

Wavy Periwinkle (2023)

Lunella undulata



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
New South Wales	New South Wales	Negligible	Catch history
Victoria	Victoria	Undefined	
Tasmania	Tasmania	Sustainable	Catch rates, size structure
South Australia	South Australia	Undefined	

STOCK STRUCTURE

The Wavy Periwinkle, *Lunella undulata*, is a moderately sized marine gastropod found on exposed reef and boulder habitat in shallow temperate waters (0–20 m) of southern and eastern Australia. They grow to a maximum length of around 65 mm and are distributed from Hopetoun, Western Australia to Coolangatta, Queensland, and around Tasmania [Edgar 2012]. Wavy Periwinkles form large aggregations in shallow coastal waters. The Wavy Periwinkle has a protracted spawning period from October to May and may undergo incomplete spawning (retain unshed eggs until the next spawning event) [Underwood 1974; Keane et al. 2014]. They have short-term lecithotrophic larvae (planktonic larvae which live off the yolk supplied by the egg), and it is assumed that the larval duration is about five days, similar to other species within the taxon [Underwood 1974]. Stock structure is unknown, however a study of genetic diversity across southern Australia is underway.

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

STOCK STATUS

New South Wales Stock status for the New South Wales Wavy Periwinkle stock is reported as **negligible** due to historically low catches in this jurisdiction and the stock has generally not been subject to targeted fishing. The Wavy Periwinkle is one of a number of species defined within the New South Wales Sea Urchin and Turban Shell (SUTS) Fishery. Prior to 2009–10 catches of species of Turban Shells (including Wavy Periwinkle) were aggregated into a group of species defined as 'Turban Shell – other'. Since 2009–10 the annual reported commercial catch of Wavy Periwinkles has averaged about 0.1 t (range 0–0.4 t p.a.) [Chick 2022]. Recreational and Indigenous catches of Wavy Periwinkles (or other Turban Shells) in New South Wales are unknown. Surveys of recreational and Indigenous catches have either not surveyed any harvest of Turban Shells [Murphy et al. 2022], not specified the species or species group [West et al. 2015] or reported them into a broader 'shells - other' category [Henry and Lyle 2003]. Fishing is unlikely to be having a negative impact on the stock.

South Australia The South Australian fishery for Wavy Periwinkle has operated since 2001. Fishing occurs throughout the year with product sold on domestic and international markets [PIRSA 2018]. Prior to July 2018, fishing was permitted through Ministerial exemption and is now managed using exploratory and developmental fishing permits with fishing restricted to hand collection by a small number of fishers [PIRSA 2018]. Annual catches (confidential) were stable at a low level for 14 years to 2018–19, before declining to 2020–21. The recent trend in catch was reflected in the trend for effort (hours) which, during 2017–18 to 2019–20, declined to less than 15% of the level in the previous decade, partly due to fewer active fishers. The commercial catch rate increased from the early years of the fishery to a peak in 2012–13, then declined to approximately 25% below the most recent ten-year average in 2019–20. There were insufficient data to estimate catch rate in 2020–21. Mean weight (g) of landed Periwinkle was stable throughout most of the history of the fishery but was 11% below the recent ten-year average 2020–21. There is no published assessment of Wavy Periwinkle, and 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. These limitations prevent 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, Wavy Periwinkle in South Australia is classified as an **undefinedstock**.

Tasmania The harvest strategy for Wavy Periwinkles in Tasmania in the Commercial Dive Fishery policy document [DPIPWE 2005, 2011] uses catch rates and size structure as performance indicators for the fishery. Trigger points for catch rates are reached if there is a decline of 20% in each of two consecutive years or 35% in a year. The fishery is managed by both input and output controls including limited entry, a total allowable commercial catch of 54 t split into five zones. A 45 mm size limit has been in place since 2014 which allows populations to spawn twice before entering the fishery [Keane et al. 2014].

Catches in the fishery since the introduction of a management plan in 2005 averaged 20.7 tonnes (t) between 2006–14, and 40.0 t between 2015–22. The highest catch recorded was 43.4 t in the 2021–22 season. State-wide catch rates in this latter period of increased harvest have varied between 59.4 and 76.3

kg/hr, with catch rates in the 2021–22 season being 69.1 kg/hr and catch cap areas to try and minimize local depletion. Concerns of localised depletion within zones by fishers led to catch caps within zones and has helped to facilitate the spatial spread of catches. GPS loggers on fishing vessels were made compulsory from the 2022–23 season, with a new program established to incorporate these spatial data into a stock assessment: FRDC 2022/039: *Developing spatial based assessment methodologies and tools for small scale dive fisheries: Case study of the Tasmanian Commercial Dive Fishery*. 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 (robust size limit and stable catch rates), Wavy Periwinkle in Tasmania is classified as a **sustainable stock**.

Victoria

Historically catches were low in this jurisdiction and there was a general lack of targeted fishing until 2018 when the fishery was split into three zones and three General (Commercial) Permits were allocated to each. The permits allow several other gastropod species to be taken, depending upon the zone. The number of permits, renewable annually, has been held constant, but some operators have changed between years with reallocation of inactive permits. Each permit has a catch cap of 5 t per annum, a minimum annual effort requirement of 10 days, and a 30 mm minimum shell size limit applies throughout the State.

Confidentiality provisions preclude full disclosure of catches for the period 2000–2017 but catches since then have generally been small (5–7 t) until 2021–22 when the catch almost doubled to 13 t (VFA 2022). Most of the Wavy Periwinkle taken during the past 5 years were taken from the Western Zone accounting for 84% of the statewide aggregate catch. Four divers operating in different years on the three permits allocated for the Zone fished for a cumulative 285 days during 2018 to 2021–22, with two of these divers who fished in tandem responsible for 92% of this effort. The remainder of the catch in the Western Zone during 39 fishing days was retained by a single Southern Rock Lobster fisher taking periwinkles which had attached to pots. The balance of the Statewide catch during the past 5 years was taken by 3 permit holders operating in each of the Central and Eastern zones.

Catch rates varied considerably among the 9 permit holders from 2–292 kg/day, but the most prolific divers were remarkably consistent over the 5-year period each averaging around 125 kg/day. The relationship between catch rate and biomass is unknown and interpretation may be confounded when effort is compromised by concurrently taking of other gastropod species.

Recreational catch is unknown and there is no size limit, but daily bag limits of 5 litres whole or 1 litre shucked apply, and Wavy Periwinkle cannot be taken from waters shallower than 2 m.

There's been no mapping of the distribution or surveys of abundance of Wavy Periwinkle in Victoria since the permits were introduced five years ago and the catch and effort data are insufficient to support an assessment of the stocks. Nevertheless, Wavy Periwinkle are widely distributed among nearshore reefs throughout Victoria and appear to be abundant. The stock has not previously been identified as overfished, and catches are low when compared with other exploited invertebrates inhabiting similar reef habits e.g., abalone and urchins.

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There is no published assessment of this species, and 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.

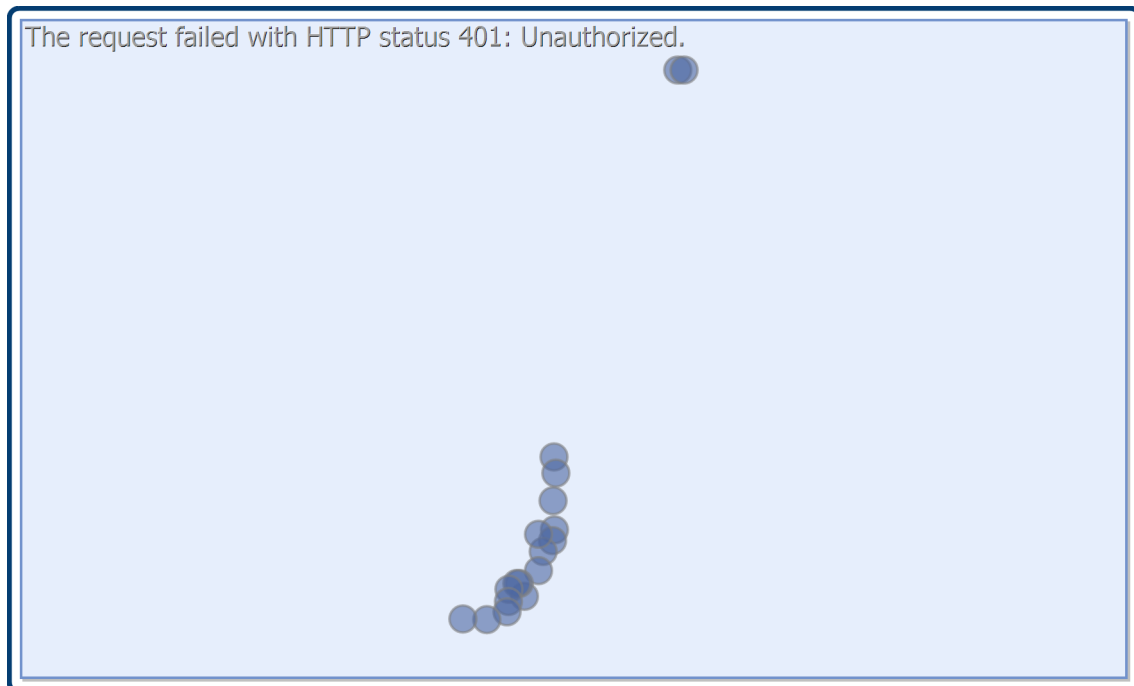
On the basis of the evidence provided above, Wavy Periwinkles in Victoria is classified as an **undefined stock**.

BIOLOGY

Wavy Periwinkle biology [Keane et al. 2014]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Wavy Periwinkle	10 years, 65 mm TL	23–26 mm TL

DISTRIBUTION



Distribution of reported commercial catch of Wavy Periwinkle

TABLES

Fishing methods	New South Wales	South Australia	Tasmania	Victoria
Commercial				
Diving	✓	✓	✓	✓

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Traps and Pots				✓
Recreational				
Hand collection	✓	✓	✓	✓

Management Methods				
	New South Wales	South Australia	Tasmania	Victoria
Commercial				
Catch limits				✓
Effort limits				✓
Gear restrictions	✓	✓	✓	
Limited entry	✓	✓	✓	✓
Marine park closures	✓	✓	✓	✓
Size limit			✓	✓
Spatial closures	✓		✓	
Spatial zoning			✓	
Total allowable catch			✓	
Recreational				
Area restrictions				✓
Bag and possession limits	✓			
Bag limits			✓	✓
Gear restrictions	✓	✓	✓	
Licence	✓			✓
Marine park closures	✓	✓	✓	✓
Spatial closures	✓			

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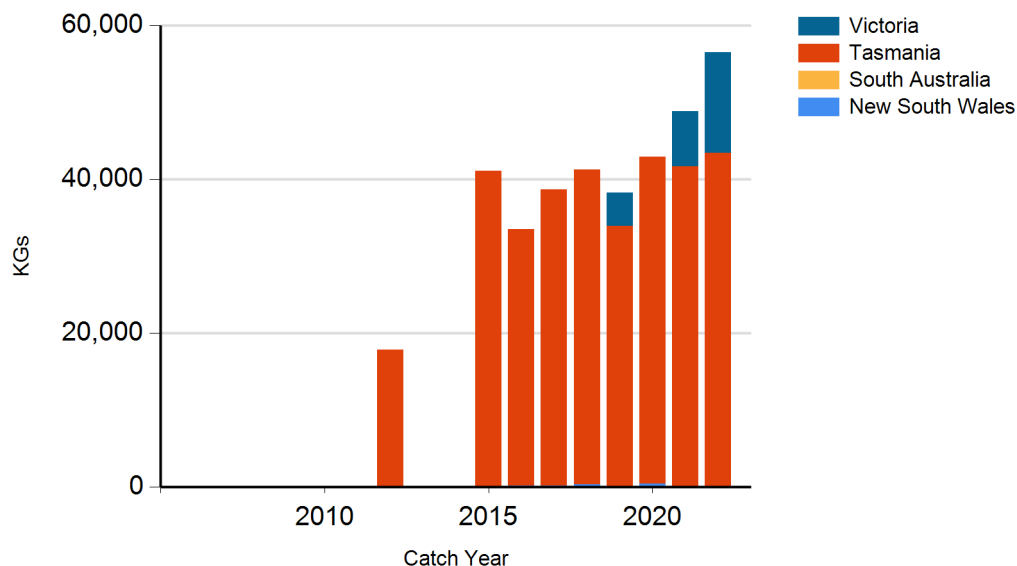
Catch	New South Wales	South Australia	Tasmania	Victoria
Commercial	0.001 t	0 t	43.4 t	13.1418 t
Indigenous	Unknown	Unknown	Unknown	Unknown
Recreational	Unknown	Unknown	Unknown	Unknown

New South Wales – Indigenous (Management Methods).

<https://www.dpi.nsw.gov.au/fishing/aboriginal-fishing>

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. Native title holders are also exempt from the need to obtain a recreational fishing licence under the provisions of the Commonwealth’s *Native Title Act 1993*.

CATCH CHART



Commercial catch of Wavy Periwinkle - note confidential catch not shown

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