

Pipi (2018)

Donax deltoides



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
New South Wales	New South Wales	EGF	Sustainable	Catch, CPUE
Victoria	Victoria	BF, OF	Undefined	Catch
South Australia	South Australia	LCF MSF	Sustainable	Fishery-independent relative abundance and size structures

EGF Estuary General Fishery (NSW), BF Bait Fishery (VIC), OF Ocean Fishery (VIC), LCF || MSF Lakes and Coorong Fishery, Marine Scale Fishery (SA)

STOCK STRUCTURE

Pipi is common on high-energy sandy beaches from southern Queensland to the mouth of the Murray River in South Australia [Murray-Jones and Ayre 1997] and the distribution may extend further westwards. High genetic variation between populations on either side of Bass Strait indicates at least two biological stocks, with the East Australian and South Australian Currents acting as key drivers of gene flow on the east and south coasts of Australia respectively [Miller et al. 2013]. A study of Pipi from Fraser Island, Queensland, to southern New South Wales, indicated a single biological stock over this area, with genetic mixing driven by ocean currents associated with the East Australian Current [Murray-Jones and Ayre 1997]. For locations west of Bass Strait in South Australia and western Victoria, no evidence of genetic structuring has been detected [Miller et al. 2013]. The degree of larval mixing is thought to be related to spawning and larval duration, although these are poorly understood [Ferguson 2013, Gluis and Li 2014, King 1976, Miller et al. 2013]. Although no genetic differences were detected among Pipi populations on beaches along the east coast of Australia, in any given year, most recruits are likely to be self-seeded or to come from nearby, adjacent beaches [Murray-Jones and Ayre 1997]. This is also likely the case for the fisheries located to the west of Bass Strait. Despite the work outlined above, the biological stock delineation of Pipi remains unclear.

Here, assessment of stock status is presented at the jurisdictional level—New South Wales, Victoria, and South Australia.

STOCK STATUS

The harvest of Pipi in New South Wales is shared between the commercial

New South Wales sector, recreational fishers and for at least 10 000 years Pipi have provided a source of food for Indigenous people in this region [Murray-Jones 1999]. Steeply declining commercial catches over a six year period (568 tonnes [t] in 2004–05 to 9 t in 2010–11) suggested that New South Wales Pipi stocks were depleted. Input controls were implemented which aimed to stabilise catches. These included: (1) spatial closures (i.e. within beach closures), (2) temporal closures of the commercial fishery (i.e. 6 months per-annum), and (3) a minimum legal size limit (i.e. 45 mm total length) to allow spawning to occur at least once before recruitment to the fishery [Murray-Jones 1999], as well as a daily catch limit of 40 kg per fisher. Annually, harvest is reported from a small proportion (less than 20 per cent) of the total number of beaches from which harvest is permitted. From 2010–11 to 2015–16, catches increased from 9 t to 176 t (26 per cent of historical peak), likely resulting from these management measures.

The primary indicators for biomass and fishing mortality are commercial catch and catch rate (i.e. catch per unit effort, CPUE, kg.day⁻¹). Statewide catches and catch rate have generally increased since 2010–11. For the three main regions of the fishery (Region 1, adjacent the Queensland border and Regions 3 and 4, located to the south), annual catches have increased and annual catch rate has been stable since 2010–11. In each of these regions, from 2012–13 to 2017–18, monthly catch rate has generally remained stable across the six month fishing season. For the years in which simple stock depletion models were applied (i.e. when within-season declines in catch rate were apparent), estimated exploitation rates in Region 1 and Region 4 were < 30 per cent [Johnson 2018]. In Region 3, which includes the greatest number of accessible beaches and highest number of endorsed fishers, within-season exploitation rates ranged from 28–73 per cent. Estimates of state-wide recreational catch are available from the National Recreational and Indigenous Fishing Survey and New South Wales state-wide surveys completed in the 2000–01 and 2013–14 financial years, respectively [Henry and Lyle 2003, West et al. 2015]. The estimated recreational catch in 2000–01 was 7 t, and in 2013–14 was 1.3 t, representing less than one per cent of total combined recreational and commercial harvest in each survey period. In 2000, recreational harvesting of Pipi for human consumption was prohibited, restricting recreational fishers to harvesting for bait only. Although there are no state-wide estimates of Indigenous harvest, onsite interviews of Indigenous fishers in the Tweed Heads region (Northern New South Wales) estimated an annual Pipi harvest in that region of 3 056–7 380 individuals [Schnierer 2011]. Indigenous fishers harvest pipi throughout New South Wales.

The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, 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, Pipi in New South Wales is classified as a **sustainable stock**.

South Australia Indigenous Australians have occupied the Coorong region in south eastern South Australia for at least 16 000 years and have harvested Pipi (also known as Goolwa Cockles in South Australia) for the past 10 000 years [Godfrey 1989]. Middens in the vicinity of the Murray River mouth in South Australia are composed almost exclusively of adult Pipi shells [Luebbbers 1978].

The commercial fishery for Pipi has been managed under an individual transferable quota system with an annual total allowable commercial catch (TACC) since 2007–08, following fishery-dependent information indicating that Pipi had declined during the mid to late 2000s [Ferguson 2013, Ferguson and Mayfield 2006, Ferguson et al. 2015]. Fishers with quota for Pipi from the Lakes and Coorong Fishery (LCF) and the Marine Scalefish Fishery (MSF) operate mainly on the ocean beaches of Youngusband Peninsula, adjacent to the

Coorong. Since 2012, the TACC has been determined under the harvest strategy for Pipi, which is described in the *Management Plan for the Lakes and Coorong Fishery* [PIRSA 2016] and a minimum legal length of 35 mm is in place to allow spawning to occur at least once before recruitment to the fishery [Ferguson 2013]. The recreational and commercial Pipi fisheries are spatially separated onto beaches that are, respectively, west and east of the River Murray mouth. Estimates of recreational catch range between 5 t and 33 t (whole weight) per year, reflecting between 0.8 and 7 per cent of the combined recreational and commercial state-wide catch [Giri and Hall 2015, Jones 2009, Jones and Doonan 2005].

The most recent stock assessment was completed in 2017 and reported up to the conclusion of the 2015–16 season [Ferguson and Hooper 2017]. The primary measures for biomass and fishing mortality are fishery-independent estimates of mean annual relative biomass [Ferguson et al. 2015] and population size structure. From 2009–10, increasing mean annual relative biomass and increasing complexity of size structures indicated recovery of the resource [Ferguson 2013, Ferguson et al. 2015]. In 2016–17, the relative biomass was 57 per cent above the previous five year average (2011–12 to 2015–16) and the highest value on record. Pre-recruits were present (52 per cent) in population size structures. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, 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, Pipi in South Australia is classified as a **sustainable stock**.

Victoria

The presence of their shells in middens is evidence that Pipi was harvested historically by Indigenous communities along the Victorian coastline for the past 10 000 years [Godfrey 1989]. Victorian traditional owners with a positive native title determination have rights under the Commonwealth's *Native Title Act 1993* to hunt, fish, gather and conduct other cultural activities for their personal, domestic or non-commercial communal needs, and their rights, including access to fish resources, are also recognised under Victoria's *Traditional Owner Settlement Act 2010*.

Until 2010–11, the commercial Pipi fishery was directed towards the supply of bait, and fewer than five commercial licences were generally active in any one year, with maximum landings about 2 t per annum. A rapid and substantial increase in commercial Pipi catch in Discovery Bay in 2012–13 (around 90 t) prompted a spatial closure in the west of the State, which was extended to the Victorian–New South Wales border in 2014 (four areas where 100 kg or more had been caught since 2012 remained open). In addition to the closures, a 35 mm minimum size limit and the requirement to prior and post-report fishing activity were introduced. These arrangements remained in place until 2017, when new arrangements, which included re-opening the coast to fishing but limiting the fishery to eight licence holders, daily catch limits, limited fishing days per month and upper catch limits for two areas in Discovery Bay, were introduced. The size limit and the requirement to prior and post-reporting of fishing activity were maintained.

These management arrangements will remain in place until the Victorian Pipi Fishery Management Plan (declared in 2018) is effected through regulation change.

Most recreational Pipi fishing occurs in Venus Bay, although anecdotal evidence suggests increasing numbers of recreational fishers are visiting Discovery Bay and elsewhere. Recreational fishers harvest Pipi for food and bait, primarily in the summer months. The impacts of recreational harvesting are thought to be localised around beach access points [Lewis et al. 2012]. No other information is

available on catch rates, fishing mortality rates or biomass estimates.

The University of Melbourne is finalising a project on the Pipi resource in Venus Bay in 2018 and commencing a project on Pipi in Discovery Bay in 2019. This research will provide valuable information for managing fisheries in both areas.

At present, there is insufficient information available to confidently classify the status of this stock.

On the basis of the evidence provided above, Pipi in Victoria is classified as an **undefined stock**.

BIOLOGY

Pipi biology [Ferguson 2013, King 1976, Murray-Jones 1999]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Pipi	South Australia: 3–5 years, 61 mm SL New South Wales: 1–2 years, 75 mm SL	South Australia: ~10 months, 28 mm SL New South Wales: 1 year, 37 mm SL

DISTRIBUTION



Distribution of reported commercial catch of Pipi

TABLES

Commercial Catch Methods	New South Wales	South Australia	Victoria
Hand collection	✓		
Hand held-Implements			✓
Net			✓
Rake		✓	
Unspecified			✓

Fishing methods			
	New South Wales	South Australia	Victoria
Commercial			
Hand collection	✓		
Hand held- Implements			✓
Rake		✓	
Unspecified			✓
Indigenous			
Hand collection	✓	✓	✓
Recreational			
Hand collection	✓	✓	
Hand held- Implements			✓
Rake		✓	
Management Methods			
	New South Wales	South Australia	Victoria
Commercial			
Bag limits			✓
Catch limits		✓	
Effort limits			✓
Gear restrictions	✓	✓	✓
Licence			✓
Limited entry	✓	✓	✓
Size limit	✓	✓	✓
Spatial closures	✓	✓	✓
Temporal closures	✓	✓	
Trip limits	✓		
Indigenous			
Bag limits	✓		
Customary fishing permits			✓
Native Title	✓	✓	
Section 37 (1d)(3)(9), Aboriginal cultural fishing authority	✓		
Recreational			

Bag limits	✓	✓	✓
Gear restrictions	✓	✓	✓
Licence			✓
Possession limit	✓	✓	
Seasonal closures		✓	
Size limit		✓	
Spatial closures		✓	✓

Active Vessels	New South Wales	South Australia	Victoria
	52 Fishing Business in EGF,	13 Licences in LCF MSF,	1 Licence Holders in BF, 9 Licence Holders in OF,

EGF Estuary General Fishery(NSW)

BF Bait Fishery(VIC)

OF Ocean Fishery(VIC)

LCF || MSF Lakes and Coorong Fishey, Marine Scale Fishery(SA)

Catch	New South Wales	South Australia	Victoria
Commercial	175.964t in EGF,	539.081t in LCF MSF,	34.069t in OF,
Indigenous	Unknown	Unknown	Unknown (No catch under permit)
Recreational	1.3 t	22.9 t (in 2000), 5 t (in 2007), 33 t (in 2013)	Unknown

EGF Estuary General Fishery (NSW), BF Bait Fishery (VIC), OF Ocean Fishery (VIC), LCF || MSF Lakes and Coorong Fishey, Marine Scale Fishery (SA),

Active Vessels Because Pipi are collected from beaches, 'vessels' is not 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 Pipi for sale.

Victoria - Indigenous (management methods) In Victoria, regulations for managing recreational fishing may not apply to fishing activities by Indigenous people. Victorian traditional owners may have rights under the Commonwealth's *Native Title Act 1993* to hunt, fish, gather and conduct other cultural activities for their personal, domestic or non-commercial communal needs without the need to obtain a licence. Traditional Owners that have agreements under the *Traditional Owner Settlement Act 2010* (Vic) may also be authorised to fish without the requirement to hold a recreational fishing licence. Outside of these arrangements, Indigenous Victorians can apply for permits under the *Fisheries Act 1995* (Vic) that authorise fishing for specific Indigenous cultural ceremonies or events (for example, different catch and size limits or equipment). There were no Indigenous permits granted in 2017 and hence no Indigenous catch recorded.

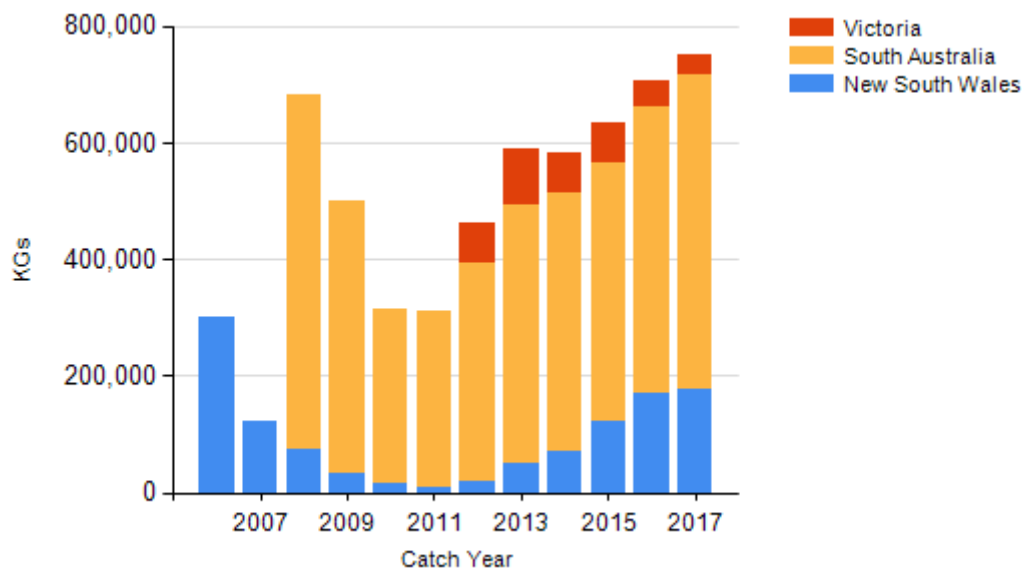
New South Wales – Indigenous (management methods) (a)

Aboriginal Cultural Fishing Interim Access Arrangement—allows an Indigenous fisher in New South Wales to take in excess of a recreational bag limit in certain circumstances; for example, if they are doing so to provide fish to other community members who cannot harvest for themselves, (b) The Aboriginal cultural fishing authority is the authority that Indigenous persons can apply to take catches outside the recreational limits under the *Fisheries Management Act 1994* (NSW), Section 37 (1d)(3)(9), Aboriginal cultural fishing authority, (c) In cases where the *Native Title Act 1993* (Cth) applies, fishing activity can be undertaken by the person holding native title in line with S.211 of that Act, which provides for fishing activities for the purpose of satisfying their personal, domestic or non-commercial communal needs. In managing the resource where native title has been formally recognised, the native title holders are engaged with to ensure their native title rights are respected and inform management of the State's fisheries resources, and (d) Aboriginal cultural fishing authority - the authority that Indigenous persons can apply to take catches outside the recreational limits under the *Fisheries Management Act 1994* (NSW), section 37(1)(c1) Aboriginal cultural fishing authority.

South Australia and Victoria - Commercial (catch) Catches from the MSF in South Australia, and the BF and OF in Victoria cannot be reported separately for confidentiality reasons as there are fewer than five licences.

South Australia – Indigenous (management methods) In South Australia, regulations for managing recreational fishing may not apply to fishing activities by Indigenous people. South Australian traditional owners may have rights under the Commonwealth's *Native Title Act 1993* to hunt, fish, gather and conduct other cultural activities for their personal, domestic or non-commercial communal needs without the need to obtain a licence.

CATCH CHART



Commercial catch of Pipi - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

ENVIRONMENTAL EFFECTS on Pipi

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