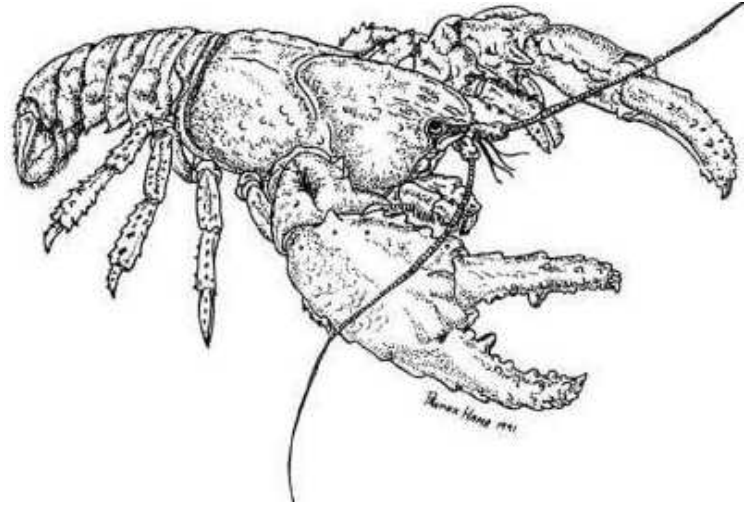


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An Endangered Crayfish: Can We Make A Difference?

by **Jim Nelson**



Engaeus granulatus (Photo by Peter Tonelli)

About The Species

Engaeus granulatus is a Tasmanian endemic burrowing crayfish occupying a restricted distribution in the Central North. The specific name of the crayfish refers to the prominent granulations found on its claws, which makes it one of our more easily identified *Engaeus* species. Within its distribution, the species seldom exhibits the vigorous colonies that are often typical of the other named species in the genus. For this reason as well as the fact that this crayfish often occurs in areas that are experiencing considerable development with

subsequent habitat loss, *E. granulatus* is probably even less secure than the other threatened species of *Engaeus* currently listed.

I carried out the field investigation followed by a Report in 2003 on behalf of the *Engaeus* Recovery Team that led to the Commonwealth nomination and listing of *E. granulatus* under the EPBC act as Endangered. It is my opinion that the listing under the category Endangered is in all probability a conservative one, which reflects our current lack of resources and tools to properly measure the vigour and population numbers of this species in order to perhaps meet the requirements for a Critically Endangered listing.

Unlike other threatened Tasmanian *Engaeus* species, individual *E. granulatus* colonies typically exhibit low numbers of burrows and crayfish. The listings for the other threatened *Engaeus* species are largely the result of their restricted distributions, while their actual individual colonies can often be quite vigorous. For instance, one buttongrass flat near Scottsdale has been calculated to carry a huge number of the very restricted and therefore Endangered *E. spinicaudatus*. *E. granulatus*, on the other hand, has a wider distribution range than the other currently listed threatened *Engaeus* species, but rarely seems to occur in large colonies. Instead, the species is usually found in small, scattered colonies containing relatively few burrows, where they appear to be just hanging on as mere remnants from perhaps former, more abundant times.

Preferred Habitat

It is my speculation after several years experience observing this species that *E. granulatus* was once a relatively wide spread and vigorous species which typically occupied areas of tea tree (*Melaleuca ericifolia*) swamps. Such swamps would have occurred in areas along the north coast from the Don River to the Dazzler Ranges extending south to Railton and Elizabeth Town. It is within this geographical area that there are now isolated, remnant colonies of the crayfish, but it is mainly within a few relatively intact tea tree swamps that strong colonies are now found showing similar vigour to most other *Engaeus* species. The species appears to particularly flourish in saturated areas with permanent water flowing through their habitat.

Devonport may once have been a significant habitat area for the species, because it very likely had many springs, streams and tea tree swamps. These were drained and cleared as the town grew and eventually became a city. The springs and streams have been diverted into storm drains that empty into the Don and Mersey Rivers.

Latrobe also appears to have been a population centre for the crayfish, as there are a number of small remnant areas where they still occur, even within the town. The Kings Creek which still flows above ground through the town into the Mersey River could more properly be called 'Kings Drain' these days. This creek which arises within the Latrobe Municipality is reputed to be the most polluted creek in the Mersey River catchment.

Areas with thriving populations of *E. granulatus* can be counted on one's fingers, and some of these are currently under threat from development. While it might be expected that a species listed as Endangered would be protected from development impacts (isn't that partly why we list species?), it has not actually been the case with this species, especially around the fast growing Latrobe area.

It is my opinion based on observation that the decline of the species relates directly to loss of preferred habitat. However, the species seems robust enough that it has managed to persist in areas where their habitat has been considerably disturbed (although I have watched them disappear from a few sites). This persistence seems to offer an opportunity to try to reverse the

process of habitat decline in order to assist the species, as well as test the seemingly obvious theory of habitat decline being responsible for population decline. Using small colonies to test habitat improvements would have the advantage of making the observations easier to carry out and assess.

Making Habitat Improvements

Assuming that habitat is a key factor relating to abundance isn't exactly rocket science, but actually re-creating tea tree swamps isn't a simple or even a practical matter in many situations. Therefore, sites need to be chosen where habitat improvements can provide useful clues of what might be done to assist population growth.

The ongoing monitoring and assessments of success or otherwise of the efforts could prove difficult, given a species which lives below ground, and for which we have no known way of accurately measuring the crayfish numbers that doesn't involve massive disturbance – thus defeating our purpose. Therefore, burrow activity (counting burrows before and after) must be used as a monitoring device. Where it can be determined that a cluster of burrow openings to the surface all appear to link to the same burrow, these will be counted as one burrow. It is accepted that counting burrow numbers is a crude monitoring device, but it should be able to show trends over the longer term.

When it comes to choosing the sites, a prime consideration needs to be easy accessibility for monitoring, as well as a reasonably small number of accessible burrows in order to assist counting and accuracy. Miandetta Park seems useful for this study. The population there is barely hanging on, with only 20 burrows counted. A spring in the Park currently feeds a pond, which overflows down the hill and eventually goes into a drain underground and to the Mersey River. The saturation zone of the outlet stream contains the only burrows of the crayfish, and they appear to be barely hanging on to the stream edges. The stream has actually become little more than a channel that flows into a storm drain. The Devonport Council's Bushland Coordinator, Phil Murray, has been keen to assist with a crayfish project at this site.

Phil has taken the initiative to bring in a small machine at Miandetta Park to create some saturation areas with small berms to slow the flow of the water and back it up to saturate more ground. These areas have been planted with suitable plants, and the Miandetta School has been involved in that aspect of the project. Involving the school has created a sense of local ownership, as well as an education experience for the students regarding their local endangered species. We have no idea how long it might take for the crayfish to discover this new potential habitat, but the frogs have moved in quickly.

At Latrobe, one of the better known populations of the crayfish is along Kings Creek, in a paddock where the stream crosses the highway at the roundabout at the Mersey Hospital. At this site a flood retention dam has now been built with Commonwealth funding. With encouragement and design input from the CNEN, a wetlands habitat was included in this dam proposal to benefit the crayfish, especially since over 100 burrows were to be covered by the dam wall. We drew up the plan for a wetlands area which was to be included as part of the Council's approval submission showing that measures were being taken to protect the species in order for construction to be approved by the DPIWE under endangered species requirements.

We drew up the plan for a wetlands to be included as part of the council's submission. This would demonstrate that measures (necessary for approval of construction works by DPIWE) were being taken to protect the species as required under the endangered species protection act.

However, the Latrobe Council Engineer, in his wisdom, later decided against the wetlands (without telling us or the DPIWE) due to the extra cost which the Council decided it would not fund, even though approval for the dam supposedly needed to include the environmental considerations for the listed crayfish (at least in theory, according to my understanding of threatened species legislation). Our objections, once we discovered the duplicity, led to a meeting on site with various government officials which determined that the flood retention dam needed to go ahead within a required time frame, and money for the wetland would have to be found later. At least the wetland idea didn't get totally removed from the picture! The Latrobe Council did manage to simply step away from taking any responsibility for the species, just as they have repeatedly done with other developments involving this species in their municipality.

Once the dam was built, there was practically no signs that more than a tiny number (4 burrows observed) of those crayfish covered by the dam wall survived, so the project practically wiped out one of the best populations. It did still leave a couple other active areas intact, but these were unable to benefit from any of the retention water from the dam wall as they were too far away.

It was left to the hard working Latrobe Landcare group to find funding for the Kings Creek wetland, which they successfully accomplished through the NRM. The wetland was constructed in spring 2007, and has already proved to be a popular spot for water birds and an amazing frog breeding habitat for 5 species. It remains to be seen what the crayfish will do, and the monitoring of any recovery there will necessarily be long term as the environment slowly changes back to being a flood plain as well as a wetland.

The Landcare group has now diverted the flood waters of Kings Creek back onto the original flood plain to be captured by the new dam wall to create a wetland. It is hoped that by planting out the diversion area, especially with *Melaleuca ericifolia*, that much of the pollution of the creek can be remediated through the plants grabbing many of the pollutants as nutrients. Since Kings Creek flows through Latrobe's industrial area, the Council has been advised by the state government that they will also need to monitor the water quality of the creek and enforce pollution control measures.

In terms of a monitoring program for determining the response of the crayfish to more saturation and the planting of suitable vegetation, areas are soon to be pegged out and burrows counted so that the burrow numbers can be monitored.

The Miandetta Park site and the new Kings Creek wetlands are experiments in habitat restoration with the intention of gaining an understanding as to whether or not habitat improvements can benefit the crayfish by increasing their numbers. Both involve saturating more ground area, and planting out with suitable plants. What we learn from these experiments will hopefully be transferred to further habitat works.

The Miandetta Wetlands

There is quite a different kind of proposed project at the Miandetta wetlands which already has a wonderful population of the crayfish. A recently built housing development now surrounds the wetlands, and storm drains have been put into the wetlands area. Storm drains can be nasty sources of pollution if the water is left untreated. Hydrocarbons coming from oil spills on the road and from the road materials themselves can be deadly sources of pollution, and runoff from garden fertilizers and sprays, as well as detergents from washing cars, driveways, etc., can all impact badly on water quality. We have proposed that a series of remediation ponds be established to deal with

the storm water, and that the local residents be informed as to ways to look after the wetlands and its endangered species.

The remediation ponds, located just above the wetlands, would use a series of suitable plants to clean the water before it enters the wetlands, where the additional water would be welcome as long as it is safe for the crayfish. In many places on the mainland of Australia, and in the United States, storm water is now required to be dealt with in this way. Tasmania is a long way behind the times in addressing its storm water pollution issues. This could be a small start.

The CNFN has recently agreed to put some money towards fencing off the Miandetta wetlands. Hopefully, this area can become a small showcase for a community working together in looking after our environment. Perhaps the CNFN will have a future excursion to these Latrobe and Miandetta sites if people are interested.

Anyone wishing to get involved in the crayfish projects, or who would like more information, please feel free to [contact me](#).

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