

# SUMMARY REPORT Part I SoE 2018 Report Card

## Legend

### Status

#### N/A Not Applicable

The indicator assessment is based on future projections or the change in environmental condition and providing a status assessment is not applicable. Only a trend assessment is provided.



#### Unknown

Data is insufficient to make an assessment of status and trends.



#### Poor

Environmental condition is under significant stress, OR pressure is likely to have significant impact on environmental condition/human health, OR inadequate protection of natural ecosystems and biodiversity is evident.



#### Fair

Environmental condition is neither positive or negative and may be variable across Victoria, OR pressure is likely to have limited impact on environmental condition/human health, OR moderate protection of natural ecosystems and biodiversity is evident.



#### Good

Environmental condition is healthy across Victoria, OR pressure is likely to have negligible impact on environmental condition/human health, OR comprehensive protection of natural ecosystems and biodiversity is evident.

### Trend

#### N/A Not applicable

This indicator assessment is based on current environmental condition only and it is not applicable to provide a trend assessment. Only a status assessment is provided.



#### Unclear



#### Deteriorating



#### Stable



#### Improving

### Data quality



#### Poor

Evidence and consensus too low to make an assessment



#### Fair

Limited evidence or limited consensus



#### Good

Adequate high-quality evidence and high level of consensus

### List of acronyms for Marine and Coastal Environments indicators:

All Gippsland Lakes (GLA)

Beware Reef Marine Sanctuary (BRMS)

Corangamite Catchment Management Authority (CCMA)

Corner Inlet (CI)

East Gippsland Catchment Management Authority (EGCMA)

Glenelg Hopkins Catchment Management Authority (GCMA)

Marine National Parks and Sanctuaries (MNPS)

Nooramunga Marine & Coastal Park (NMCP)

Northern Port Phillip Bay (NPPB)

Other Marine & Coastal Areas (OMAC)

Port Phillip Bay (PPB)

St Kilda (STK)

Phillip Island (PI)

West Gippsland Catchment Management Authority (WGCMA)

Southern Port Phillip Bay (SPPB)

Western Port (WPT)

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# SUMMARY REPORT Part I SoE 2018 Report Card

## Indicator

**MC:01** Mangrove extent

## Region

Western Port (WPT), Corner Inlet (CI), Nooramunga Marine & Coastal Park (NMCP), Other Marine & Coastal Areas (OMAC)

## Measures

Spatial extent

## Data custodian

DELWP Biodiversity

## Western Port

has retained 90-95% of its pre-1750s mangrove habitat that was estimated at 1320 hectares. Losses have been caused by harvesting, land claim for industrial and port development and the drainage of adjacent land.

**Corner Inlet and Nooramunga Mangroves** are at their southern-most limit in Corner Inlet and Nooramunga, where 80% of the pre-1750s cover remains.

## Other marine and coastal areas

On a statewide basis, 90% of the pre-1750 extent of mangroves remains. Spatial extent may be expanding in response to climate change.

There is insufficient data to determine condition of mangroves.



DATA QUALITY

Good

## Indicator

**MC:02** Saltmarsh extent

## Region

Port Phillip Bay (PPB), Western Port (WPT), All Gippsland Lakes (GLA), Other Marine & Coastal Areas (OMAC)

## Measures

Spatial extent

## Data custodian

DELWP Biodiversity

## Port Phillip Bay

About 50% of Port Phillip Bay's pre-1750s saltmarsh cover of 3710 hectares remains today.

## Western Port

In Western Port, 90-95% of saltmarsh that once covered 1460 hectares remains today.

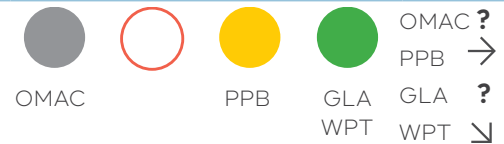
## Gippsland Lakes

Historical mapping of the various lakes indicates that between 80-100% of pre-1750s saltmarsh has been retained.

## Other marine and coastal areas

Of 30 coastal sectors surveyed and compared to pre-1750 extent, 7 had 35-65% of saltmarsh remaining, 7 were 100% intact, one had expanded to 130% and 14 ranged between 70-95%.

There is insufficient data to determine condition of mangroves.



DATA QUALITY

Fair - PPB & WPT



DATA QUALITY

Poor - GLA & OMAC

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# SUMMARY REPORT Part I SoE 2018 Report Card

## Indicator

**MC:03** Seagrass condition

## Region

Western Port (WPT), Other Marine & Coastal Areas (OMAC), Port Phillip Bay (PPB), Corner Inlet (CI ), All Gippsland Lakes (GLA)

## Measures

Changes in extent  
Changes in percentage cover, density and epiphytes

## Data custodian

DELWP Biodiversity

## Port Phillip Bay

Baywide extent of seagrasses is relatively constant, while there can be large changes in cover in localised areas.

## Western Port

Variability in *Zostera* beds; stable *Amphibolis antarctica* beds, Seagrass in Yaringa Marine National Park in good condition.

## Gippsland Lakes

A decline in seagrass extent and an increase in seagrass density have been measured, but with only limited data.

## Corner Inlet

Subtidal seagrass extent had varied over time, but recent data reveals that it declined on average by 0.5 km<sup>2</sup> per year between 1965 and 2013, with algal blooms and turbidity both impacting on light penetration. There is limited data on density and epiphytes.



DATA QUALITY

Fair

## Indicator

**MC:04** Seagrass-dependent fish

## Region

Port Phillip Bay (PPB), Western Port (WPT), Other Marine & Coastal Areas (OMAC) All Gippsland Lakes (GLA)

## Measures

Change in relative abundance, diversity and biomass of seagrass-dependent fish

## Data custodian

DELWP Biodiversity; PV

## Port Phillip Bay

There is insufficient data for an assessment of status and trends.

## Western Port

There is insufficient data for an assessment of status and trends.

## Gippsland Lakes

Fish assemblages and seagrass condition at 30 sites were highly variable and insufficient to assess status and trends.

## Other marine and coastal areas

There is insufficient data for an assessment of status and trends.



DATA QUALITY

Poor

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# SUMMARY REPORT Part I SoE 2018 Report Card

## Indicator

**MC:05** Estuarine condition

## Region

Victoria

## Measures

Index of Estuarine Condition covering five themes: physical form, hydrology, water quality, flora, fauna

## Data custodian

DELWP Catchments, Waterways, Cities and Towns

Until the completion of the Index of Estuarine Condition in 2020, there will be insufficient data for an assessment of status and trends.



DATA QUALITY

Poor

## Indicator

**MC:06** Mobile invertebrates on intertidal reefs

## Region

Port Phillip Bay (PPB) Marine National Parks & Sanctuaries (MNPS), Western Port (WPT), Other Marine & Coastal Areas (OMAC)

## Measures

Census (count)  
Total diversity of mobile invertebrates  
Extent of mobile invertebrates  
Patchiness or fragmentation (i.e. connectivity)

## Data custodian

PV Intertidal Reef Monitoring Program, Sea Search/Museum of Victoria ad-hoc surveys

## Port Phillip Bay

Mobile invertebrates have remained in good condition since 2003 in the bay's Marine National Parks and Marine Sanctuaries only.

## Western Port

Western Port has few reefs and limited data about them. There has been an observed loss in invertebrate diversity at Crawfish Rock due to high turbidity.

## Other marine and coastal areas

Mobile invertebrates are in good condition in Marine National Parks and Sanctuaries only. Data are insufficient on reefs outside those protected areas.



DATA QUALITY

Good - MNPS



DATA QUALITY

Poor - OMAC, PPB & WPT

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# SUMMARY REPORT Part I SoE 2018 Report Card

## Indicator

**MC:07** Sessile invertebrates on intertidal reefs

## Region

Marine National Parks & Sanctuaries (MNPS), Other Marine & Coastal Areas (OMAC)

## Measures

Change in percentage cover of sessile invertebrates  
Total diversity of sessile invertebrates  
Spatial extent of sessile invertebrates  
Number of non-indigenous/invasive species and extent  
Patchiness or fragmentation (i.e. connectivity)

## Data custodian

PV Intertidal Reef Monitoring Program, Sea Search/Museum of Victoria ad-hoc surveys

## Marine National Parks and Marine Sanctuaries

Good condition in nine parks, and fair condition in three parks.

## Other marine and coastal areas

Data are limited for sites outside Victoria's marine protected areas.



DATA QUALITY

Good - MNPS



DATA QUALITY

Poor - OMAC

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# SUMMARY REPORT Part I SoE 2018 Report Card

## Indicator

**MC:08** Mobile megafaunal invertebrates on subtidal reefs

## Region

Marine National Parks & Sanctuaries (MNPS), Northern Port Phillip Bay (NPPB), Southern Port Phillip Bay (SPPB), Other Marine & Coastal Areas (OMAC)

## Measures

Change in abundance of large molluscs, echinoderms and crustaceans  
Change in size-class distribution of selected species

## Data custodian

Parks Victoria; Reef Life Survey

## Port Phillip Bay: Marine National Parks and Marine Sanctuaries only

Health of megafaunal invertebrates in Port Phillip Heads Marine National Park is good, unknown in Point Cooke and Jawbone Marine Sanctuaries and fair at Ricketts Point Marine Sanctuary.

## Other marine and coastal areas

Mobile megafaunal data is limited outside Victoria's Marine Protected Areas. Mobile megafaunal invertebrates are rated as good in 12 parks, fair in one park and unknown in another. Trend data is not available.



DATA QUALITY

Good - MNPS, NPPB & SPPB



DATA QUALITY

Poor - OMAC

## Indicator

**MC:09** Subtidal reef fish

## Region

Southern Port Phillip Bay (SPPB), Marine National Parks & Sanctuaries (MNPS), Northern Port Phillip Bay (NPPB), Other Marine & Coastal Areas (OMAC)

## Measures

Abundance  
Diversity  
Biomass  
Size-class distribution

## Data custodian

DELWP Biodiversity; PV

## Port Phillip Bay

In southern Port Phillip Bay, the health of reef fish communities was rated as 'good', reflecting the improving health of the ecosystem. Health of reef fish communities was rated as unknown in Jawbone Marine Sanctuary and fair in Point Cooke and Ricketts Point Marine Sanctuaries.

## Other marine and coastal areas

Large mobile fish (including sharks and rays) on subtidal reefs in Marine National Parks and Sanctuaries beyond Port Phillip Bay are good in 14 parks, fair in one and unknown in one. Data is limited outside Victoria's Marine Protected Areas.



DATA QUALITY

Good - SPPB & MNPS



DATA QUALITY

Fair - NPPB



DATA QUALITY

Poor - OMAC

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# SUMMARY REPORT Part I SoE 2018 Report Card

## Indicator

**MC:12** Migratory shorebirds

## Region

Port Phillip Bay (PPB), Corner Inlet (CI), Other Marine & Coastal Areas (OMAC)

## Measures

Number of individuals (counts)

## Data custodian

DELWP Biodiversity; Birdlife Australia; Victorian Wader Studies Group

There has been a decline trend in the number of migratory shorebirds visiting the Victorian coast, heavily influenced by the loss of habitats along their flyways, especially around the Yellow Sea in China. Numbers are also affected by periods of drought and high rainfall within Australia, which alters wetlands extent.



DATA QUALITY

Fair - PPB & CI & OMAC

## Indicator

**MC:13** Little penguins

## Region

St Kilda (STK), Phillip Island (PI), Other Marine & Coastal Areas (OMAC)

## Measures

Mean number of individuals recorded in standardised counts

Mean numbers occupying burrows

Number of chicks fledged per breeding female/pair weight in grams

## Data custodian

Phillip Island Nature Park/Earthcare  
St Kilda

Penguin numbers have been variable at the large Phillip Island colony (32,000 breeding adults) but have improved in recent years. The smaller St Kilda Breakwater colony (1400) has been slowly growing since the first penguins arrived in the 1960s. But increasing visitor pressure and marine debris are issues of concern. There is limited data on the other penguin colonies along the Victorian coast.



DATA QUALITY

Good - STK & PI



DATA QUALITY

Poor - OMAC

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# SUMMARY REPORT Part I SoE 2018 Report Card

## Indicator

**MC:14** Piscivorous (fish-eating) birds

## Region

Corner Inlet (CI), Western Port (WPT), Other Marine & Coastal Areas (OMAC)

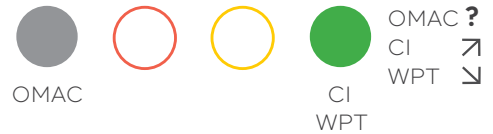
## Measures

Total counts of terns, cormorants and Australian pelican in summer (February) and winter (June–July)

## Data custodian

ARI, Birdlife Australia; Deakin University

The numbers of fish-eating birds in Western Port have been in decline while those in Corner Inlet have been increasing. Data for other marine and coastal areas are insufficient to determine status and trends.



## Indicator

**MC:15** Marine and coastal Waterbirds

## Region

Western Port (WPT), All Gippland Lakes (GLA), Other Marine & Coastal Areas (OMAC), Port Phillip Bay (PPB)

## Measures

Total counts of waterbirds

## Data custodian

Birdlife Australia (Western Port Waterbird Survey)/ DELWP

The number of waterbirds at any given location is heavily influenced by the availability of suitable wetland habitats, food supply and predation in their Victorian and Australian ranges. Research at the Western Treatment Plant and in Western Port has recorded declining numbers for various species. The large size of the Gippsland Lakes has limited the number and location of bird counts, but diversity and abundance have been assessed as fair from the available data.



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# SUMMARY REPORT Part I SoE 2018 Report Card

## Indicator

**MC:16** Over-abundant sea urchins on subtidal reefs

## Region

Southern Port Phillip Bay (SPPB), Beware Reef Marine Sanctuary (BRMS), Nooramunga Marine & Coastal Park (NMCP), Northern Phillip Bay (NPPB) Other Marine and Coastal Parks (OMAC)

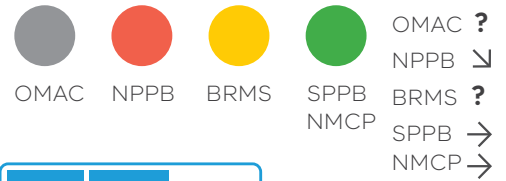
## Measures

Urchin density  
Level of impact

## Data custodian

PV and Reef Life Survey. Melbourne University and Fisheries Victoria also undertook a one-off snapshot monitoring exercise (2014).

Sea urchins have become over abundant on reefs in northern Port Phillip Bay and Beware Reef Marine Sanctuary, and in seagrass in Nooramunga Marine and Coastal Park. Culling programs have been carried out at each location. Urchins have also been observed in increased numbers at Cape Howe and Point Hicks but data from other marine and coastal areas are limited.



DATA QUALITY

Fair - SPPB, BRMS, NMCP & NPPB



DATA QUALITY

POOR - OMAC

## Indicator

**MC:17** Invasive marine species

## Region

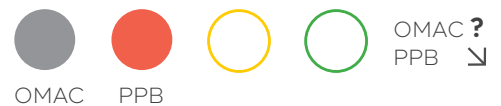
Port Phillip Bay (PPB), Other Marine & Coastal Areas (OMAC)

## Measures

Number of introduced plant and animal species  
New incursions  
Threat, distribution and abundance  
Spatial area affected  
Expansions of existing areas  
Risks to native habitats and species

## Port Phillip Bay

There are more than 160 invasive marine species recorded in Port Phillip Bay, but only a small number that are of ongoing serious concern. There have been outbreaks of invasive marine species in other marine and coastal areas, but there is no systematic monitoring to determine their location, status or trend.



DATA QUALITY

Fair - PPB



DATA QUALITY

Poor - OMAC

## Data custodian

DELWP Biodiversity; DEDJTR Biosecurity and Agriculture Services; PV

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# SUMMARY REPORT Part I SoE 2018 Report Card

## Indicator

**MC:18** Catchment inputs into coastal waters/reefs

## Region

Port Phillip Bay (PPB), Western Port (WPT), Glenelg Hopkins CMA, West Gippsland CMA, Corangamite CMA, Other Marine & Coastal Areas (OMAC)

## Measures

- Annual load by pollutant
- Nutrients
- Water clarity (turbidity)
- Dissolved oxygen
- Salinity (conductivity)
- pH
- Metals

## Data custodian

DELWP Catchments, Waterways, Cities and Towns; EPA Victoria

## Port Phillip Bay

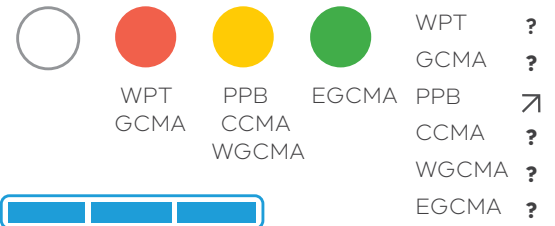
EPA water-quality report cards from 2012–13 to 2016–17 for the bay’s catchments showed a higher percentage of catchments with fair to very good ratings than those with very poor to poor ratings. Water quality was better in the middle and upper reaches of the catchments.

## Western Port

The EPA’s first report card for Western Port in 2016-17 revealed that 78% of the catchment area was rated from very poor to fair, even though water quality in the bay itself was rated as good.

## Other marine and coastal areas

The Catchment Management Authorities (CMAs) with coastal boundaries have rated the condition and water quality of their catchments poor (Glenelg; Port Phillip and Westernport), moderate (Corangamite; West Gippsland) and good (East Gippsland).



## DATA QUALITY

Good - PPB & WPT & CMAs

## Indicator

**MC:19** Point-source discharges to marine waters

## Region

Victoria

## Measures

- Reported as volume by treatment category (primary, secondary, tertiary)

## Data custodian

EPA Victoria

Water quality data is collected inside and outside the mixing zones at each of 18 ocean outfalls along Victoria’s coast, but reporting and analysis are limited. However, reports submitted to EPA indicate that each outfall is meeting its licence conditions. Although there have been overall improvements in the quality of stormwater discharges to Port Phillip Bay, there is limited data on individual discharges.



## DATA QUALITY

Poor

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# SUMMARY REPORT Part I SoE 2018 Report Card

## Indicator

**MC:20** Harmful algae blooms reefs

## Region

Port Phillip Bay (PPB), All Gippsland Lakes (GLA), Other Marine & Coastal Areas (OMAC)

## Measures

- Bloom type
- Abundance
- Diversity
- Extent
- Duration

## Data custodian

EPA Victoria

Algal blooms can impact marine life and human health and usually appear after heavy rainfall and subsequent warm and sunny weather. Both Port Phillip Bay and the Gippsland Lakes have experienced algal blooms (seven between 1997 and 2016). However, data on their extent and frequency beyond those two areas is limited.



DATA QUALITY

Good - PPB & GLA



DATA QUALITY

Poor - OMAC

## Indicator

**MC:21** *Enterococci* bacteria

## Region

Port Phillip Bay (PPB), Other Marine & Coastal Areas (OMAC)

## Measures

- Number of bacteria cells (*Enterococci*) per 100 ml of water sample
- Percentage of beaches meeting SEPP

## Data custodian

EPA Victoria

Except for data collection at a small number of ocean outfalls, the focus of *Enterococci* bacteria monitoring is to determine the safety of water-based recreational activities at Port Phillip Bay's beaches. The monitoring has shown that in recent years, 94-97% of beaches have met water-quality objectives - an improvement on earlier years.



DATA QUALITY

Good - PPB



DATA QUALITY

Poor - OMAC

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# SUMMARY REPORT Part I SoE 2018 Report Card

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## Indicator

**MC:22** Impacts of fisheries production

## Region

Victoria

## Measures

Status of key fish stocks from most recent published assessments

Independent peer-reviewed scientific research of impacts

Changes in targeted fish species and stocks

Changes in trophic structures

Trends in the species composition, number and/or weight taken as bycatch

Impacts on marine and coastal habitats

Interactions with threatened species

## Data custodian

VFA

Although the status of commercially targeted stocks is assessed regularly by fisheries agencies, such assessments do not cover the other measures listed here. Data on those is limited or unavailable.



DATA QUALITY

Poor

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# SUMMARY REPORT Part I SoE 2018 Report Card

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## Indicator

**MC:23** Conservation of coastal ecosystems in protected areas

## Region

Victoria

## Measures

Area of conservation by type of conservation class

Area by total extent and region extent

Proportion of ecosystem types under protection

Threatened species represented in conservation areas

Extent and impact of invasive species

## Data custodian

DELWP Biodiversity

National parks and other conservation areas extend along approximately 70% of the Victorian coastline but there are limited data on threatened and invasive species, while a number of threatened ecological vegetation classes could be given greater protection.



DATA QUALITY

Fair

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# SUMMARY REPORT Part I SoE 2018 Report Card

## Indicator

**MC:24** Conservation of marine ecosystems in protected areas

## Region

All Gippsland Lakes (GLA) and East Gippsland Inlets

Five marine bioregions

## Measures

Area of conservation by type of conservation class

Area by total extent and region extent

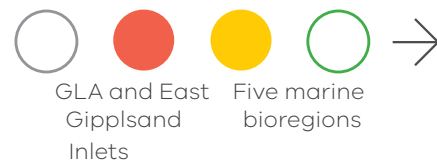
Proportion of ecosystem types under protection

Threatened species represented in conservation areas

## Data custodian

DELWP Biodiversity

Although marine protected areas cover approximately 11% of Victoria's marine waters, their spatial extent is skewed to Corner Inlet/Nooramunga and Wilsons Promontory, indicating that the network is failing to meet the National Representative System of Marine Protected Areas principles of comprehensiveness, adequacy and representativeness across all five marine bioregions.



DATA QUALITY

Good

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