

Hanley's River Snail – *Notopala hanleyi*

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Threatened Species Unit



Figure 1: Hanley's River Snail shells (Photo: D. Gilligan)

Introduction

Hanley's River Snail is a freshwater snail that was once common and widespread in the Murray River catchment, including the Lachlan and Murrumbidgee Rivers. In the 1940s, the species was so common it supported collections of thousands of individuals for research purposes. However populations rapidly declined in the 1960s and 1970s and by the 1980s they were reduced to a handful of locations, probably as a result of weir building and other activities associated with river flow management. They are now virtually extinct throughout their natural range and living specimens have only been found in three locations in NSW.

In NSW, Hanley's River Snail is listed as a **critically endangered species**. There are heavy penalties for harming, possessing, buying or selling them, or for harming their habitat (see 'Legal implications').

Description

There are approximately 18 *Notopala* species found in Australia. Only three of these – *Notopala sublineata*, *Notopala hanleyi* and *Notopala kingi suprafasciata* occur in NSW. Prior to recent genetic and morphological analyses, the three species, as well as *Notopala alisoni* (found outside NSW), were all considered to be subspecies of *Notopala sublineata*.

Hanley's River Snail is a medium-sized (20-25 mm) freshwater snail with a round shell that ends in a conical spire. The outer shell is generally dark green but may also be greenish brown or dark brown, without banding. Morphological analyses show that shells of Hanley's River Snail can be distinguished conchologically from other species in the *Notopala* genus.

The body is similar to other snails but possesses a prominent snout and short eye stalks on the outside of the tentacles.

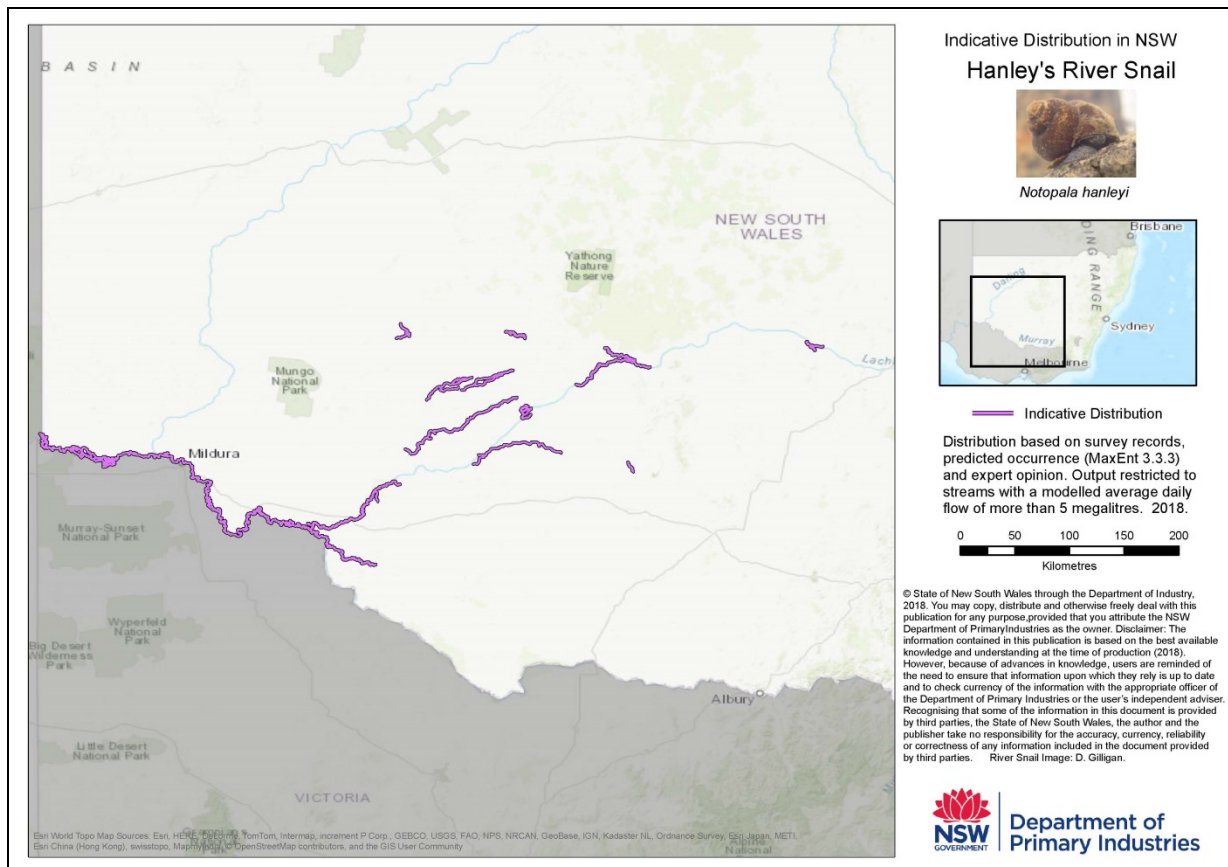


Figure 2: Indicative distribution of Hanley's River Snail

Habitat and ecology

- The species once occurred in flowing, well-oxygenated waters throughout the Murray River catchment.
- Artificially introduced hard surfaces now provide habitat for the species with populations being recorded as surviving in irrigation pipelines. The pipeline environment is thought to promote microbial production and organic accumulation, which is a highly nutritious food source for the species.
- The genus *Notopala* is characterised by females giving birth to live young rather than the more usual method for freshwater gastropods of laying eggs that hatch in an external environment.
- Females are sexually mature at 15-16 mm. Fertilisation is internal, and the young remain with the female until they are large enough to survive independently.
- The viviparous life history (bearing fully-developed live young) of Hanley's River Snail means that dispersal via drifting or by dislodged egg capsule is not possible and therefore the species has limited dispersal capabilities.
- Hanley's River Snail feeds on the bacteria and microflora associated with detritus.

Why is Hanley's River Snail threatened?

- Changes in the nature of the periphyton (biofilm) community as a result of altered flow regimes (principally weir and dam building). Hanley's River Snail is not able to thrive on the relatively low nutrient content provided by algae that results from reduced flow variability.
- Predation by Common Carp, or habitat degradation caused by these fish has been associated with the decline in Hanley's River Snail.
- Populations within the few remaining locations where it may still survive (irrigation infrastructure on the Murray River) are threatened by deliberate removal (using flushing chemicals) from some sites.
- Removal of large woody debris from rivers results in direct habitat loss for the species.
- The species has limited opportunity to reinvade its previous habitat. The construction of navigation locks on the Murray River in the 1920s and 1930s transformed the lower Murray River, altering the hydrology, hydraulics, sedimentation rates and biofilm composition.
- The lack of recent records of Hanley's River Snail in its natural habitat and the absence of living specimens in recent surveys indicate that the species has undergone an extremely

large reduction in population size and geographic distribution.

Conservation and recovery actions

- Continue to collect data on the presence/absence of Hanley's River Snail during incidental surveys.
- Protect the habitats known to support, or with the potential to support Hanley's River Snail populations.
- Support research into the habitat requirements and ecology of Hanley's River Snail and key threats to the species.
- Increase community awareness and support for recovery actions.
- Report any sightings of the species via the NSW DPI online form: www.dpi.nsw.gov.au/fisheries/species-protection/report-it
- A full list of strategies to be adopted for promoting the recovery of Hanley's River Snail is set out in the NSW DPI Priorities Action Statement www.dpi.nsw.gov.au/fisheries/species-protection/priorities-action-statement2

Legal implications

It is illegal to catch and keep, buy, sell, possess or harm Hanley's River Snail (or any other threatened species in NSW) without a specific permit, licence or other appropriate approval, and significant penalties apply. For critically endangered species, these penalties can include fines of up to \$220,000 and up to 2 years in prison.

There can also be significant penalties for causing damage to the habitat of a threatened species without approval, through actions such as dredging river beds, removing large woody debris and constructing barriers that block the free passage of fish.

Clearing that constitutes a routine agricultural management activity, and certain routine farming practice activities (other than clearing) are permitted, provided the activities are to the minimum extent reasonably necessary and all other relevant statutory approvals or authorities have been obtained.

The impacts of developments or activities that require consent or approval in accordance with the *Environmental Planning and Assessment Act 1979* must be assessed and considered by consent or determining authorities. Where such actions are likely to result in significant impact on a threatened species or its habitat, a detailed species impact statement must be prepared.

Strategies to be adopted for promoting the recovery of the Hanley's River Snail are set out in the NSW DPI Priorities Action Statement.

A [recovery plan](#) has been prepared in accordance with the provisions of the *Fisheries Management Act 1994* to promote the recovery of the species to a position of viability in nature.

Bibliography and further reading

Brazier, J. (1879) Description of a new species of *Vivipara*. *Proceedings of the Linnean Society of New South Wales* **3**: 221-222.

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Fisheries Scientific Committee (2016) *Notopala hanleyi* – Hanley's River Snail as a Critically Endangered Species.

Sheldon, F. and Walker, K. F. (1997) Changes in biofilms induced by flow regulation could explain extinctions of aquatic snails in the lower River Murray, Australia. *Hydrobiologia* **347**: 97-108.

For further information

See the NSW DPI website: www.dpi.nsw.gov.au

Contact the NSW DPI Threatened Species Unit:
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Figure 3: A Hanley's River Snail (Photo: D. Gilligan)