveys in spring at six sites in the Anglesea Swamp and four sites in the Anglesea Estuary. Currently, we conduct these surveys yearly while the borefield is in operation; and every second year when not in operation.In addition to the surveys undertaken by Ecology Australia in 2021, the local community provided information on frog calling from the greater Anglesea area. This local knowledge is incredibly valuable, and thank local residents for sharing observations around frog numbers with us.

What we have found

A review of the frog monitoring to date has indicated that:

- The frog groups present at any particular site have been relatively stable over the monitoring period.
- The variability observed within the data is considered to be within natural variation.
- Rainfall and presence of water is likely to be driving frog abundance and occupancy across the catchment.
- During the spring-summer 2021, frogs were recorded from 6 of the 8 sites at Anglesea Swamp, with some calling from more than 100 m away.
- Southern brown tree frog, common froglet and southern bullfrog (also known as pobblebonk) were all recorded within the Anglesea swamp.
- Frogs were recorded at all 4 of the Anglesea Estuary sites in 2021. Only southern brown tree frog and southern bullfrog were recorded within the Anglesea Estuary.
- Results of the 2021 frog surveys are consistent with previous years, with low numbers and diversity of frogs recorded across both the Anglesea Swamp and Anglesea Estuary.

The vegetation monitoring data has shown:

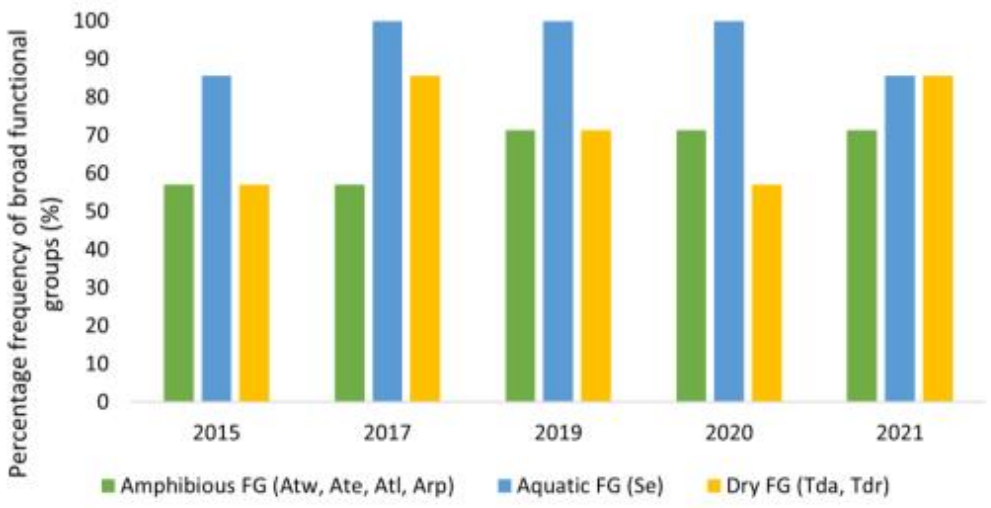
- Vegetation composition, functional groups and cover of bare ground have been largely unchanged in the swamp and estuary since monitoring commenced.
- The Anglesea estuary is prone to naturally occurring acid events, and while the vegetation appears to be fairly resilient to low pH, frogs may be susceptible.

Terrestrial ecology monitoring: Vegetation

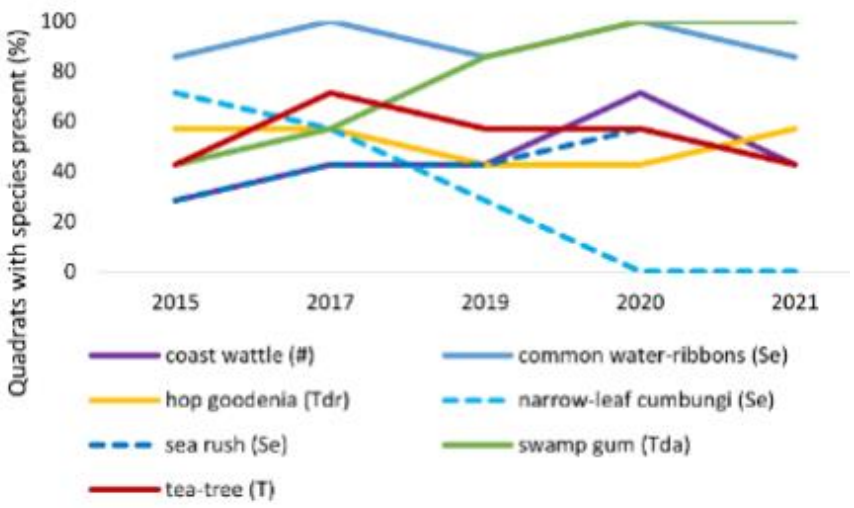
LAR1 vegetation and frog summary data

A.

B.



C.



D.

LAR1: General habitat description					
Ecological Vegetation Class (EVC)	Swampy Riparian Woodland				
Wetland permanence	Permanent				
This site is a section of slow-flowing creek up to 150 cm deep and 3-4 m wide. Submergent vegetation was absent, with 5–10% cover of floating water-ribbons. The creek is fringed with young common reeds, water-ribbons and revegetation in the form of prickly tea-tree, Eucalypts and Goodenia. Common reeds are an emergent vegetation along the banks.					
LAR1: Frog abundance and richness					
Southern Brown Tree Frog		**Common Froglet**		**Southern Bullfrog**	**Species Richness**
2		0		5-10	2
LAR1: Water quality parameters					
Survey 1					
pH	3.51	**Turbidity**	0 NTU	**Water temperature**	14.5 °C
EC	1.33 µs/cm	**Salinity**	0.06 %	**Dissolved Oxygen**	11.8 mg/L
Survey 2					
pH	3.56	**Turbidity**	0 NTU	**Water temperature**	17 °C
EC	14 µs/cm	**Salinity**	0.06 %	**Dissolved Oxygen**	8.31 mg/L
Comments					
During the second frog survey pobblebonk (5-10 individuals), and southern brown tree Frogs (2 individuals) were detected calling within 100 m of the site.					

Figure 17 Anglesea Borefield Monitoring and Assessment Program, Anglesea Estuary, Site LAR1, 2021 including: A. photo points, B. percentage of quadrats occupied by broad FGs across all monitoring years, C. percentage of top three dominant species across all monitoring years and D. frog summary data