

# VONGOLES (2020)

*Katelysia* spp.



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## STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Western Australia	Western Australia Vongole Fishery	Negligible	
Tasmania	Ansons Bay Vongole Fishery	Depleted	Biomass estimate, recruitment
South Australia	Coffin Bay Cockle Fishing Zone	Depleting	Harvestable biomass estimate, recruitment
South Australia	Port River Cockle Fishing Zone	Depleted	Harvestable biomass estimate, recruitment
South Australia	West Coast Cockle Fishing Zone	Undefined	

## STOCK STRUCTURE

Vongole (*Katelysia* spp.) is a species complex that inhabits southern coastal waters from Augusta in Western Australia to Port Jackson in New South Wales. They are found on sand banks in shallow bays and estuaries from the intertidal zone to a depth of 5 m [Cantin 2010]. Stock structure is unknown. However, given the short larval life span, ~16 days for *K. rhytiphora* hatchery animals [Gluis and Li 2014], it is likely that Vongole in individual bays would constitute separate stocks.

Due to the potential for there to be a large number of stocks, assessment of stock status is presented at the management unit level—Western Australian Vongole Fishery; Ansons Bay Vongole Fishery (Tasmania); Coffin Bay Cockle Fishing Zone, Port River Cockle Fishing Zone, and West Coast Cockle Fishing Zone (South Australia).

## STOCK STATUS

- Ansons Bay Vongole Fishery** The harvest strategy for Vongole in Tasmania in the Shellfish Fishery Policy Document [DPIW 2007] uses biomass and size-composition as performance indicators but does not define a limit reference point below which the stock would be classified as recruitment impaired. Biomass surveys of the Ansons Bay Vongole fishery are conducted every 2–3 years with total allowable commercial catches (TACCs) determined to be up to 10 per cent of the biomass estimate (at the 95 per cent confidence interval).
- The 2018 estimate of biomass available to the Ansons Bay Vongole Fishery was 23.61 tonnes (t) (19.49–27.73 t), a level that is 11.6 per cent of the peak biomass recorded in 2001. Exploitation rates have been below the maximum of 10 per cent and minimum legal limits (32 mm shell length, SL) are set at a size that enables the majority of Vongole to reproduce at least once prior to being available for harvest.
- Despite these measures, large stock declines occurred in 2014 and in 2015 there was no evidence of recruitment (no pre-recruits or juveniles identified). The Ansons Bay Vongole Fishery has been closed to commercial fishing from 1 September 2015 on the basis of being recruitment impaired.
- The 2018 biomass estimate was the lowest on record and is likely attributable to a combination of mortality of Vongole as a result of extreme rainfall and flood events in the north-east of Tasmania in 2014, followed by recruitment failure in 2015–17 [Keane and Gardner 2017]. Low abundances of juveniles were observed in the 2018 survey but are unlikely to lead to significant stock rebuilding in the short term. Preliminary results from the 2019 stock assessment indicate no sign of stock rebuilding.
- The above evidence indicates that spawning stock biomass is likely to have been depleted to the point where average recruitment levels are significantly impaired, primarily as a result of substantial environmental impacts.
- On the basis of the evidence provided above, the Ansons Bay Vongole Fishery (Tasmania) management unit is classified as a **depleted stock**.
- Coffin Bay Cockle Fishing Zone** The 2018 estimate of harvestable biomass in the Coffin Bay Cockle Fishing Zone CBCFZ was 538 t and is lower than previous estimates [Heldt et al. 2020]. In addition, since 2015, Vongole density has decreased, large, legal sized Vongole have declined, and outputs from a data-limited stock assessment model (catch-only MSY) showed consistent declines. There was some evidence of recent recruitment from 2016–2018, noting that recruitment is known to be sporadic [Dent et al. 2016], and that setting of appropriate minimum legal lengths enables a majority of Vongole to reproduce prior to harvest, based on estimates of size at first maturity [Gorman et al. 2010, Dent et al. 2012]. The above evidence indicates that, for the period from 2015–2018, the biomass declined, but the stock is not yet considered to be recruitment impaired, and that the current level of fishing mortality is likely to cause the stock to become recruitment impaired. In addition, although not directly linked to stock status, the 2018–19 harvestable biomass estimate at 80 per cent confidence (538.5 t) resulted in a harvest fraction of 9.3 per cent, which was above the harvest fraction limit of 7.5 per cent in the management plan (PIRSA 2014).
- On the basis of the evidence provided above, the Coffin Bay Cockle Fishing Zone management unit is classified as a **depleting stock**.
- Port River Cockle Fishing** The Port River Cockle Fishing Zone (PRCFZ) was historically important with significant catches reported prior to 2009. The first biomass survey conducted in 2009 estimated low biomass in the PRCFZ [Gorman et al. 2010], but the causes

**Zone** of this biomass decline are unclear. Due to ongoing sustainability concerns, the PRCFZ has been closed to the taking of Vongole by all fishing sectors since 2011–12; the stocks have not recovered from a depleted state. Biomass surveys in early 2016 showed lack of stock recovery, and a project to develop stock enhancement methods is underway. The above evidence indicates that the biomass of this stock is likely to be depleted and that recruitment is likely to be impaired. Furthermore, the above evidence indicates that current fishing mortality has been reduced 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 Port River Cockle Fishing Zone management unit is classified as a **depleted stock**.

**West Coast Cockle Fishing Zone** There was insufficient information to estimate an annual biomass for the entire West Coast Cockle Fishing Zone WCCFZ [Heldt et al. 2020]. Estimates of harvestable biomass were 236 t in 2016 for Streaky Bay, 109 t in 2017 for Smoky Bay, and 76 t in 2018 for Venus Bay. There was evidence of recent recruitment in most bays; however, there was no evidence of recruitment of *K. rhytiphora* in Streaky Bay in 2016. Recruitment is sporadic [Dent et al. 2016], and minimum legal lengths in place enable Vongole to reproduce at least once prior to being available for harvest, based on estimates of size at first maturity [Dent et al. 2012, Gorman et al. 2010]. There are no data available to estimate biomass or exploitation rates. In addition, there is no knowledge on recruitment or harvestable biomass, and there are no defined target or limit reference levels. This prevents assessment of current stock size or fishing pressure. Consequently, there is insufficient information available to confidently classify the status of this stock.

On the basis of the evidence provided above, the West Coast Cockle Fishing Zone (South Australia) management unit is classified as an **undefined stock**.

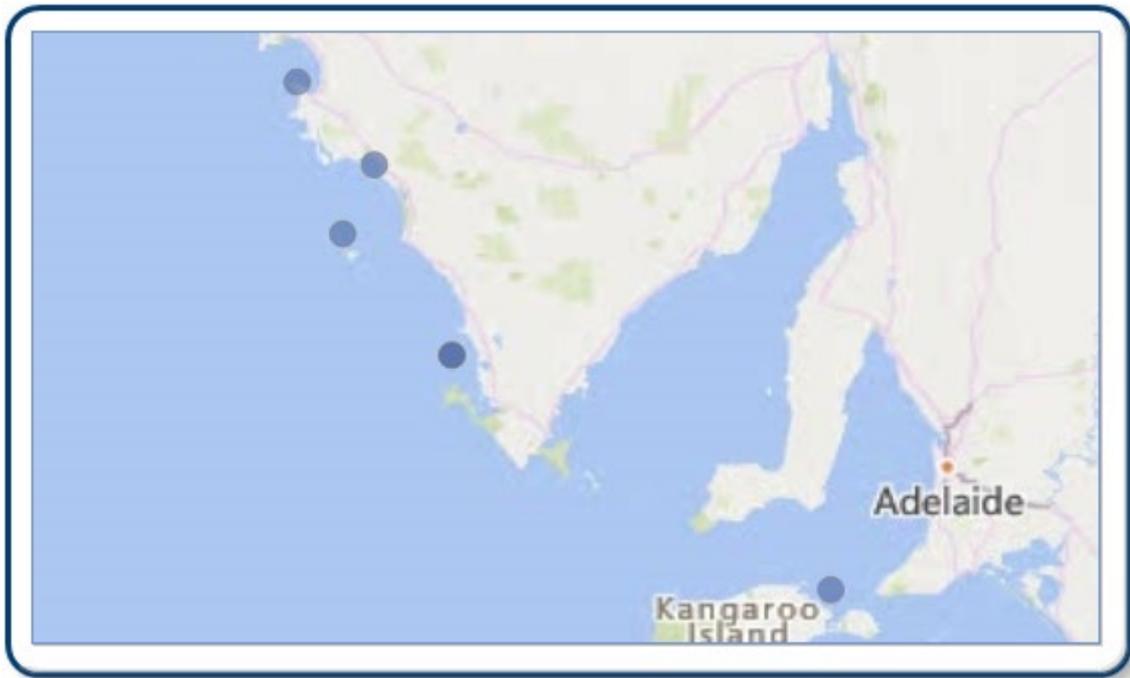
**Western Australia Vongole Fishery** Stock status for the Western Australia management unit is reported as Negligible due to low catches by this jurisdiction. The Western Australian harvest was 0.1 tonnes (t) or less in 2004, 2005, 2012–2014 and 2017; and zero in other years. Low levels of fishing effort and thus fishing mortality are unlikely to be having a negative impact on the stock.

## BIOLOGY

**Vongole biology** [Riley et al. 2005, Gorman et al. 2010, Dent et al. 2012]

Species	Longevity / Maximum Size	Maturity (50 per cent)
VONGOLES	29 years, 55 mm SL	4 years, 23–31 mm SL * [*Note that differences in maturity (50 per cent) occur among species and locations]

## DISTRIBUTION



Distribution of reported commercial catch of VONGOLES

**TABLES**

<b>Fishing methods</b>		
	<b>South Australia</b>	<b>Tasmania</b>
<b>Commercial</b>		
Diving		✓
Rake	✓	
<b>Recreational</b>		
Bait Pump	✓	
Hand collection	✓	✓
Rake	✓	

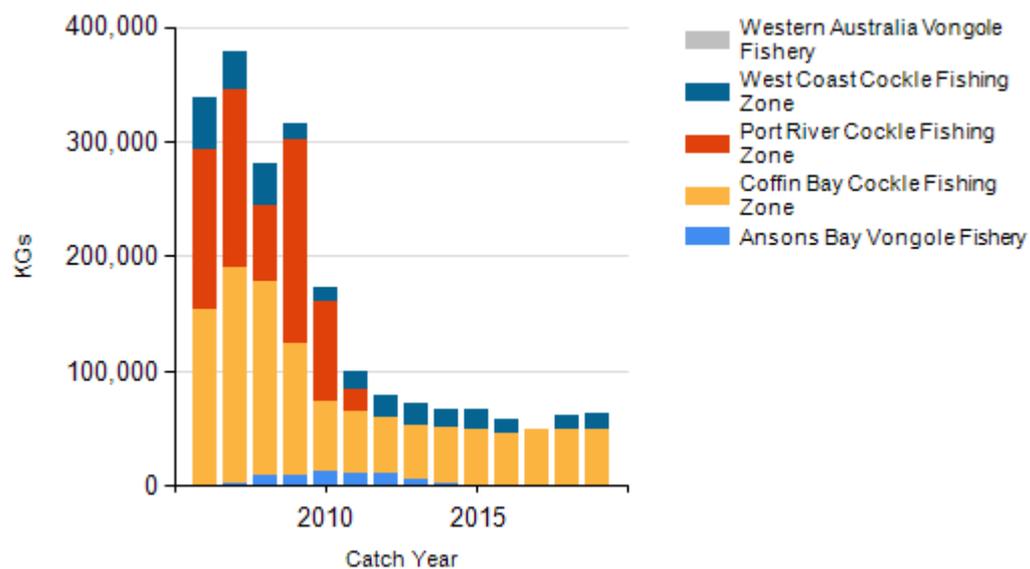
<b>Management Methods</b>		
	<b>South Australia</b>	<b>Tasmania</b>
<b>Commercial</b>		
Gear restrictions	✓	✓
Limited entry	✓	✓
Size limit	✓	✓
Spatial closures	✓	✓
Temporal closures		✓
Total allowable catch	✓	✓
<b>Recreational</b>		

<b>Bag and possession limits</b>	✓	
<b>Bag limits</b>		✓
<b>Size limit</b>	✓	
<b>Spatial closures</b>	✓	

<b>Catch</b>			
	<b>South Australia</b>	<b>Tasmania</b>	<b>Western Australia</b>
<b>Commercial</b>	63.159 t	0 t	0 t
<b>Indigenous</b>	Unknown	Unknown	
<b>Recreational</b>	12 805 ± 12, n = 574 individuals or 0.14 t per year (2013–14)	Unknown	

**Active Vessels** Vongole can be collected from beaches and bay on foot therefore, ‘vessels’ are not always used. Hence, numbers of licences and fishers are presented here instead of vessel numbers. Licences refer to the number of licence holders with an endorsement to take Vongole for sale.

### CATCH CHART



Commercial catch of VONGOLES - note confidential catch not shown

<b>References</b>	
Cantin 2010	Cantin, A 2010, Population biology of two sympatric mud cockles, <i>Katelsysia peronii</i> and K.

	<p>scalarina (<i>Bivalvia</i>: <i>Veneridae</i>), with implications for their management, PhD thesis, Flinders University, Adelaide.</p>
Dent et al. 2012	<p>Dent, J, Mayfield, S, Burch, P, Gorman, D and Ward, TM 2012, Distribution, harvestable biomass and fisheries biology of <i>Katelysia</i> spp. in the South Australian commercial Mud-Cockle Fishery, Fishery assessment report for Primary Industries and Regions South Australia Fisheries and Aquaculture, SARDI Publication F2010/000263-2, SARDI Research Report Series 595, South Australian Research and Development Institute (Aquatic Sciences), Adelaide.</p>
Dent et al. 2016	<p>Dent, J, Mayfield, S and Carroll, J 2016, Harvestable biomass of <i>Katelysia</i> spp. in the South Australian commercial Mud Cockle Fishery, Report to Primary Industries and Regions South Australia, Fisheries and Aquaculture, SARDI Publication F2014/000191-2, SARDI Research Report Series 898, SARDI, Adelaide.</p>
DPIW 2007	<p>Department of Primary Industries and Water 2007, Shellfish fishery policy document, Wild Fisheries Management Branch, DPIW, Hobart.</p>
Gluis and Li 2014	<p>Gluis, MR and Li, X 2014, Hatchery manual for larval rearing of <i>Vongole Katelysia rhytiphora</i>, Fisheries Research and Development Corporation Project 2009/208, South Australian Research and Development Institute (Aquatic Sciences), Adelaide.</p>
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Gorman et al. 2010	<p>Gorman, D, Mayfield, S, Burch, P and Ward, TM 2010, Distribution, harvestable biomass and fisheries biology of <i>Katelysia</i> spp. In the South Australian commercial mud cockle fishery, Fishery assessment report for PIRSA Fisheries, SARDI Publication F2010/000263-1, SARDI Research Report Series 442, South Australian Research and Development Institute (Aquatic Sciences), Adelaide.</p>
PIRSA 2013	<p>Primary Industries and Regions South Australia 2013, Management plan for the South Australian Commercial Marine Scalefish Fishery, South Australian Fisheries Management Series: Paper 59, PIRSA, Adelaide.</p>
Riley et al. 2005	<p>Riley, SP, Green, RM, Zacharin, W and Maguire, GB 2005, Growth models and age determination for the intertidal venerid clam <i>Katelysia scalarina</i> (Lamarck 1818) from three sites in Tasmania, Australia, Fisheries Research and Development Corporation Project 93/232, in GB Maguire (ed) Enhancing Tasmanian clam resources, FRDC, Tasmania.</p>
Heldt et al. 2020	<p>Heldt, K and Mayfield, S 2020, Harvestable biomass of <i>Katelysia</i> spp. in the South Australian Vongole Fishery. Report to PIRSA Fisheries and Aquaculture (PDF 3.3 MB). South Australian Research and Development Institute (Aquatic Sciences), Adelaide. SARDI Publication Number. F2014/000191-2. SARDI Research Report Series No. 1060. 40pp</p>