

Commercial Scallop (2016)

Pecten fumatus



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Commonwealth	Bass Strait Central Zone Scallop Fishery	BSCZSF	Undefined	Biomass surveys, size composition, catch, effort
Victoria	Ocean Scallop Fishery	OSF	Undefined	Catch
Victoria	Port Phillip Bay Dive Scallop Fishery	PPBDSF	Sustainable	Biomass surveys, size composition, catch
Tasmania	Tasmanian Scallop Fishery	TSF	Undefined	Biomass surveys, size composition, catch

BSCZSF Bass Strait Central Zone Scallop Fishery (CTH), TSF Tasmanian Scallop Fishery (TAS), OSF Ocean Scallop Fishery (VIC), PPBDSF Port Phillip Bay Dive Scallop Fishery (VIC)

STOCK STRUCTURE

There are several Commercial Scallop beds fished commercially in Commonwealth, Victorian and Tasmanian waters. These beds often contain different age classes of scallop and most have been fished at some stage in the past. Commercial Scallops in Port Phillip Bay (Victoria) are genetically distinct from those in the D'Entrecasteaux Channel (Tasmania), and also differ from conspecifics in most other locations in south eastern Australia[1,2]. The genetic structure of Commercial Scallops in Bass Strait is complex and unclear[2,3].

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 Tasmanian Scallop Fishery.

STOCK STATUS

Bass Strait Central Zone Scallop Fishery Commercial Scallops in the Bass Strait Central Zone Scallop Fishery were considered recruitment overfished until 2007. Following 3 years of closure due to low scallop abundance and concerns about overfishing, the Bass Strait Central Zone Scallop Fishery (Commonwealth) was reopened in 2009, under a new harvest strategy[5]. Commercial Scallops experienced die-offs in 2010–11 and the harvest strategy was revised in 2012[6], 2014[7] and 2015[8].

Elements of the current Commonwealth harvest strategy include: a tiered management approach (whereby a 150 tonnes (t) TAC is set as a 'default opening' TAC with operators managing voluntary industry closures to ensure no more than 50 t comes from any one bed and also to protect beds that do not meet the discard rate of less than 20 per cent of scallops smaller than 85 mm shell length [SL]); surveys to estimate biomass and determine areas of high density (with the option for two other tiers for setting a TAC including formal closures of some surveyed beds, depending on survey results); and a set of decision rules used to open an area to fishing (including a minimum size limit of 85 mm SL and a maximum discard rate of 20 per cent)

Scallop beds near King Island were fished in 2014 and the scallops were reportedly in good condition[9]. The beds were not surveyed before, or during, the 2014 season. Three beds in the area were surveyed before the 2015 season, with the harvestable biomass estimated at 9300 t[10]. Further pre-season surveys near King Island in June 2016 estimated the harvestable biomass at 16 500 t, spread across seven areas[11].

In response to these results, the level of fishing effort and catch increased from very low levels in 2013 (182 t of a 1500 t TAC), to 2014 (1418 t of a 1500 t TAC) and increased again in 2015 to 2260 t (of a 2500 t TAC), which is the highest catch and effort since the fishery reopened in 2009. Given the uncertainty in biomass and the potential that biomass remains substantially reduced across the fishery, the impact of this catch on total biomass is unclear.

Evidence of low recruitment, effort contraction and reduced catch in the eastern part of the fishery indicate that the biomass in this area has declined compared to historical levels.

Three scallop beds were found in the western part of the fishery in 2014, in areas unfished for more than a decade. All three beds were reportedly in good condition and again yielded good catches in 2015.

Because surveys and fishing activity in recent years have focused on and around known beds, there is a lack of contemporary information from large parts of the historically fished area. The fact that Commercial Scallops experience sporadic die-back events means that confidence in biomass estimates decrease over time.

However, survey results from 2015 and 2016 estimate a larger biomass than has been seen in recent years, with recruitment having occurred around King Island sometime after a 2009 survey which failed to detect commercial quantities of scallops in the area. If this trend of increasing biomass and recruitment continues, it may provide confidence that, even while biomass across the fishery remains unknown, fishing mortality is at a level that is not preventing rebuilding.

A number of conflicting indicators, combined with a lack of information on scallop biomass across the majority of the fishery (including previously fished areas) means that there is insufficient evidence to confidently classify the status of this stock.

On the basis of the evidence provided above, the Bass Strait Central Zone

Scallop Fishery (Commonwealth) management unit is classified as an **undefined stock**.

Ocean Scallop Fishery

Approximately 7.6 t of Commercial Scallops were landed by the Ocean Scallop Fishery (Victoria) in the 2015–16 fishing season. This harvest is minor compared to that of the Tasmanian and Commonwealth scallop fisheries. Surveys of historically fished scallop beds in 2009[12] and 2012[13] found low scallop densities and negligible recruitment. Consequently, the TAC for the 2010–11, 2011–12 and 2012–13 fishing seasons was set at zero. A TAC of 135 t was set for the following three seasons to allow limited exploratory fishing and determine if there had been any stock recovery. However, low participation and catches during these seasons means that there is insufficient information available to confidently classify the status of this stock.

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

Port Phillip Bay Dive Scallop Fishery

Dredging for Commercial Scallops in Port Phillip Bay ceased in 1997. A single licence was issued for the take of Commercial Scallop in a new Port Phillip Bay Dive Scallop Fishery in 2013. A survey conducted in 2014 estimated that the total harvestable biomass of Commercial Scallops within fishable areas of Port Phillip Bay was 3629 t[14]. A total allowable commercial catch (TACC), equating to four per cent of the estimated harvestable biomass (146 t) was then set for the 2015–16 fishing season (1 April–30 March). A conservative TACC, combined with the protection afforded by a minimum legal size (90 mm SL) ensures that fishing mortality within this management unit is low[15].

Recreational fishing for Commercial Scallops is popular off the coast of the Bellarine Peninsula between Portarlington and St. Leonards, and to the north of the Mornington Peninsular from Point Nepean to Dromana[16]. While there are no current estimates of the recreational take of Commercial Scallop in Victorian waters, a survey in 2000–01 estimated that it was in the order of 5.7 t[17]. The above evidence indicates that the biomass of this stock is unlikely to be recruitment overfished, and that the current level of fishing pressure is unlikely to cause the stock to become recruitment overfished.

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

Tasmanian Scallop Fishery

The harvest of Commercial Scallop in Tasmania waters is regulated through a minimum size limit of 90 mm SL; animals of this size are approximately 3+ years of age and have spawned at least twice[18].

The Tasmanian Scallop Fishery is managed under a harvest strategy where surveys are undertaken to estimate abundance and decision rules are used to open an area (or areas) to fishing. Similar to the Commonwealth fishery, these decision rules include a minimum size limit and a maximum discard rate (which is not to exceed 20 per cent). However, unlike the Bass Strait Central Zone Scallop Fishery (Commonwealth) (BSCZSF), there is no requirement to close a proportion of the beds found during surveys. Instead, protection of scallops (and scallop habitat) is afforded through a ban on dredging in waters less than 20 m and a network of dredge-prohibited areas around the state.

The Tasmanian fishery was closed to fishing in 2009–10 due to apparent low abundance and small average sizes (below the minimum size). In 2013, 2014 and 2015, industry 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 that met the harvest strategy guidelines.

These areas were subsequently opened to fishing each year between 2013 and 2015. A lower minimum size limit (85 mm SL) was applied to the north-west bed given the historically slow growth rates in this region and the fact that most scallops of this size are still 3+ years old[18]. A voluntary industry closure was implemented in July 2013 for a portion of the east coast bed when a large aggregation of immature scallops was discovered in the northern section of the fishing area.

By the end of 2013, 1226 t (82 per cent) of the 1489 t TAC had been harvested. In 2014, only 489 t (39 per cent) of the 1240 t TAC was taken, with 404 t coming from the north-west bed, which had average scallop densities of almost twice those of the east coast bed when surveyed. In 2015, 781 t (76 per cent) of the 1033 t TAC was taken, with 717 t coming from the east coast bed, which had average scallop densities of almost twice those of the north-west bed when surveyed.

Estimates of Commercial Scallop abundance in the BSCZSF have been significantly greater than those for the Tasmanian fishery for the period 2014–16. The majority of licensees in the Tasmanian fishery also operate in the Commonwealth fishery. As such, some of the uncaught TAC in the Tasmanian fishery may be a result of operators choosing to fish in Commonwealth waters, where scallops were more abundant.

Given the more abundant resource in the BSCZSF, industry state-wide surveys were only conducted within two known scallop beds on the state's east coast in 2016, with no current knowledge of the status of beds elsewhere in the state. The surveys generally only found low levels of scallop abundance and limited evidence of successful recruitment, with no area considered to contain commercially viable quantities. This included the east coast bed fished in 2015, which appeared to have been fished down to a commercially unviable density, with no subsequent recruitment evident. However, there is a known bed of scallops adjacent to this fished bed that is in a dredge-prohibited area, and is likely part of the commercial bed that has been fished between 2013–15; that is, the line demarcating the dredge-prohibited area dissects the bed. Furthermore, the closure dissects the bed where the abundance is greatest. There is currently no knowledge of the status of scallop beds in other dredge-prohibited areas or in waters less than 20 m around the state.

In addition to the above conflicting indicators, there is a lack of information about the majority of the fishery area, including areas previously fished. There is insufficient evidence to confidently classify the status of this stock.

On the basis of the evidence provided above, the Tasmanian Scallop Fishery management unit is classified as an **undefined stock**.

BIOLOGY

Commercial Scallop biology[1–3,18]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Commercial Scallop	7+ years; > 120 mm <u>SH</u> <u>SHell</u> length	2 years; 70–80 mm <u>SL</u> , depending on region

DISTRIBUTION



Distribution of reported commercial catch of Commercial Scallop

TABLES

Commercial Catch Methods	Commonwealth	Tasmania	Victoria
Diving			✓
Dredges	✓	✓	✓
Fishing methods			
	Commonwealth	Tasmania	Victoria
Commercial			
Diving			✓
Dredges	✓	✓	✓
Indigenous			
Diving		✓	✓
Recreational			
Diving		✓	✓
Management Methods			
	Commonwealth	Tasmania	Victoria
Commercial			
Gear restrictions	✓	✓	✓
Limited entry	✓	✓	✓
Size limit	✓	✓	✓
Spatial closures	✓	✓	✓

Temporal closures	✓	✓	
Total allowable catch	✓	✓	✓
Indigenous			
Bag limits			✓
Spatial closures			✓
Recreational			
Bag limits		✓	✓
Size limit		✓	
Spatial closures		✓	✓
Temporal closures		✓	

Active Vessels	Commonwealth	Tasmania	Victoria
	11 License in BSCZSF,	8 Vessel in TSF,	1 Vessel in OSF, 4 Vessel in PPBDSF,

BSCZSF Bass Strait Central Zone Scallop Fishery(CTH)

TSF Tasmanian Scallop Fishery(TAS)

OSF Ocean Scallop Fishery(VIC)

PPBDSF Port Phillip Bay Dive Scallop Fishery(VIC)

Catch	Commonwealth	Tasmania	Victoria
Commercial	2259.64t in BSCZSF,	781.17t in TSF,	
Indigenous		Unknown	Nil
Recreational		Unknown	Unknown

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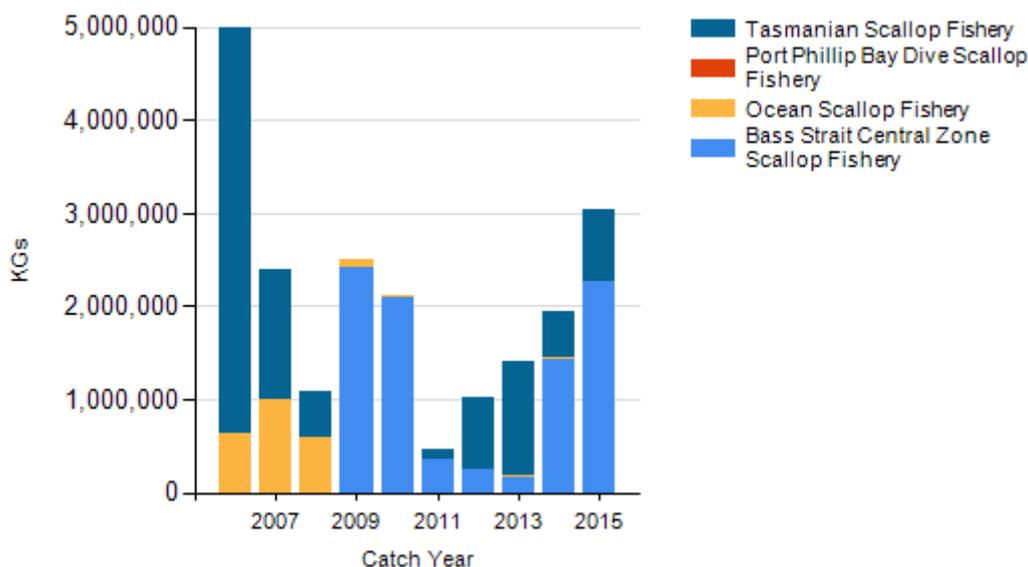
a Victoria – Commercial In Victoria, the reporting period is fishing season, which runs from 1 April–30 March.

b Victoria – Indigenous (management methods) In Victoria, regulations for managing recreational fishing are also applied to fishing activities by Indigenous people. Recognised Traditional Owners (groups that hold native title or have agreements under the Traditional Owner Settlement Act 2010 [Vic]) are exempt (subject to conditions) from the requirement to hold a recreational fishing licence, and can apply for permits under the Fisheries Act 1995 (Vic) that authorise customary fishing (for example, different catch and size limits or equipment). The Indigenous category in Table 3 refers to customary fishing undertaken by recognised Traditional Owners. In 2015, there were no applications for customary fishing permits to access Commercial Scallop.

c Victoria – Indigenous (management methods) Subject to the defence that applies under Section 211 of the Native Title Act 1993 (Cth), and the exemption from a requirement to hold a Victorian recreational fishing licence, the non-commercial take by indigenous fishers is covered by the same arrangements as that for recreational fishing.

d Victoria – Commercial (catch) 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.

CATCH CHART



Commercial catch of Commercial Scallop - note confidential catch not shown.

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

- Commercial Scallops have been fished within the same regions repeatedly since the 1960s[19], and the current impacts of dredging activities are considered less significant than those when the fishery began. This is because the long-term dredge fishery may have already resulted in benthic communities shifting in favour of those species that are less susceptible to dredging, or those most able to quickly recover[20-22]. Scallops are targeted where they are abundant and the effect on other species within the broader ecosystem tends to be minimal[2, 23]. An ecological risk assessment of the Bass Strait Central Zone Scallop Fishery found that none of the habitats assessed were at high risk[24]. Commercial Scallops, and associated benthic communities, are impacted by dredging over relatively brief periods of time and generally recover quickly[25,26].
- Selective harvesting by the Port Phillip Scallop Dive Fishery has minimal impact on the surrounding environment and other fisheries[15]. It is difficult to identify any scenario where this dive fishery would have a detrimental impact on the local snapper fishery[27].

ENVIRONMENTAL EFFECTS on Commercial Scallop

- Changes in Commercial Scallop community structure can be driven more by environmental effects than fishing[25]. Recruitment of Commercial Scallops is sporadic, intermittent and poorly understood[4]. Natural mortality of scallops is highly variable and depends on factors including (but not limited to) density-dependent food shortages, seabed bottom type, disease, environmental conditions and predation[28]. Stock relationships are heavily influenced by ocean currents[2]. Climate change-induced changes in ocean currents and/or upwelling events are expected to affect recruitment. Recent research has shown that seismic surveying may impact the health and increase the mortality rate of scallops[29].

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