Empty *Hyridella narracanensis* shell
Image © Michael Klunzinger

TASMANIAN THREATENED SPECIES LISTING STATEMENT

Hyridella narracanensis

Narracan corrugated mussel

Scientific name: ***Hyridella narracanensis*** (Cotton & Gabriel, 1932)

Common name: Narracan corrugated mussel, smooth almond shell, southern river mussel

Group: Invertebrate, Mollusca, Bivalvia, Unionida, **family Hyriidae**.

Status: *Threatened Species Protection Act 1995*: **endangered**

Environment Protection and Biodiversity Conservation Act 1999: **Not listed**

IUCN Red List: **Near Threatened**

Distribution: Endemic status: **Not endemic to Tasmania: Native to Tasmania and Victoria**

Tasmanian NRM region: **North**

Tasmanian IBRA regions: **Ben Lomond, Furneaux**

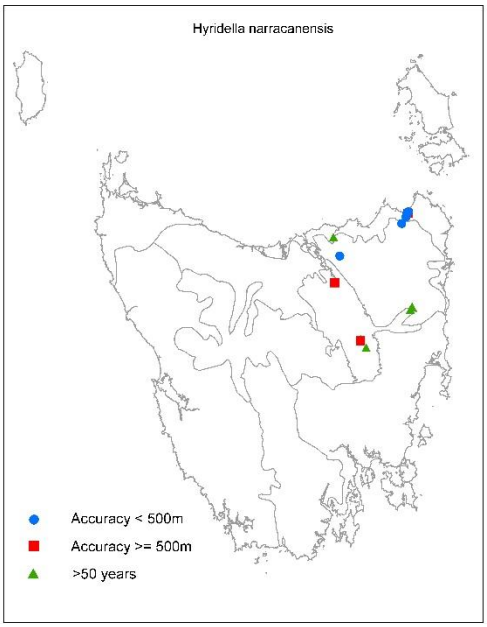

Figure 1. The distribution of *Hyridella narracanensis*, showing IBRA regions, within Tasmania.

Plate 1. *Hydridella narracanensis* holotype.
Image © Julie Ponder.

Tasmania

SUMMARY: *Hyridella narracanensis* is a small freshwater bivalve (< 60 mm) occurring across southeastern Australia, including north-eastern Tasmania. In Tasmania, the species has a narrow range, currently known only in the Boobyalla and Little Boobyalla Rivers and in a tributary of the Pipers River, although historical records show a wider distribution throughout the Tamar River basin. The species also occurs in low abundance in isolated populations in Victoria and southeast South Australia.

The principal threats to *H. narracanensis* are habitat loss, fragmentation and degradation from agricultural land usage and legacy impacts from mining.

Management objectives for *H. narracanensis* are to improve habitat protection and condition around known populations.

IDENTIFICATION AND ECOLOGY

Hyridella narracanensis is a small (maximum length approximately 60 mm) freshwater mussel. The species has an almond shape and a strong hinge. The shell has a slightly curved dorsal margin which is obliquely truncate posteriorly, but has a strongly curved ventral margin, so that the posterior end of the shell is pointed (acuminate). The surface of the shell is smooth with a well-developed posterior ridge, and young shells possess a series of fine, v-shaped ridges around the beak (McMichael and Hiscock 1958). The outer layer of the shell (periostracum) colour varies from olive tan in smaller specimens to a dark purple, brown in adults (Plate 1).

The glochidium larva of this species is orbicular and has two sharp, relatively long hooks on either valve, separated by a cutting blade. Glochidia are released from adult females as white to tan clusters (conglutinates), which loosely resemble fish prey items such as other macroinvertebrates, which is likely to attract potential fish hosts. (Klunzinger et al. 2023).

There is currently no information published on the reproductive biology of *H. narracanensis*, but presumably adults are gonochoristic (individuals are either male or female) and the life cycle is likely to be similar to other species of Australian freshwater mussels (Walker et al. 2014). Reproduction occurs in spring and summer and mature larvae are known to be released around December (Klunzinger et al. 2023). Released glochidia parasitise fish for a short period during which they metamorphose into juvenile mussels before dropping to the stream bed.

Age estimates have not been determined for *H. narracanensis*, although this work is underway (Klunzinger et al. unpublished data). Other Australian freshwater mussels reach maturity at 4–6 years of age and live for at least 40–50 years (Klunzinger et al. 2014, Herath et al. 2019). A species closely related to *H. narracanensis*, *Hyridella glenelgensis* from Victoria, has been found to live for at least 15–20 years (Klunzinger and Jones, unpublished data), so *H. narracanensis* may have a similar lifespan.

Like other Australian freshwater mussels, *H. narracanensis* is a filter feeder, dwelling in the surface sediments of streams. The species lacks a byssus (filaments for attachment to substrates) and so feeds on particulate matter in the water column. The species is relatively sedentary, and although the species may move through sediments freely, daily and seasonal movement patterns are unknown.

Survey techniques

There are no published agreed survey guidelines for *Hyridella narracanensis*. Survey guidelines for the closely related Glenelg River mussel (*Hyridella glenelgensis*) specify that 'brailing' (feeling through sandy muddy sediments for shells) searches in sediment for shells is the most effective method for finding freshwater mussels (DCCEEW n.d., Playford and Walker 2008, Raadik et al. 2022).

H. narracanensis has been surveyed by visually searching for shells deposited onto the banks or on emergent aquatic vegetation and in-stream structures such as logs or boulders in freshwater streams. Additional techniques have involved a combination of visual observation (using a mask and snorkel or from the water surface) and brailing searches (Klunzinger and Jones, unpublished data). The application of environmental DNA (eDNA) should be considered in efforts to detect this species as this technology has considerable potential for detecting rare or cryptic taxa.

Confusing species

There are no species that may be confused with *H. narracanensis*. In Tasmania, *H. narracanensis* is easily distinguished from *Velesunio moretonicus* (Reeve 1865), the only other species of freshwater mussel occurring in the state, primarily by shape, size and shell texture. *V. moretonicus* is ovate with a more rounded posterior shell margin, whereas *H. narracanensis* has an almond shape and distinctive beak sculpturing in juveniles which is absent in *V. moretonicus* (Ponder et al. 2024). Adult specimens of the two species may also be distinguished by maximum shell length: *H. narracanensis* reaches a maximum length of 60 mm, whereas *V. moretonicus* has a maximum length of up to 105 mm, although care must be taken to ensure that juvenile *V. moretonicus* are not confused with adult *H. narracanensis* based solely on shell length (Ponder et al. 2024).

DISTRIBUTION AND HABITAT

Hyridella narracanensis occurs in low abundance in Victoria, southeastern South Australia and Tasmania (FFG SAC 2022, Plate 3). In Tasmania, the species occurs rarely (Jones 2025). The current distribution of *H. narracanensis* is restricted to an area of approximately 34 km^2 in the Piper-Ringarooma River Basin in the northeast of the state but was once more widespread (based on historical data). Recent surveys of all known populations found evidence of the species only in the middle to lower reaches of the Boobyalla and Little Boobyalla Rivers, and one record in a tributary of the Pipers River (Jones 2025). At these locations, the number of live individuals was low, accompanied by many empty shells. Historical (pre-2015) area of occupancy extended southwest into the Tamar River Basin, but the species was not detected in this region by recent surveys of historical localities.

H. narracanensis inhabits actively flowing, perennial freshwater rivers and streams (Plate 2). The species thrives in areas with low levels of suspended sediment and where refuges are provided by woody debris and riparian vegetation (Jones 2025).

Plate 2. Habitat of *Hyridella narracanensis*. Image © Michael Klunzinger.

TASMANIAN POPULATION PARAMETERS

Number of subpopulations: 2
Number of locations (as per IUCN definition): 2
Extent of occurrence: 374.4 km^2 in Tasmania
Area of occupancy (as per IUCN criteria) = 34.0 km^2 in Tasmania
Number of mature individuals: Unknown

In Tasmania, the population size for *Hyridella narracanensis* is unknown, as are the sizes of mainland populations.

Recent surveys in Tasmania suggest a major decline in population numbers of the *H. narracanensis* in the state: the species has had an observed 98.9% reduction in extent of occurrence (from 4,978.6 km^2 prior to 2015 to 51.2 km^2 in 2024), a 42.9% reduction in area of occupancy (from 56 km^2 prior to 2015 to 32 km^2 in 2024). The species has an observed, inferred and suspected decline in quality of habitat, is suspected of being negatively affected by nutrient pollution and hypoxia and is found in only two locations with very low abundance. Furthermore, *H. narracanensis'* extent of occurrence and area of occupancy are inferred to be in continuing decline due to ongoing modifications to and declines in quality of habitat.

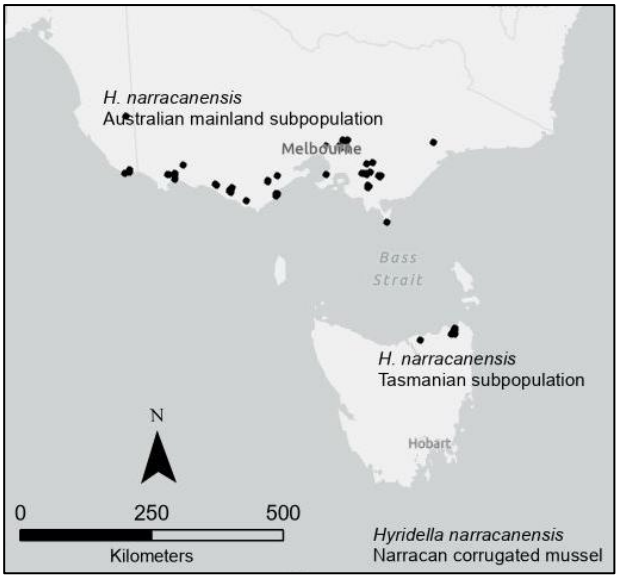

Plate 3. Distribution of *Hyridella narracanensis* in Australia (data from Atlas of Living Australia).

Table 1. Population summary for *Hyridella narracanensis* within Tasmania.

Subpopulation	Sites	Tenure	NRM region*	1:25 000 mapsheet	Year last (first) seen	Abundance
1 – Piper-Ringarooma River	Little Boobyalla River	Regional reserve, Cameron Regional Reserve	North	Monarch	2024	Unknown
	Boobyalla River,	Private Freehold	North	Monarch	2024 (2002)	Unknown
	Boobyalla River	Regional Reserve, Cameron Regional Reserve	North	Monarch	2015	Unknown
	Boobyalla River	Private Freehold	North	Monarch	2015	Unknown
	Boobyalla River	Private Freehold	North	Monarch	2005	Unknown
	Boobyalla River	Private Freehold	North	Monarch	2024 (2005)	Unknown
	Boobyalla River	Private Freehold	North	Monarch	2004	Unknown
	Piper River tributary	Private Freehold	North	Weymouth	2025	Unknown
2 – Tamar River Basin	Macquarie River, west of Campbell Town, central Tasmania, Australia.	Private Freehold	North	Campbell Town	1970 (absent in 2024)	Unknown
	Macquarie River, Tasmania (unlocalised)	Unknown	North	Unknown	1975 (absent in 2024)	Unknown

Subpopulation	Sites	Tenure	NRM region*	1:25 000 mapsheet	Year last (first) seen	Abundance
	South Esk River, under Ben Lomond Mountain	Unknown	North	Unknown	1955 (absent in 2024)	Unknown
	South Esk River, Cataract Gorge (unlocalised)	Public Reserve	North	Launceston	1988 (1900) (absent in 2024)	Unknown
	Liffey River at Bishopsbourne	Private Freehold	North	Cluan	1900 (absent in 2024)	Unknown

* NRM region = Natural Resource Management region

RESERVATION STATUS

Hyridella narracanensis has been observed in parts of the Boobyalla Conservation Area and the Cameron Regional Reserve. Approximately 55% of the confirmed observations are located on private freehold land.

CONSERVATION STATUS

Hyridella narracanensis is listed as endangered under the Tasmanian *Threatened Species Protection Act 1995*. The species is listed as Endangered under the Victorian *Flora and Fauna Guarantee Act 1988* and as 'Near Threatened' on the IUCN Red List.

In 2025, *H. narracanensis* was listed as endangered on the Tasmanian *Threatened Species Protection Act 1995*, meeting Criteria A2ce + B1ab(i, ii, iii, iv) + 2ab(i, ii, iii, iv) of the *Guidelines for Eligibility for Listing under the Threatened Species Protection Act 1995*. Specifically:

A2: an observed decline in population size of at least 50% in the last 10 years based on

c) a decline in area of occupancy, extent of occurrence and/or quality of habitat;

e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

B1: Extent of occurrence estimated to be less than 5,000 km^2 and;

B2: Area of occupancy estimated to be less than 500 km^2 with an observed, inferred and projected continuing decline in:

i) extent of occurrence
ii) area of occupancy
iii) area, extent and quality of habitat
iv) number of locations
v) number of mature individuals

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

The species is threatened primarily by the cumulative effects of habitat loss, fragmentation and degradation. As a sedentary species, *Hyridella narracanensis* is particularly susceptible to localised changes in habitat conditions as a result of human-induced disturbance or modification of streams and rivers, including the removal of riparian vegetation.

Fine sediment from agricultural activities: Fine sediment covering the stream bed and algal mat presence is evident in many surveyed streams passing through agricultural land. This is often combined with modified channels and accumulations of organic matter on the stream bed.

This threat has increased within the last ten years and has been observed during targeted field surveys and inferred from documented evidence of other freshwater mussel species from peer-reviewed publications. The likelihood of this risk is almost certain, the consequence major, and the trend continuing. This threat extends throughout the species' range, although to a lesser extent in conservation reserves.

Modification of stream beds from agricultural activities: Channelisation, water extraction and instream damming on agricultural land has been observed in *H. narracanensis'* range. This threat has been observed during targeted field surveys and inferred from documented evidence of other freshwater mussel species from peer-reviewed publications. The likelihood of this risk is almost certain, the consequence major, and the trend continuing. This threat extends throughout the species' range except in conservation reserves.

Livestock access to streams: Livestock (especially cattle) cause pugging and physical damage to shells; and introduce faeces and urine, reducing water quality and making bed sediments uninhabitable for juvenile freshwater mussels. Livestock degrade the instream habitat and trample stream banks, releasing fine sediments onto the stream bed. This is also likely to impact habitat quality for host fishes of the species. This threat has been ongoing following the introduction of livestock to Tasmania and has continued to occur within the last ten years to present. The threat was observed during targeted field surveys where freshwater mussels are rare or absent and is also documented from peer-reviewed publications. The likelihood of this threat is almost certain, its consequence major, and its trend continuing. The threat extends throughout the majority of private agricultural land where the species occurs.

Legacy effects from tin mining: Legacy impacts associated with sedimentation and sand slugs from past tin mining activities may have contributed to the loss of the species and are likely to threaten the species into the future.

Stream banks in the upper reaches of the South Esk River are severely eroded (often rising vertically 2–3 metres from the stream bed), and long sections are simplified, "flatbed" streams, providing few flow refuges. The middle reaches of the Great Forester River show evidence of past channel erosion and are in a recovery phase. The Ringarooma River catchment – one of only two locations in which the species is found – is also severely affected. The legacy of past mining activities persists with large sediment plumes/slugs moving through aquatic habitats which may have resulted in the species' disappearance from parts of its former range. The impacts of gold and tin mining, including severe erosion and sedimentation are well documented. Effects on freshwater mussel populations are inferred from published peer-reviewed literature (Beck et al. 2020). The likelihood of the threat's impact to the species in the past, present and future is almost certain, its trend continuing, and its consequence major to catastrophic. This threat occurs mostly in the northern and eastern regions of the species' historical range, and throughout the species' current range.

Climate change: The trend towards a warmer climate and changes to average precipitation levels may impact the quality and availability of habitat for *H. narracanensis*. Climate modelling for Tasmania indicates that periods of rainfall surpluses (wetter conditions) and deficits (drier conditions) are likely to increase in duration and intensity in the future (White et al. 2010). Prolonged periods of rainfall or flooding may exacerbate sedimentation or erosion of the species' habitat, while drought conditions may impact the species—which requires perennial streams—by reducing or depleting stream flow and degradation of riparian vegetation communities. The impact of climate change on *H. narracanensis* in Tasmania is inferred from regional climate modelling and documented evidence of the impacts of changed rainfall patterns on other freshwater mussel species from peer-reviewed publications (see Cushway et al. 2025).

The likelihood of this risk is possible, its consequence major, and it is likely to impact the species throughout its current range.

Non-specified chance events: The small size of the Tasmanian subpopulation exposes the species to a stochastic risk of regional extinction in Tasmania. This risk is inferred from the low number of observed individuals in the Tasmanian subpopulation, the restricted range of the species, and the ongoing nature of habitat modification. The likelihood of this threat is possible and its consequence major.

MANAGEMENT STRATEGY

Management objectives

The main objective for the recovery of *Hyridella narracanensis* is to decrease the risk of extinction by maintaining the integrity of habitat at known sites through appropriate land management.

What has been done?

Management plans: Within Tasmania, there are no current recovery plans in place for the *H. narracanensis*; however, this species has been named as a special value in relation to the Boobyalla River Catchment Water Management Plan (DPIW 2009, DPIPWE 2012).

Conservation on private land: Some landowners are proactively fencing off streams, providing off-stream watering points to exclude livestock, and creating filter strips to prevent fine sediments and organic pollution (e.g. animal waste) from entering the stream. In some situations, in-stream structures to stabilise the channel and speed recovery may be necessary.

Targeted surveys and monitoring: The number of mature *H. narracanensis* individuals is unknown, and difficult to assess for species like this. The extent of the species has also been found to have reduced significantly. Museum records and published literature indicate that the species once occurred within the South Esk River from the southern end of Ben Lomond National Park to Cataract Gorge; Liffey and Macquarie Rivers, and the Boobyalla River in the northeastern part of its range. Recent surveys (Klunzinger and Jones, unpublished data) failed to detect the species in South Esk, Liffey or Macquarie Rivers, nor was it found in Brid River, Brumbies Creek, Curries River, Great Forrester River, Little Pipers River, Meander River, or Pipers River. It was only found in the middle to lower reaches of the Boobyalla and Little Boobyalla River, and despite its presence there, the number of live individuals detected was low, with many empty shells. Subsequent to these surveys, a record in a small tributary of the Pipers River has been confirmed (Jones 2025).

Further research: Age estimates of the species, species distribution modelling to inform conservation, and phylogenetic analyses of the species in comparison with other Australasian Hyriidae are being conducted (Klunzinger et al. unpublished data). Additionally, an IUCN Red List conservation status assessment is being prepared, supported through an upcoming regional conservation assessment of Australia's freshwater bivalves in collaboration with the IUCN Red List Authority on Freshwater Bivalves and Mollusc Specialist Group.

What is needed?

- To prevent further habitat degradation – explore mechanisms/policies to protect streams from uncontrolled works in riparian areas.
- To reduce habitat disturbance on agricultural land – promote the development of an agricultural best practices management program or equivalent, including guidelines for protection of streamside buffers, water quality and flow.
- To avoid further population declines – protect habitat of known colonies, including by fencing off streams, providing off-stream watering points to exclude livestock, and creating filter strips to prevent fine sediments and organic pollution from entering the stream.

- To increase understanding of the ecology of the species – continue to conduct investigations of population biology and life history, including species distribution, ecological requirements, host fish use, and relative impacts of threatening processes.
- To improve protection of the species – provide information and extension support to relevant Natural Resource Management committees, local councils, government agencies, the local community and development proponents on the locality, significance and management of hyriid species and potential habitat.

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Prepared by: Threatened Species Section with Michael Klunzinger and Hugh Jones in 2025 under the provisions of the Tasmanian *Threatened Species Protection Act 1995*.

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Permit: It is an offence under Tasmanian legislation to collect, catch, damage, injure, destroy, or kill a threatened species listed under the *Threatened Species Protection Act 1995,* without a permit.

Version history

Version	Date	Author	Purpose/Change
1.0	20 April 2026	Threatened Species Section, Michael Klunzinger and Hugh Jones.	First version. Drafted in conjunction with the nomination for listing in 2025. Drafted by Evie Simpson (TSS), Michael Klunzinger and Hugh Jones. Reviewed and endorsed by the Threatened Species Scientific Advisory Committee at Meeting 91.