



How to identify *Engaewa* (burrowing crayfish) and *Cherax* (marron, gilgies, koonacs, yabbies)

Introduction

There are several species of burrowing crayfish within the *Engaewa* genus found in SW Australia. They are rarely seen and their presence is usually only apparent because of the presence of 'chimneys', piles of round pellets of soil which are deposited at burrow entrances. The Margaret River burrowing crayfish is listed as Critically Endangered at a Federal, State and International level. The area where this species is known to exist is very small and the threats are numerous. Declining water table, climate change, habitat degradation and fire management procedures are all threats to *Engaewa* populations.

Engaewa spend the majority of their life below ground and actively searching for them risks destroying their burrows and so should be avoided. They are occasionally seen on the surface but it is more likely that a crayfish on the surface will belong to the *Cherax* genus.

Crayfish within the *Cherax* genus, with the exception of the hairy marron, are not currently listed as threatened and are far more commonly encountered.

Burrows

All crayfish burrow and they do so for two reasons – to create a safe place to hide and to prevent drying out when they are unable to access surface water. *Cherax* use burrows as a temporary habitat. *Cherax* burrows are generally a single tunnel, often heading straight down or straight into the wall of a dam. The tunnels are larger than those of *Engaewa* due to their larger body size.

Engaewa live permanently in their burrows which consist of multiple tunnels, branching off from each other in numerous directions, creating a complex burrow system. They can be very deep, as *Engaewa* will dig down many metres to reach the ground water level in summer. In winter when the water level is high they may be found just below the surface. They rarely leave their burrow and have not been found in large water bodies such as dams, though they may be found in shallow puddles.



Photo 1: *Engaewa*; photo courtesy of Tribbeck Media

Chimneys

When crayfish construct a burrow they roll up pellets of soil and push them out of the top of the burrow, so creating 'chimneys' of soil. These chimneys can vary considerably depending on the species of crayfish, type of soil, weather conditions, time of year and vegetation.

Some chimneys may be very large and obvious: Photo 2 shows a chimney which is approximately 30cm high. More commonly burrows are hidden amongst dense vegetation and only become visible when the surrounding vegetation is removed, see Photos 3 & 4 below.



Photo 2: 30cm chimney

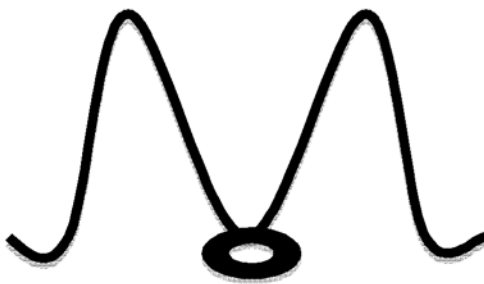


Photo 3: chimney hidden by dense vegetation

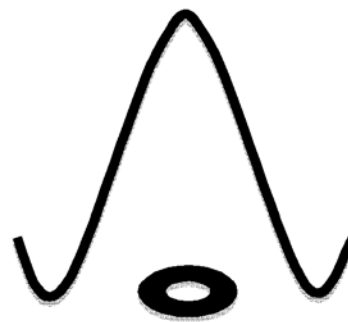


Photo 4: a recently slashed roadside revealing numerous chimneys

Generally *Engaewa* chimneys are larger than *Cherax* chimneys but composed of smaller pellets. *Cherax* more usually form a caldera around a central hole (as shown below) and if the chimney is found in a particularly winter wet area such as river or dam then it is likely to belong to *Cherax*.



Cherax chimney



Engaewa chimney

Chimneys are usually most evident during the wetter winter months when the crayfish are closer to the surface. Some sites may seem unlikely to have crayfish in summer but have obvious chimneys in winter.



Photo 5: site in summer



Photo 6: site in winter

Weathering of Chimneys

The action of weathering can change the appearance of chimneys and make them much harder to identify. The chimneys can lose their pelleted appearance, so that they look like piles of soil rather than 'chimneys', they may also be very small if it is a new burrow or if the previous chimney had been washed away, (Photo 7). Photo 8 is an example of a chimney which has eroded on one side, leaving pellets clearly visible on the other side.



Photo 7: small chimney pellets



Photo 8: action of weathering on pellets

Sometimes when chimneys are badly weathered the only clue to the presence of a burrow is a change in soil colour, as the soil which is expelled from a burrow is often a different colour to soil that is on the surface.



Photo 9: the difference in soil colour clearly visible against the paler surface

Differences in size/shape of crayfish

Should a crayfish be seen on the surface there are some important differences between *Engaewa* and *Cherax* which make identification of individuals possible:

- Claws: *Engaewa* claws open vertically whereas *Cherax* hold their claws horizontally. Many *Engaewa* also have one claw which is much bigger and stouter than the other; *Cherax* do not have this difference between claws.
- Tails: *Engaewa* have very small tails (smaller than their body), whilst *Cherax* tails are about the same size as their body. *Cherax* use their tails to move quickly through water, whilst *Engaewa* live underground and do not use their tails in the same way.
- Eyes: *Engaewa* have much smaller eyes than *Cherax*. Good eyesight is not a necessity for the *Engaewa*, again due to the majority of time spent underground.
- Colour: *Engaewa* are generally a pale colour with patches of blue/purple whilst *Cherax* are brown/black, though there is some natural variation which occurs within species.



Photo 10: *Cherax*



Photo 11: *Engaewa*; photo courtesy of Tribbeck Media

Further info

Quinton Burnham is a researcher from Edith Cowan University and is currently describing some new *Engaewa* species. These descriptions will soon be published, along with a simple method to tell the different species apart. Should you discover an *Engaewa* on the surface, the photos for identification can be sent to quinton.burnham@gmail.com. Please include a photo of the claws if possible, as they have important hairs for identification purposes.