

Commercial Scallop (2023)

Pecten fumatus



Don Bromhead: Australian Bureau of Agricultural and Resource Economics and Sciences,
Jayson Semmens: Institute for Marine and Antarctic Studies, University of Tasmania,
Victorian Fisheries Authority: Victorian Fisheries Authority

STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Commonwealth	Bass Strait Central Zone Scallop Fishery	Sustainable	Biomass surveys, size composition, catch
Victoria	Ocean Scallop Fishery	Depleted	Biomass surveys, catch
Victoria	Port Phillip Bay Dive Scallop Fishery	Sustainable	Biomass surveys, size composition, catch
Tasmania	Tasmania Scallop Fishery	Recovering	Biomass surveys, size composition, catch

STOCK STRUCTURE

There are several Commercial Scallop bed regions fished commercially in Commonwealth, Victorian and Tasmanian waters. Commercial Scallops in Port Phillip Bay (Victoria) and D'Entrecasteaux Channel (Tasmania) are genetically distinct from conspecifics in most other locations in south-eastern Australia [Woodburn 1990; Semmens et al. 2015; Ovenden et al. 2016]. Beds in north-eastern Bass Strait are also genetically distinct to adjacent Bass Strait beds and may not contribute to wider recruitment based on biophysical models of larval movement [Ovenden et al. 2016].

Here, assessment of stock status is reported at the management unit level—Bass Strait Central Zone Scallop Fishery (Commonwealth), Ocean Scallop Fishery (Victoria), Port Phillip Bay Dive Scallop Fishery (Victoria) and Tasmania Scallop Fishery.

STOCK STATUS

Bass Strait Central Zone Scallop Fishery

Commercial Scallops in the Commonwealth Bass Strait Central Zone Scallop Fishery (BSCZSF) were considered recruitment overfished between 1999 and 2007. Following three years of closure due to low scallop abundance and concerns about overfishing, the fishery was reopened in 2009, under a new harvest strategy [AFMA 2007]. Commercial Scallops experienced die-offs in 2010–11 and the harvest strategy was revised in 2012 [AFMA 2012], 2014 [AFMA 2014] and 2015 [AFMA 2015]. The main areas fished have varied through time. Between 2009 and 2013 the fishery operated north of Flinders Island (eastern Bass Strait), but then shifted to focus around King Island (western Bass Strait) until 2019, and has since operated in both areas.

Elements of the current Commonwealth harvest strategy include: a tiered management approach, whereby a 150 tonne (t) total allowable catch (TAC) can be set as a 'default opening' TAC. This TAC, which covers the whole BSCZSF management area, allows operators to search widely for scallop beds, and a pre-season scientific biomass survey to be conducted.

Tier 1 of the harvest strategy states that if the scientific survey identifies one or more scallop bed(s) with a combined biomass of 1,500 t or more, with scallops greater than 85 mm in length and in 'high' density, and these beds are closed to commercial fishing, the TAC can be stepped up to a maximum of 2,000 t.

Tier 2 of the harvest strategy states that if the scientific survey identifies one or more scallop bed(s) with a combined biomass of 3,000 t or more, and these beds are closed to commercial fishing, the TAC can be set to at least 2,000 t.

The 2021 biomass survey covered six King Island beds with an estimated combined biomass of 30,278 t, three Apollo Bay beds with an estimated combined biomass of 20,582 t and three Flinders Island beds with an estimated biomass of 13,142 t [Koopman et al. 2021]. The total estimated biomass of 64,000 t comprised 56,067 t of scallops larger than 85 mm.

The 2021 fishery opened on 12 July 2021 with a TAC of 3,905 t (up from 3,000 t in 2020). Fishing focused on beds in both eastern and western Bass Strait and operators reported scallops in good condition. The fishery closed on 31 December 2021 with 2,344 t landed (2,732 t in 2020).

The management of scallops is complex due to the high degree of variation in recruitment from year to year. Recent survey and catch information indicate that the biomass is substantially higher now than it was a decade ago and is currently not depleted in managed areas across the fishery. The recent management arrangements (including TACs set) have ensured that recent catches are low relative to recent surveyed biomass. While it is very difficult to predict future recruitment in scallop fisheries, low TACs set in recent years have helped maintain a healthy biomass and minimised the chance of the stock becoming recruitment impaired due to fishing [Bromhead et al. 2022]. The above evidence indicates that the biomass of this stock is unlikely to be depleted and recruitment is unlikely to be impaired, and the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, the Bass Strait Central Zone Scallop Fishery (Commonwealth) management unit is classified as a

sustainable stock.

**Ocean
Scallop
Fishery**

The Victorian Scallop (Ocean) Fishery extends out from the coastline to 20 nautical miles. Since the commercial fishery began in the 1970s, catches have varied greatly from year to year. Historical catch and CPUE information would suggest the scallop stocks in coastal eastern Victorian waters (off Lakes Entrance) became heavily depleted during the 2000s, although no formal quantitative stock assessment was undertaken at that time (Koopman et al, 2023). No current depletion estimate is available for Commercial Scallops in the Victorian Ocean Scallop Fishery stock.

Prompted by poor catches during the mid-to late-2000s, fishery independent surveys of historically fished scallop beds were undertaken during 2009 [Harrington et al. 2010] and 2012 [Semmens and Jones 2012], revealing only very low densities of scallops and negligible recruitment. Consequently, the TACC for the 2010–11, 2011–12 and 2012–13 fishing seasons was set at zero. A TACC of 136.5 t was set for the 2013–14 and 2014–15 seasons. For the 2015–16 to 2020–21 seasons, the TACC remained set at 135 t to allow limited exploratory fishing to take place to locate viable scallop beds and determine if there has been any stock recovery. Only a small portion of the TACC was caught each year during most of this period, although effort was much lower than that during the early 2000s.

In 2017 another broad area survey was undertaken [Koopman et al. 2018], again revealing only very small patches and low densities of scallops, negligible recruitment and no commercially viable scallop beds. These results suggested that there had been virtually no recovery of the stock at that stage. Catches increased during the 2020–21 season (caught by fewer than 5 of the 91 licence holders, so total catch is confidential), taken from a relatively concentrated area near to the Bass Strait Central Zone.

Evidence of some recent recruitment and a potentially viable scallop bed prompted a survey of the “Tarwhine bed”, south-east of Lakes Entrance during 2020 [Koopman et al. 2021]. At that time, this bed had commercially viable densities of large (greater than 80mm) scallops and an estimated biomass of about 8,000 t of legal-sized scallops. Half of this bed (named as the Tarwhine east stratum in subsequent surveys) was closed to commercial fishing and the other half (Tarwhine west stratum) supported a commercial catch of 662 t over 112 days fished during the 2021–22 season.

Results of the 2022 pre-season survey [Koopman et al. 2022] supported that the Tarwhine Bed (east and west strata combined) remained commercially viable, with 8,759 t of legal-sized scallops. Other than the Tarwhine bed, there was little evidence of recovery of historical beds, with the Clonmel bed in the south showing only a low biomass. During the 2022–23 season, catches reported from the fishery were lower than the previous year with significantly fewer days fished.

The most recent survey (the 2023 pre-season survey) revealed a decrease in biomass on the Tarwhine bed by about 50% to 4,280 t [Koopman et al. 2023]. This reduction in biomass occurred in both the area of the bed that had been closed to commercial fishing (Tarwhine east) and the area that was open to fishing (Tarwhine west). The low level of catch in the fishery during the 2022–23 season indicates that the reduction in biomass was unlikely due to fishing. Results revealed no signs of new recruitment, and there are no known developing beds elsewhere in the fishery. The 2023–24 TACC has been set at

135 t.

The above evidence indicates that the biomass of this stock is likely to be depleted and that recruitment is likely to be impaired. Current fishing mortality is constrained by management to a level that should allow the stock to recover from its recruitment impaired state; however measurable improvements are yet to be detected.

On the basis of the evidence provided above, the Ocean Scallop Fishery (Victoria) management unit is classified as a **depleted stock**.

**Port Phillip
Bay Dive
Scallop
Fishery**

Fishing commenced in the Scallop Dive (Port Phillip Bay) Fishery in 2014, the year after the single exclusive license was issued, and effort increased gradually over the next two years. Effort then decreased slightly in 2018. Catch has followed a similar trend, increasing from 2014 through to highs in 2016 and 2017, but decreased substantially in 2018 (as there is only one licence holder the amounts are confidential). CPUE increased from 2014 to 2016, with nominal CPUE reaching 93 kg/hr, and remained relatively stable in 2017. In 2018, however, nominal CPUE almost halved to 54 kg/hr, as a consequence of the slight decline in effort coupled with a large decline in the total catch landed. Importantly, the standardised results were higher but followed a similar pattern, indicating that bias in the data was consistent over time and that the somewhat symmetrical pattern of increase followed by decrease reflected the actual biomass [Conron et al. 2020].

Commercial Scallop abundance in Port Phillip Bay is naturally patchy and can fluctuate by several orders of magnitude, which has been well documented in Port Phillip Bay where it was reported that the now disbanded dredge fishery landed as much as 2,000 t of meat weight in any one year [Coleman 1998]. As a result, the decrease in CPUE observed in 2018 is not necessarily a sign of overfishing and is unlikely to be so given the very conservative landings (less than 60 t) within the context of the total abundance, which was estimated to be more than 11,000 t in 2015 [Gwyther 2015] i.e., approximately 0.5% of the total biomass. As a result, while information has not been provided to assess the spatial concentration of effort, it is likely that the decrease in CPUE observed in 2018 is largely due to naturally lower scallop abundance, which has resulted in a decrease in CPUE and consequently fishing effort as fishers are receiving lower returns for their effort. As time progresses it will become apparent how the natural variation in scallop abundance affects the dive fishery, but at present, given the very conservative landings, it is highly unlikely that the Port Phillip Bay Commercial Scallop dive fishery will cause recruitment impairment and the stock can be considered as sustainable [Conron et al. 2020]. Less than 15 days of fishing has taken place in any one year since 2021–22 and while the catch is confidential, it is likely to be very small compared to the TAC (60 t).

The above evidence indicates that the biomass of this stock is unlikely to be depleted, recruitment is unlikely to be impaired, and the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, the Port Phillip Bay Dive Scallop Fishery (Victoria) management unit is classified as a **sustainable stock**.

**Tasmania
Scallop
Fishery**

The Tasmanian Scallop Fishery (TSF) is managed under a harvest strategy where surveys are undertaken to estimate abundance and decision rules are used to open or close an area (or areas) to fishing with TACs based on the

estimated abundance. Like the Bass Strait Central Zone Scallop Fishery (Commonwealth) (BSCZSF), these decision rules include a minimum size limit and a maximum discard rate, which is not to exceed 20%. The minimum size limit is 90 mm shell length (noting that this can be varied with an exemption); animals of this size are approximately 3 years of age and have spawned at least twice [Young et al. 1989]. Unlike the BSCZSF, until recently there was no requirement to close a proportion of the beds surveyed in a particular region of the fishery. Instead, protection of scallop habitat, which may contain scallop beds, was only afforded through a ban on scallop dredging in waters less than 20 m and a network of dredge-prohibited areas around the state. However, since the 2022 scallop season, to open one of the six TSF Scallop Fishery Areas for harvest with a total allowable catch (TAC) equal to or greater than 1,000 t, an area with a minimum estimated biomass of 1,000 t of scallop with a 'medium' density (approximately 0.6 scallops/m²) that meets the discard criteria must be closed to commercial fishing for the entire season as a spawning biomass closure. To open a Scallop Fishery Area with a TAC less than 1,000 t, a spawning biomass closure equivalent to the TAC must be established.

Biomass in the TSF is historically overfished with recruitment and production levels now affected. In 2013, 2014 and 2015, surveys generally found low scallop densities and limited evidence of successful recent recruitment but did identify two beds (one on the north-west coast and the other on the east coast) containing commercial quantities [Semmens et al. 2018]. Surveys in 2016 and again in 2017 generally only found very low levels of scallop abundance and limited evidence of successful recruitment, with no area considered to contain commercially viable quantities in either year. This includes the east and north-west coast beds fished in 2013–15, which appeared to have been fished down to a commercially unviable density at the time, with no subsequent recruitment evident. Given the results of the 2016 and 2017 surveys, there was a low expectation that conducting surveys in 2018 and 2019 would reveal the presence of commercially viable scallop beds, and as such, surveys were not conducted. In 2020 surveys were again conducted, and the results were dominated by low to moderate densities of legal sized scallops in multiple areas, including the east coast beds (which were fished in 2013–15) and the Flinders Island region adjacent to the BSCZSF. This demonstrated signs of recruitment that suggested the possibility of supporting a commercial fishery in the near- to medium-term post 2020.

The 2021 survey subsequently covered three Flinders Island beds (Scallop Fishery Area 3) with an estimated legal-sized (greater than 90 mm SL) biomass of 17,145 t, one central east coast bed (Scallop Fishery Area 4) with an estimated legal-sized biomass of 384 t and one lower east coast bed (Scallop Area 5) with an estimated legal-sized biomass of 9,366 t [Ewing et al. 2021].

Scallop Area 3 opened to fishing in September 2021, the first season since 2015, with the TAC set at 1,494.9 t. However, there had been a major die-off post survey, most likely due to a warm-water incursion in the Flinders Island area and only 44.5 t was landed due to poor quality and recovery. The remainder of the Scallop Fishery Areas remained closed.

Surveys were again undertaken in 2022 and covered one north-west coast (western Bass Strait) bed (Scallop Fishery Area 1) with an estimated legal-sized (greater than 85 mm SL) biomass of 21,624 t and two lower east coast beds (Scallop Fishery Area 5) with an estimated legal-sized biomass of 16,608 t [Semmens et al. 2022].

Scallop Fishery Area 5 subsequently opened to fishing in late June 2022, with

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the TAC set at 3 495 t. However, again there had been a major die-off post survey and only 604 t was landed from this area due to predominately poor quality and poor recovery. However, Scallop Fishery Area 1 opened to fishing in early July under the established TAC, with a total of 2,793 t landed from that area. The TAC was increased in October to 4 495 t.

Fishing mortality is managed with the aim of restricting catches to beds of mature scallops near the end of their lifespan. The combination of the harvest strategy and depleted biomass has led to a history of closures due to low abundance. In recent times, the fishery was closed between 2000–02 and again between 2009 and 2010. Areas with commercial density of scallops towards the end of their lifespan were opened to fishing each year between 2013–15. The fishery was subsequently closed again between 2016–20. However, surveys since 2020 have shown evidence of wide-scale recruitment that has occurred during the most recent closure period and fishing has occurred in 2021 and 2022, although this has been hampered somewhat by sudden bed die-off events in the eastern portion of the fishery, which may become more common with warming waters from the East Australian Current pushing further southward and predicted heatwave events.

On the basis that successful broadscale recruitment events during 2016–20 have increased biomass, and that current restrictions, particularly the new model of closing some biomass to fishing in the Scallop Fishery Area where fishing is taking place, are effectively limiting fishing mortality, the Tasmania Scallop Fishery management unit is classified as a **recovering stock**.

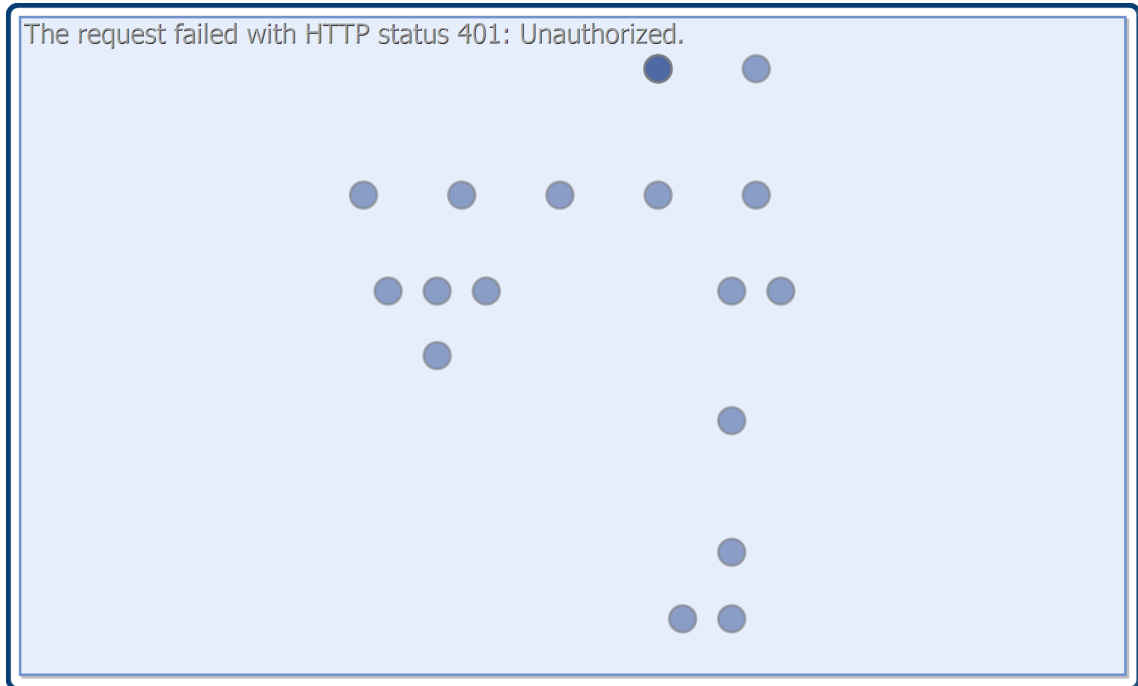
BIOLOGY

Commercial Scallop biology [Young et al. 1989; Woodburn 1990; Semmens et al. 2015; Ovenden et al. 2016]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Commercial Scallop	7+ years, greater than 120 mm SL	2 years, 70–80 mm SL, depending on region

DISTRIBUTION

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Distribution of reported commercial catch of Commercial Scallop

TABLES

Fishing methods	Commonwealth	Tasmania	Victoria
Charter			
Diving			✓
Commercial			
Diving			✓
Scallop Dredge	✓	✓	✓
Recreational			
Diving		✓	✓

Management Methods	Commonwealth	Tasmania	Victoria
Charter			
Bag and possession limits			✓
Licence			✓

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Spatial closures			✓
Commercial			
Effort limits			✓
Gear restrictions	✓	✓	✓
Licence		✓	✓
Limited entry	✓	✓	✓
Size limit		✓	✓
Spatial closures	✓	✓	✓
Temporal closures	✓	✓	
Total allowable catch	✓	✓	✓
Recreational			
Bag and possession limits			✓
Bag limits		✓	
Licence			✓
Size limit		✓	
Spatial closures		✓	✓
Temporal closures		✓	

Catch			
	Commonwealth	Tasmania	Victoria
Commercial	2344.42 t	3397.95 t	546.59 t
Indigenous		Unknown	Unknown (No catch under permit)
Recreational		Unknown	Unknown

Commonwealth – Commercial (Catch). Data provided for the Commonwealth align with the Commonwealth Bass Strait Central Zone Scallop Fishery for 2021.

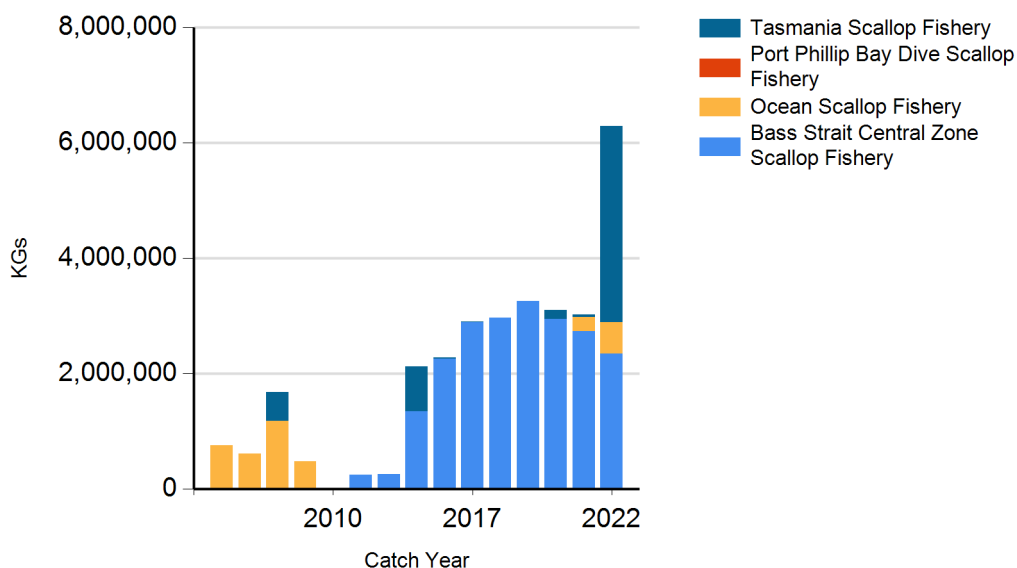
Commonwealth – Recreational. The Australian Government does not manage recreational fishing in Commonwealth waters. Recreational fishing in Commonwealth waters is managed by the state or territory immediately adjacent to those waters, under its management regulations. Recreational fishing sectors in the Indian Ocean are South Australia, Victoria and Western Australia. Recreational sectors in the Pacific Ocean are New South Wales, Queensland and Tasmania.

Commonwealth – Indigenous. The Australian Government does not manage non-commercial Indigenous fishing in Commonwealth waters, with the exception of the Torres Strait. In general, non-commercial Indigenous fishing in Commonwealth waters is managed by the state or territory immediately adjacent to those waters. Indigenous fishing sectors in the Indian Ocean are South Australia, Victoria and Western Australia.

Victoria – Commercial (Catch). (a) To protect commercial confidentiality of data, the catch in the Ocean Scallop Fishery (Victoria) and Port Phillip Bay Dive Scallop Fishery (Victoria) cannot be reported because there are fewer than five licence holders; and (b) In Victoria, the reporting period is fishing season, which runs from 1 April–30 March.

Victoria – Indigenous (Management Methods). A person who identifies as Aboriginal or Torres Strait Islander is exempt from the need to obtain a Victorian recreational fishing licence, provided they comply with all other rules that apply to recreational fishers, including rules on equipment, catch limits, size limits and restricted areas. Traditional (non-commercial) fishing activities that are carried out by members of a traditional owner group entity under an agreement pursuant to Victoria’s Traditional Owner Settlement Act 2010 are also exempt from the need to hold a recreational fishing licence, subject to any conditions outlined in the agreement.

CATCH CHART



Commercial catch of Commercial Scallop - note confidential catch not shown

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