



WARRAGUL BURROWING CRAYFISH - Recognising & Protecting Crayfish Habitat Fact Sheet No. 1, June 2016

The Ghost-Like Cray

A mysterious, pale critter lurks in an underground labyrinth of winding burrows beneath the floodplains of west Gippsland. It belongs to a group of specialised crayfish known as burrowing crayfish.

A tiny area in west Gippsland is home to a small, ghost-like, burrowing crayfish called the Warragul Burrowing Crayfish (*Engaeus sternalis*). It is thought to be one of the rarest species of burrowing crayfish in Australia. It is ghost-like because of its pale, creamy-white hues but also because up until 2011, it was elusive and only known to inhabit a small stretch of several kilometres of creekbank along Wattle and Labertouche Creeks in Labertouche. This species was originally collected from the “Warragul district” in 1889 and scientifically described in 1936 by Ellen Clark. However, it was not recorded again from Warragul until scientists stumbled across it in 2011 while hunting for the Giant Gippsland Earthworm (*Megascolides australis*), another famous Gippslander!

Due to their small range and threatening processes that lead to habitat loss, Warragul Burrowing Crayfish have special protection in Victoria and are listed under Victoria’s **Flora and Fauna Guarantee Act 1998**.

This means they are in need of conservation actions to help stop their decline.

What Is A Burrowing Crayfish?

The Warragul Burrowing Crayfish belongs to a group of crayfish called terrestrial or land crayfish because they rarely inhabit open waters. Instead, they spend most of their lives on land in underground burrow systems. While they are related to “yabbies” (smooth shelled crayfish that live in dams and open water) they belong to the genus *Engaeus*.

Even though you may never have seen a burrowing crayfish before, you will most likely be familiar with their architectural prowess in the form of simple or fancy soil chimneys surrounding the entrance to their burrows. These chimneys are built from balls of mud, and pop up in wet areas, especially during the rainy weather. They come in all sorts of shapes and sizes, and can be small and squat, fan shaped or tall and conical reaching heights over 40 cm.

What Do They Look Like?

Warragul Burrowing Crayfish are smaller than your typical “yabby” at about 70 mm in length. Their colour is usually creamy yellow but they may also present in shades of blue-grey hues. They can be distinguished from other burrowing crays by their small eyes and fine downy hairs covering their back (carapace) and claws (chela).

Warragul Burrowing Crayfish

Small eyes and fine, downy hairs



Warragul Burrowing Crayfish

Creamy Yellow Colour



Warragul Burrowing Crayfish

Blue-Gray Colour

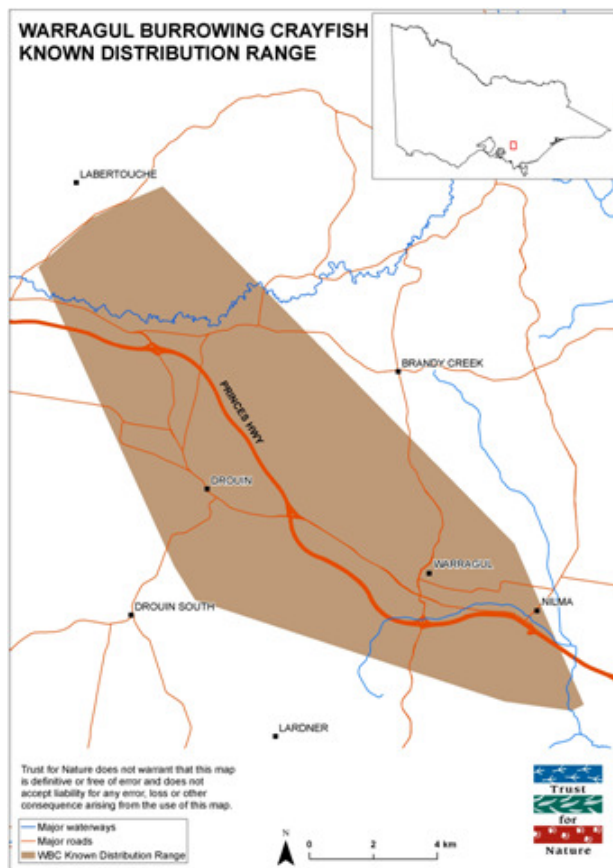


The Life Of A Crayfish

Very little is known about the life-cycle of Warragul Burrowing Crayfish. They spend most of their lives in an underground burrow system, probably coming to the surface at night to seek mates in spring and summer or after heavy rains. They build their burrows down to the water table but often reside in smaller chambers closer to the surface which are filled with gooey mud. Males enter burrows of females to mate and the female carries clusters of eggs under her tail, probably throughout summer. The young likely hatch by February and become independent but may remain in the maternal burrow for some time. Several generations of Warragul Burrowing Crayfish have been recorded within the same burrow system.

Where are they found?

Less than 20 square kilometres in west Gippsland is home to the Warragul Burrowing Crayfish. They are unique to this region and are not found anywhere else in the world. This is one of the reasons that they are considered Critically Endangered (IUCN 2010 and DEPI 2009). The township of Labertouche is on the western edge of their range which extends eastward toward Drouin and Warragul.



What looks like home for Warragul Burrowing Crayfish (habitat)?

As burrowing crayfish have gills, they require moisture to breathe within the soil. This comes from seepages, ground water, streams or collected run-off. Warragul Burrowing Crayfish build burrows in a variety of moist habitats. Their habitat differs between Labertouche and the Drouin - Warragul area. At Labertouche, they can be found along the clayey creek banks of Labertouche and Wattle Creeks surrounded by remnant Swampy Woodland.

In Drouin and Warragul, their typical habitat occurs in clay dominated soils in open pastures within:

- Banks of creeks and shallow drainage lines
- Floodplains
- Occasionally low lying roadside reserves/naturestrips

Recognising Warragul Burrowing Crayfish Chimneys

Chimneys built by Warragul Burrowing Crayfish are often distinctive enough to use them to help identify the presence of these crayfish. They only appear in the wetter months such as winter and spring and are very difficult to find during dry conditions.

Warragul Burrowing Crayfish Chimney features

- Chimneys composed of small, spherical balls of soil with each soil ball around 0.5-1 cm
- Narrow burrow entrance and burrow system (< 2 cm)
- Small and compact (generally between 2-5 cm but < 8 cm tall and 5 cm wide)
- Often singular but may consist of a cluster of chimneys



Why Are They In Trouble?

The Warragul district was settled in the 1860s when swamps were drained and the existing scrub and forest was cut, burnt and cleared to make way for agriculture. Today, the area occupied by Warragul Burrowing Crayfish is comprised of the small, but expanding rural communities of Warragul, Drouin and Longwarry. These towns are surrounded by cleared farmland used primarily for dairying and some cultivation. Many threatening processes can be associated with these land-uses. This means that without our help and protection, they are vulnerable to extinction, particularly since a large portion of their habitat occurs within areas currently being developed for urban expansion.

Burrowing crayfish are very dependent on soil moisture and local wetland systems for survival. Changes in drainage, stream channelization, water pollution, soil compaction and removal of vegetation all contribute to loss and degradation of their habitat.

Agriculture

- Dam construction - floods suitable habitat and removes habitat
- Channelization of streams and draining paddocks - alters drainage patterns, water flow and dries suitable habitat
- Removal of native vegetation - dries out soil, leads to erosion, exposes burrows and alters soil microclimate
- Pollution of water systems - pesticides, fertilisers poison crayfish and reduce water quality
- Trampling by stock - causes stream bank erosion, vegetation loss, soil compaction or pugging and destruction of burrows
- Cultivation and intensive farming - removes habitat, destroys burrows and alters soil condition

Urbanisation

- Road and housing construction - effects water quality and quantity, changes catchment, removes habitat
- Wetland and retardation basin construction - inundates crayfish habitat
- Altered natural drainage systems - changes surface and soil moisture levels
- Water pollution - road and housing run-off can lead to siltation and reduction in water quality

What Can I Do To Help Protect Them?

Everyone can play an important role in helping to protect these unique and vulnerable crayfish, especially since many people will have them in and around their own backyards!

Land Managers & Developers

The Warragul Burrowing Crayfish is endemic to Baw Baw Shire (BBSC). As a species of conservation significance, approval is required for development applications which may specifically impact upon the crayfish and its habitat. This may include housing and industrial development, infrastructure and construction of wetlands and retardation basins. Applications will typically be required to include the preparation of plans to avoid or mitigate potential impacts.

- Consult Baw Baw Shire Council if any development work is being undertaken in land covered by natural waterways, drainage lines and seepages within the range of Warragul Burrowing Crayfish.

Landowners and Local Community

Become a Citizen Scientist

Find out where Warragul Burrowing Crayfish occur

- Learn to identify Warragul Burrowing Crayfish chimneys
- Determine if they occur on your property, local park or school ground by looking for their chimneys (best observed between late autumn and early summer) in and around moist areas or wetlands
- Further information: www.burrowingcrayfish.com.au

Protect Warragul Burrowing Crayfish Habitat

- Protect habitat (streamsides and seepages) from stock or other activities that compact or churn the soil, especially during winter and spring
- Protect habitat along waterways from erosion through fencing and revegetation
- Do not disturb soil or alter drainage patterns (don't drain or flood habitat) that may alter existing seepages and floodplain areas
- Retain native vegetation around wetlands and creeks
- Consider protecting habitat by joining Land For Wildlife or entering into a Conservation Covenant with Trust For Nature (TFN) to permanently conserve and protect the suitable areas of burrowing crayfish habitat

Below is an easy-to-use checklist to assist the local community and landowners to determine whether their properties may contain areas suitable for Warragul Burrowing Crayfish.

1. Is your property located within the known range, or close to the boundaries of the known range, of Warragul Burrowing Crayfish?

(If you answer NO your property is unlikely to have Warragul Burrowing Crayfish habitat).

2. Does your property contain waterways, floodplains or soaks?

(If you answer NO your property is unlikely to have Warragul Burrowing Crayfish habitat).

3. Does your property have soils composed of either blue-grey clay or brown or red clay loams?

(If you answer NO your property is less likely to have Warragul Burrowing Crayfish habitat).

4. Can you find any crayfish chimneys during the wetter months of the year such as winter and spring?

Yes No

If yes are they -

- * Composed of small, regular spherical balls of soil?
- * Are they small and compact around < less than 8 cm in height?
- * Are the chimneys entrances small openings of less than 2 cm?

If so, enjoy hosting these rare creatures in your own backyard!

If no, and you have checked several times during the wetter months of the year, you are less likely to have Warragul Burrowing Crayfish.

Resources & Contacts

Baw Baw Shire Council

<http://www.bawbawshire.vic.gov.au/Home>

Building Capability to manage Giant Gippsland Earthworm habitat on farms

<http://www.giantearthworm.org.au/>

DELWP

<http://www.delwp.vic.gov.au/>

Land For Wildlife

<http://www.depi.vic.gov.au/environment-and-wildlife/community-programs/land-for-wildlife>

Trust For Nature

<http://www.trustfornature.org.au/what-we-do/conservation-covenants/>

Crayfish website

www.burrowingcrayfish.com.au

Last updated June 2016

Prepared by Dr. B. Van Praagh (Invert-eco)

Graphic Design by VP-IT