

Ballot's Saucer Scallop (2018)

Ylistrum balloti



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Western Australia	Abrolhos Island and Mid-West Trawl managed Fishery	AIMWTMF	Sustainable	Recruitment surveys, CPUE, catch
Western Australia	Shark Bay Scallop Managed Fishery	SBSCMF	Sustainable	Recruitment surveys, catch, CPUE
Western Australia	South Coast Trawl Fishery	SCTF73	Sustainable	Catch, CPUE, area fished
Western Australia	South West Trawl Managed Fishery	SWTMF	Sustainable	Catch, effort, area fished
Queensland	East Coast Otter Trawl Fishery	ECOTF	Depleted	Estimated biomass, abundance survey, CPUE, catch, effort

ECOTF East Coast Otter Trawl Fishery (QLD), AIMWTMF Abrolhos Islands and Mid West Trawl Managed Fishery (WA), SBSCMF Shark Bay Scallop Managed Fishery (WA), SWTMF South West Trawl Managed Fishery (WA), SCTF73 FBL condition 73 South Coast Trawl Fishery (WA)

STOCK STRUCTURE

Ballot's Saucer Scallop in Australian waters are now classified as *Ylistrum balloti* (formerly *Amusium balloti*) following a recent revision of the genus *Amusium* [Mynhardt et al. 2014]. This species is distributed from Israelite Bay in Western Australia, across the tropics, to the southern coast of New South Wales. Ballot's Saucer Scallop occur along most of the coast of Western Australia, but given the vast length of this coastline and the potential for regional differences in recruitment, four separate management units have been established in this jurisdiction for those areas where Ballot's Saucer Scallop occur in commercial quantities.

The eastern Australian stock stretches from Innisfail in Queensland to Jervis Bay in New South Wales. No fishery for Ballot's Saucer Scallop exists in New South Wales waters. The stock

classification presented here is based on information from the commercial fishery in central and southern Queensland (latitude 22°–27° south).

Here, assessment of stock status is presented at the management unit level—Shark Bay Scallop Managed Fishery, Abrolhos Islands and Mid-West Trawl Managed Fishery, South West Trawl Managed Fishery and South Coast Trawl Fishery (Western Australia); and East Coast Otter Trawl Fishery (Queensland).

STOCK STATUS

Abrolhos Island and Mid-West Trawl managed Fishery The Abrolhos Islands and Mid-West Trawl Managed Fishery (Western Australia) management unit is managed under an escapement policy. The impact on the spawning biomass is limited by fishing after the peak spawning period; setting the duration of fishing according to catch predictions (based on pre-season surveys); closing the fishery at a minimum catch rate threshold (150 kg meat weight per day); and not opening sections of the fishery if Ballot's Saucer Scallop abundance is considered to be below a specified target [Gaughan and Santoro 2018].

Annual pre-season surveys showed very low recruitment (of one year olds) between 2011 and 2015 following the marine heatwave and subsequent low spawning stock and the fishery was closed between 2012 and 2016. Cooler temperatures in 2016–17 resulted in improved recruitment in the southern part of the Abrolhos Islands in late 2016 and early 2017 and the predicted catch for 2017 (120–180 t meat weight) was above the target range (100 t meat weight). The fishery was re-opened in April 2017 for the first time in five years. The recruitment index in 2017 (600 scallop/nm) was at the lower end of the historical range (250–4000 scallop/nm) and in early 2018 (2900 scallop/nm) shows continued recovery with likely improved catches during 2018–19. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

The landings in 2017 were 130 t meat weight (651 t whole weight) which was within the expected range and fishers ceased fishing at a catch rate above the threshold (150 kg/day). The above evidence indicates that 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 Abrolhos Islands and Mid-West Trawl Managed Fishery (Western Australia) management unit is classified as a **sustainable stock**.

East Coast Otter Trawl Fishery In Queensland, the annual catch of Ballot's Saucer Scallop has been declining since 2001, and from 2014–17 was less than 546 t meat weight (2 730 t whole weight) per year, near the lowest MSY estimate across a range of productivity scenarios for the stock [Campbell et al. 2012]. The most recent stock assessment [Yang et al. 2016] estimated that spawning biomass of the East Coast biological stock in 2015 may have been as low as five to six per cent of the 1977 unfished level. Results of the 2017 fishery independent survey of abundance also showed relatively low densities of pre-recruits and scallops older than one year old.

At 134 t annual meat weight (670 t whole weight) in 2017, landings of Ballot's Saucer Scallop by the East Coast Otter Trawl Fishery were at a historical low [QDAF 2018]. This is likely due in part to recent management intervention, including total closure of high abundance scallop replenishment areas since November 2016 and prohibition on harvesting during the May–October spawning season. However, the annual catch rate in 2017 also decreased to the lowest level seen since 1997, when recruitment failed [QDAF 2018]. Average monthly catch rates in late 2017 were about 40 per cent higher than the historic lows of January 2015–April 2016 [QDAF 2018]; providing some evidence of stock

rebuilding, at least in the southern-most part of the fishery. The above evidence indicates that the biomass of this stock is likely to be depleted and that recruitment is likely to be impaired.

A long-term decline in the annual number of scallop harvesting days has been evident since 1997, when the stock was first considered to be overfished, and effort in 2017 was at a historically low level [QDAF 2018]. However, a shift in fleet composition towards more efficient vessels has increased fishing power since 2000 [Campbell et al. 2012]. Results from a recent fishery-independent survey reinforce concerns about low scallop abundance. Mean scallop densities in 14 out of 15 strata were lower in 2017 than mean densities from comparable strata in long-term (1997–2006) scallop abundance surveys [A. Courtney, personal communication]. Spatial and temporal closures introduced in late 2016 to reduce fishing pressure and total closure of the fishery from May-October have probably also reduced annual effort. The above evidence indicates that 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 East Coast Otter Trawl Fishery (Queensland) management unit is classified as a **depleted stock**.

Shark Bay Scallop Managed Fishery

Shark Bay Scallop Managed Fishery

The Shark Bay Scallop Managed Fishery (Western Australia) management unit was in a recovery phase following the mortality induced by the marine heatwave in 2010–11. The low stock biomass after 2011 seems to have been the result of a series of poor recruitment events associated with protracted unfavourable environmental conditions dating back to the marine heatwave that began in late 2010 [Caputi et al. 2016, Caputi et al. 2014b]. The stock biomass within this management unit had fallen to a level where there was a significant risk of recruitment failure. Fisheries management responded to this environmentally-driven decline in productivity with a complete cessation of fishing for three years until fishery-independent surveys indicated the potential for a modest harvest.

The annual survey in November 2017 indicated that the stock survey abundance in both parts of the fishery (northern Shark Bay (360 scallop/nm) and Denham Sound (800 scallop/nm)) had recovered to within historical ranges (northern Shark Bay; 100-3400 scallop/nm and Denham Sound; 100-1000 scallop/nm) and the stock is now considered to have recovered. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

A trial quota system with a conservative total allowable commercial catch (TACC) and target reference levels for resumption of fishing was implemented in 2015 to provide protection for the breeding stock and aid in recovery. Management measures have been implemented each year since 2015 to limit harvests, including a limit on the level of pre-spawning scallop harvest complemented by small-scale spatial closures.

Fishery-independent recruitment surveys are conducted each year on this management unit [Joll and Caputi 1995, Kangas et al. 2011, Caputi et al. 2014a]. Sustainable catch predictions for the two separate stocks are derived from the correlation of historical annual landed catch (meat weight), and the mean catch rate (number per nautical mile trawled) of recruit (0+) and residual (1+) scallops for standard survey sites for each area sampled in November each year. These predictions are used in determining the sustainable TACC for each part of the fishery in a Departmental/industry consultative framework. In 2017, a total TACC of 330 tonnes (t) meat weight (1 650 t whole weight) was implemented and 326 t meat weight was landed. The above evidence indicates that 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 Shark Bay Scallop Managed Fishery (Western Australia) management unit is classified as a **sustainable stock**.

South Coast Trawl Fishery *The South Coast Trawl Fishery (Western Australia) management unit is a low-activity fishery in which effort is related to the abundance of Ballot's Saucer Scallop in any given year, which can be highly variable due to sporadic recruitment. The few vessels (up to four) that operate in the fishery only fish over one to three per cent of the allowable fishery area and have not fished in every year. No fishing was undertaken in 2017. The mean catch rate in this fishery for the previous five years was 3 039 kg (whole weight) per boat day, which is 68 per cent of the maximum catch rate recorded (range 817–4 499 kg per boat day) [Gaughan and Santoro 2018]. The above evidence indicates that the biomass of this stock is unlikely to be recruitment overfished. It also indicates 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 South Coast Trawl Fishery (Western Australia) management unit is classified as a **sustainable stock**.

South West Trawl Managed Fishery The South West Trawl Managed Fishery (Western Australia) (SWTMF) management unit is a comparatively small, low-activity fishery in which fishing effort has been related to either the abundance of Western King Prawn or Ballot's Saucer Scallop in any given year, which can be highly variable due to sporadic scallop recruitment. Up to nine boats have fished in this fishery from 1993 but only one to four vessels have operated in the fishery since 2005 and they have only fished in one to three per cent of the allowable fishery area [Gaughan and Santoro 2018]. Between 2005 and 2014 (no fishing occurred in 2015 and 2016) an average of 168 boat days were recorded annually, with a catch range of between 1–217 t whole weight, compared to 500 boat days on average the previous 12 years (1993–2004), with a catch range of between 3–27 t whole weight. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

Only one boat fished in the SWTMF in 2017 for a total of 41 boat days. There are currently eight licences in this fishery, however only one authorised boat to fish in 2017. In this fishery, for other boats to be approved to fish, a variation application needs to be approved by the chief executive officer, or their delegate, and approval is discretionary. For example, the chief executive officer may determine that it is not in the better interests of the fishery (i.e. if potential for a significant activation of latent effort) to vary the authorisation. The above evidence indicates that the fishing pressure is unlikely to cause the stock to become recruitment overfished.

On the basis of the evidence provided above, the South West Trawl Managed Fishery (Western Australia) management unit is classified as a **sustainable stock**.

BIOLOGY

Ballot's Saucer Scallop biology [Dredge 1981, Heald 1978, Joll 1989, Orensanz et al. 2006, Williams and Dredge 1981]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Ballot's Saucer Scallop	Maximum of 4 years and 140 mm SH	At 4 year of age and 85–90 mm SH

DISTRIBUTION



Commercial catch of Ballot's Saucer Scallop - note confidential catch not shown

TABLES

Commercial Catch Methods	Queensland	Western Australia
Otter Trawl	✓	✓

Fishing methods	Queensland	Western Australia
Commercial		
Otter Trawl	✓	✓

Management Methods	Queensland	Western Australia
Commercial		
Catch limits		✓
Effort limits		✓
Limited entry	✓	✓
Seasonal closures	✓	
Size limit	✓	
Spatial closures	✓	✓
Vessel restrictions	✓	

Active Vessels	Queensland	Western Australia
	114 in ECOTF,	4 in AIMWTMF, 23 in SBSCMF, &3 in SWTMF,

ECOTF East Coast Otter Trawl Fishery(QLD)

AIMWTMF Abrolhos Islands and Mid West Trawl Managed Fishery(WA)

SBSCMF Shark Bay Scallop Managed Fishery(WA)

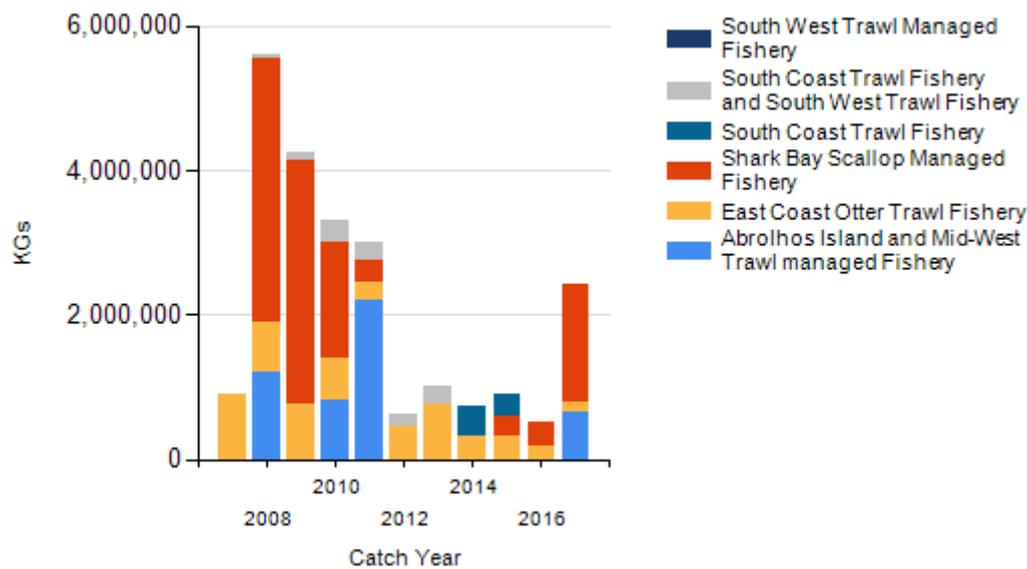
SWTMF South West Trawl Managed Fishery(WA)

Catch	Queensland	Western Australia
Commercial	133.597t in ECOTF,	650.875t in AIMWTMF, 1649.08t in SBSCMF, 0t in SCTF73,
Indigenous	No catch	No catch
Recreational	No catch	No catch

ECOTF East Coast Otter Trawl Fishery (QLD), AIMWTMF Abrolhos Islands and Mid West Trawl Managed Fishery (WA), SBSCMF Shark Bay Scallop Managed Fishery (WA), SWTMF South West Trawl Managed Fishery (WA), SCTF73 FBL condition 73 South Coast Trawl Fishery (WA),

Queensland – Indigenous (Management Methods). In Queensland, under the *Fisheries Act 1994* (Qld), Indigenous fishers are able to use prescribed traditional and non-commercial fishing apparatus in waters open to fishing. Size and bag limits and seasonal closures do not apply to Indigenous fishers. Further exemptions to fishery regulations can be obtained through permits.

CATCH CHART



Commercial catch of Ballot's Saucer Scallop - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

ENVIRONMENTAL EFFECTS on Ballot's Saucer Scallop

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