Seagrasses in the Leschenault Estuary

case study

Seagrasses are recognised internationally as an excellent indicator of estuarine health. They have been referred to as the 'canary of the estuary', as they require both good water quality and good sediment quality in order to thrive.

These flowering plants evolved from land plants and have adapted to live underwater in estuaries and the coastal ocean. Seagrasses are vital to estuary ecology – providing habitat, sediment stabilisation, food for waterbirds (e.g. Black Swans) and take up nutrients (making them unavailable for unfavourable algal blooms).

Seagrasses in the Leschenault Estuary have been intermittently studied for approximately 40 years. In the 1980s they were reported to cover almost the whole estuary. In 2009, 73 per cent of the estuary seabed was estimated to be covered by seagrass, however between 2009 and 2014 seagrass was decimated in the estuary. The Leschenault Estuary lost more than half of the seagrass, equivalent to 860 ha.

Unfortunately, it is not possible to directly identify the cause of the loss, however it coincided with several years of major nuisance algal blooms (likely due to excess nutrients), a marine heat wave and extremely low rainfall (2010 was lowest annual rainfall on record).

Seagrass was mapped annually from 2015 in late summer when vegetation was expected to be the highest. Between 2015 and 2017, an average of 37 per cent of the estuary area was covered with seagrass (Map 1). The latest survey shows an increase in seagrass density and area, with more than 40 per cent of the area of the Leschenault Estuary occupied by seagrass.

The recovery of the seagrass has been supported by successful flowering and fruiting. Following the seagrass loss almost no flowering was observed in 2014, however this improved in 2015 and high flowering density and successful fruit production was seen in 2016.

These observations suggest that the recovery potential of the seagrass was improving, however it has taken until summer 2018 to start to see estuary-wide improvements in seagrass coverage and density (Figure 1). While the seagrass in the Leschenault Estuary appears to be recovering, continued effort to improve water quality draining to the estuary is required.

The Regional Estuaries Initiative is a WA state government program that aims to improve water quality through catchment actions and supports seagrass surveys for the Leschenault. For more information about the program visit rei.dwer.wa.gov.au

Aerial image of the Leschenault Estuary, showing dark dense seagrass meadows (Photograph: Ashley Ramsay)

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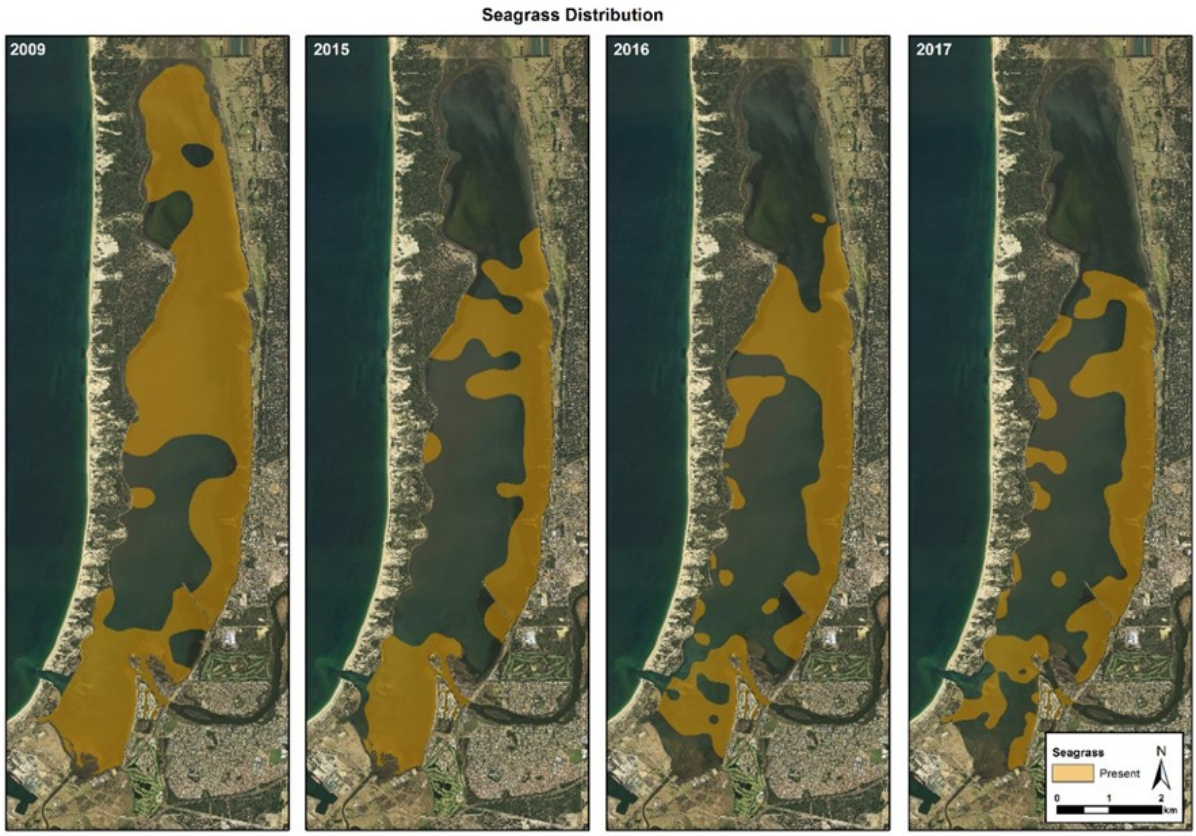

Map 1: Seagrass areas estimated to be present in 2009, 2015, 2016 and 2017 (data source, Department of Water and Environmental Regulation).

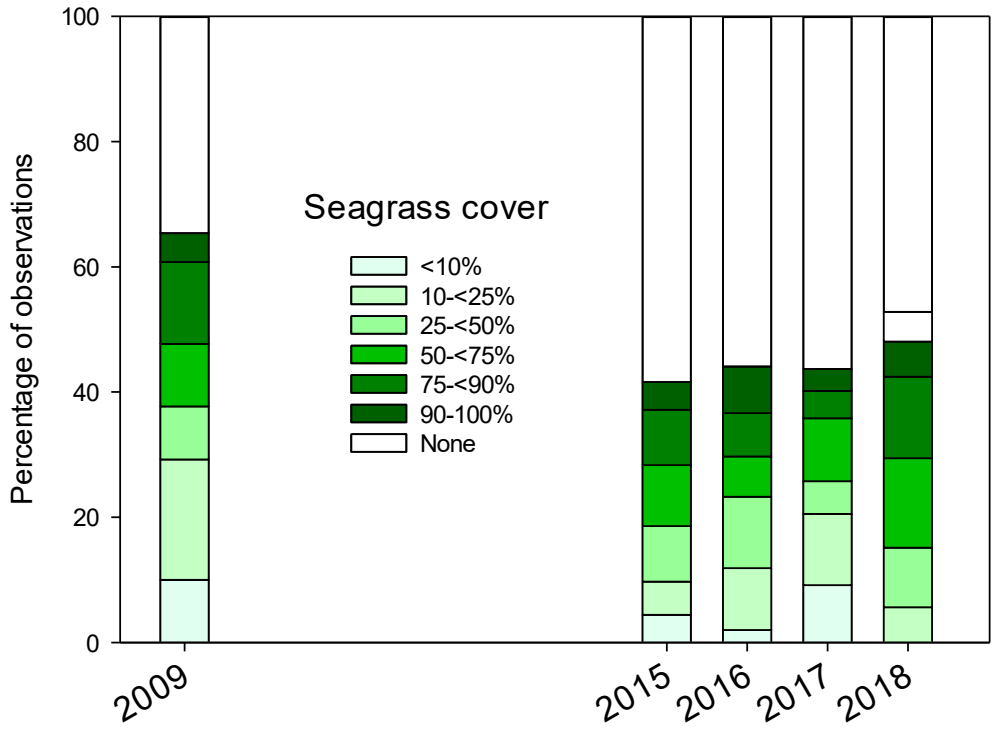

Figure 1: Density of seagrass cover as a percentage of observations in each seagrass cover category, indicating improvement in 2018 (data source, Department of Water and Environmental Regulation).

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Trends, condition & information reliability

After a substantial loss in coverage and condition of seagrass (between 2009 and 2014), seagrass condition has shown steady improvement.

A marked improvement in areal coverage and condition was observed in summer 2018.

There is good confidence in the data, with five years of information available on seagrass in the Leschenault Estuary (collected by the Department of Water and Environmental Regulation).

However, it should be noted that the data provided is preliminary.

Also, tt is intended that this information will be published by the Department of Water and Environmental Regulation as a technical report.

Interesting facts

- Seagrass habitats provide nurseries for many fish and crustacean species and contribute to biodiversity
- *Halophila ovalis* (Paddleweed) is the most common seagrass in the Leschenault Estuary
- Seagrasses absorb nutrients from the water and stabilise sediments at the bottom of the estuary making a more resilient waterway
- Seagrasses require higher levels of light than other aquatic vegetation such as micro or macroalgae.
- Seagrasses are found in shallow coastal and estuarine environments on every continent except Antarctica
- There are approximately 58 species of seagrass worldwide with 26 species found in WA waters, although a much smaller number are found in estuaries.

Seagrass mapping in the Leschenault Estuary
(Photograph: Ashley Ramsay)

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You can help!

Actions on our farms, in our gardens and along our waterways can have a big impact on the water conditions that contribute to healthy, resilient seagrass.

We need your help to lower the nutrients entering the estuary to prevent the excessive growth of macroalgae that smothers seagrass and blocks it's sunlight.

The Regional Estuaries Initiative includes ways for farmers and gardeners to lower their nutrient footprint through optimising fertiliser use, livestock effluent management, preventing livestock access to waterways and revegetating areas close to our streams and rivers.

Go to **rei.dwer.wa.gov.au/participate** to get involved.

References

All data and information has been sourced through the work of Dr Kieryn Kilminster, and Aquatic Science Branch at the Department of Water & Environmental Regulation

Author

Dr Kieryn Kilminster, Department of Water & Environmental Regulation,

Halophila ovalis (Paddleweed) is the most common seagrass occurring in the Leschenault Estuary (Photograph: Marta Sanchez Alarcon, DWER)

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