

Scientists are putting the freshwater mussel under the spotlight in a bid to learn more about this little-known creature.

## Piggyback on a fish: the marsupial freshwater mussel tells its tale

**A**round the same time as dinosaurs were diversifying, during the Triassic period, an ancient group of bivalve (meaning 'two-shelled') molluscs was moving from marine to freshwater environments. This order of freshwater mussel, known as Unionoida, is found on every continent apart from Antarctica, with more than 850 known species worldwide. The Australian family, Hyriidae, is made up of 18 species, with another 58 species of hyriid found in other parts of Australasia and South America.

### Marine versus freshwater mussels

Unlike their marine relatives—which bind themselves to reef platforms and jetty piers with attachment organs called byssi—freshwater mussels are free

moving. They use a muscular, tongue-like foot to drag themselves around and burrow into river sediments, setting themselves up to 'filter-feed' on tiny particles such as plankton, algae and other microorganisms. In this way, they help keep our freshwater lakes, rivers and streams clean and clear.

What separates the Unionoida from other bivalves is their distinctive larval form, known as 'glochidia'. Emerging from specialised pouches of the female's gills, known as 'marsupia', these larvae have a very limited ability to move and so colonisation of new areas can be tricky. Fortunately, they have adapted a clever way to get around. The glochidia use hooks on the edges of their shells to attach to the fins or gills of passing fish. These parasitic glochidia live on the fish for periods of weeks to months as

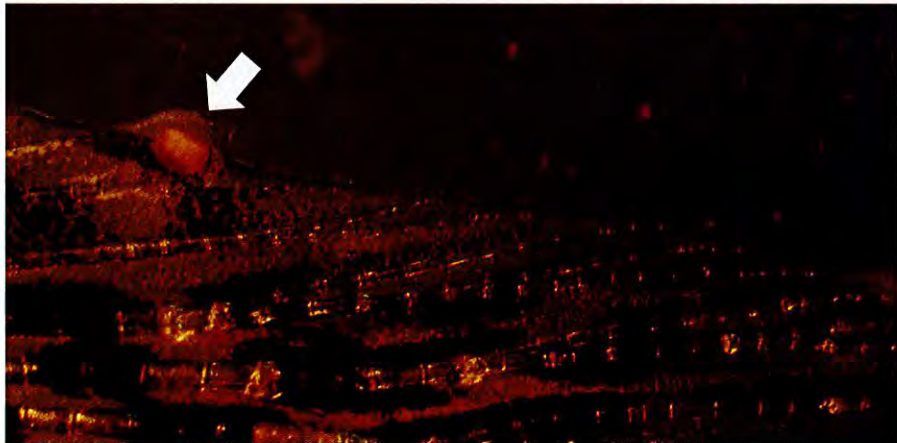
they metamorphose into their juvenile form, before dropping to the river bottom to begin life in the sediments.

Much of the biology and ecology of Australian freshwater mussels is still unknown. In Western Australia, almost no information is available for the five known species. Carter's freshwater mussel (*Westralunio carteri*) is restricted to south-western WA, with its historic range extending from Moore River in the north, to Kalgan River in the south. George Kendrick from the WA Museum documented a major decline in populations of Carter's freshwater mussel in the mid-to-late 1970s as a result of dryland salinity in the Avon River catchment. Results of a biodiversity survey of the WA agricultural zone showed that the mussel has declined more broadly





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across the inland south-west, probably also as a result of salinisation. This resulted in the species being listed as 'vulnerable' by the International Union for the Conservation of Nature and as a 'priority 4' species by the Department of Environment and Conservation, meaning it is in need of further study.

### Learning more

Recent work by Murdoch University researchers is attempting to answer several fundamental research questions about this species. They are seeking to understand what species of freshwater fish the glochidia attach to, their tolerance to salinity, their reproductive cycle, how fast they grow, how long they live, their current distribution, their population strongholds and where they have died out. This information will help in the protection of this obscure species.



**Above left** A pair of Carter's freshwater mussels from Beela Reserve, Brunswick River.

*Photo - Brett Vukelic*

**Top** An example of what a Carter's freshwater mussel looks like underwater, in Canning River, with filtering valves facing.

**Centre** The arrow indicates a larval form of Carter's freshwater mussel attached to the tail fin of a Swan River goby (*Pseudogobius olorum*).

*Photos - Michael Klunzinger*

**Above** A Carter's freshwater mussel from the fresh spring-fed stream of Yalyal Brook.

*Photo - David Morgan*

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- 46 Piggyback on a fish: the marsupial freshwater mussel tells its tale  
Studies into these little-known creatures reveal, among other things, a tendency for hitchhiking on fish.
- 48 Lessons learned since the Dwellingup fires  
Fire management has made huge advances since the early days.
- 56 Dry times ahead: the future for fauna of the Gngangara Mound  
New work investigates whether the animals of this area near Perth are declining along with the groundwater.

## Regulars

- 3 Contributors and Editor's letter
- 9 Bookmarks  
*Beyond the Edge*  
*Tempered by Fire*  
*Exploring Western Australia's natural wonders: national, marine and regional parks*
- 30 Feature park  
Geikie Gorge National Park
- 45 Endangered  
Shrublands on dry clay flats
- 62 Urban Antics  
Eucalypts ...

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23



35



48



10