

# Action Statement

Flora and Fauna Guarantee Act 1988

## Western Swamp Crayfish *Gramastacus insolitus*

### Description and Distribution

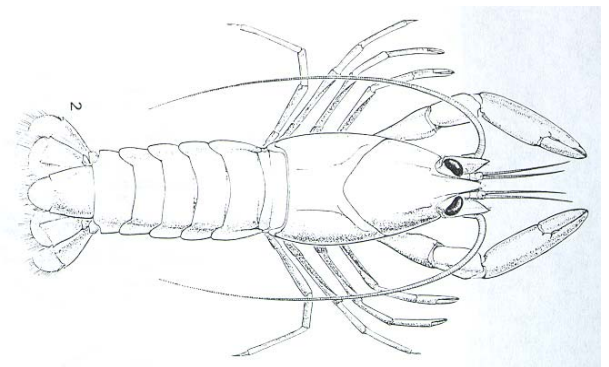
The Western Swamp Crayfish *Gramastacus insolitus* Riek is a member of the Parastacidae (Decapoda) family. It is a very small crayfish with mature specimens rarely exceeding 30-35 mm in length. The genus *Gramastacus* is found exclusively in south-eastern Australia. Up until recently, there were thought to be two species in the genus, *G. insolitus* and *G. gracilis* (Riek 1972). However, morphological and biochemical studies by Ziedler and Adams (1990), established that these were the same species. *Gramastacus* is now considered a monotypic genus with *G. insolitus* the only species. The Western Swamp Crayfish is characterised by a number of exoskeleton differences between the sexes and has relatively large eyes compared to other genera of Parastacidae and relatively slender chelae (Ziedler and Adams 1990). Individuals are grey to green but the tips of the pereopods, uropods and telson are red and the carapace and abdominal segments have a dark outline with a red tinge.

The species occurs in the vicinity of the Grampians in western Victoria and in south-eastern South Australia.

### Habitat

The Western Swamp Crayfish is confined to permanent swamps or creeks and drains connected to swamps. Its type locality is small permanent freshwater swamps, almost completely covered in weed, near Moyston in the Grampians (Riek 1972).

The species is sympatric and similar in appearance to *Geocharax* species and are therefore difficult to distinguish in the field. Male *Gramastacus* are easily distinguished by the presence of large, uncalcified genital papilla. Ziedler and Adams



Western Swamp Cray *Gramastacus insolitus*  
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Distribution in Victoria (DSE 2004)

(1990) found the presence of numerous hairs on the inside face of the chelae useful in distinguishing *Gramastacus* females from juvenile *Geocharax*. Juvenile *Geocharax* are often misidentified as *Gramastacus* since juveniles of this species, in common with all life stages of *Gramastacus*, do not tend to burrow (Ziedler and Adams 1990). In contrast, adult *Geocharax* are strong burrowers and may construct extensive burrows up to 2m in depth.

The Western Swamp Crayfish also occurs in partial association with other freshwater crayfish such as *Engaeus lyelli* and sometimes with *Cherax albidus* (Riek 1969). *Euastacus hispidus* is present in larger streams in the area and in streams at higher elevations.

### **Life history and ecology**

Unlike many other freshwater crayfish, the Western Swamp Crayfish does not appear to burrow, although under laboratory conditions, individuals were observed to make shallow burrows when the water level was reduced (Ziedler and Adams 1990).

The Western Swamp Crayfish is known to breed during October to December (Ziedler and Adams 1990).

### **Conservation Status**

#### **National conservation status**

The Western Swamp Crayfish has not been listed under the Commonwealth **Environment Protection and Biodiversity Conservation Act 1999**.

#### **Victorian conservation status**

The Western Swamp Crayfish has been listed as threatened under the **Flora and Fauna Guarantee Act 1988**.

### **Decline and threats**

The Western Swamp Crayfish has not had its conservation status assessed. However, the species has a very restricted distribution and abundance within Victoria and South Australia (Riek 1972) with only nine locality records for the State (Ziedler and Adams 1990). Ziedler and Adams (1990) comment that the Western Swamp Crayfish was probably more widespread in its distribution before swamps were drained for agricultural and pastoral purposes.

The Western Swamp Crayfish is considered threatened primarily because of its restricted distribution, the lack of ecological and biological information about the species and the possibility of detrimental habitat disturbance occurring through habitat modification, particularly wetland drainage. In its final recommendations the

Scientific Advisory Committee (SAC 1993) determined that the Western Swamp Crayfish is prone to future threats which are likely to result in extinction and very rare in terms of abundance or distribution.

The distribution, abundance, and biology of this species is poorly known and little information is available on which to formulate management guidelines.

Electrophoretic studies of populations of the Western Swamp Crayfish indicate that there is little or no gene flow between neighbouring populations of this species (Ziedler and Adams 1990). This suggests that populations of this species may therefore be fragile and difficult to replace if lost.

Invertebrates which have limited distributions, such as many species of freshwater crayfish are particularly vulnerable to localised environmental perturbations (Williams 1990). Localised catastrophic events, such as an extended drought or fire could drastically affect populations of the Western Swamp Crayfish.

At least one of the known populations of the Western Swamp Crayfish occurs within the Grampians National Park. Although National Parks are less modified than most areas, they can still contain point sources of pollutants and are subject to the effects of management practices elsewhere in the catchment (Merrick 1995).

Threats on privately owner land include drainage, ploughing, fertilising, spraying of herbicides and insecticides and cattle grazing.

Drainage of swamps results in reduction of surface waters, elimination of periodic flooding, alteration of physico-chemical parameters and lower water tables (Horwitz 1990). All these factors may be detrimental to the survival of this species. The Western Swamp Crayfish is particularly vulnerable to desiccation since it does not make burrows. This is supported by the extinction of the species at Puddar Swamp, near Penola, after the swamp dried up. Observations suggest that the crayfish may have survived the initial drying of the swamp by seeking refuge under damp, decaying vegetation (Ziedler and Adams 1990). However, the absence of burrows means that the species cannot access the water table, and therefore has little protection against prolonged desiccation.

Threats on privately owner land include drainage, ploughing, fertilising, spraying of herbicides and insecticides and cattle grazing.

The effects of fertilisers used in the conversion of swamps to pasture and herbicides/pesticides are largely unknown. However there is some evidence that some decapod crustaceans are known to exhibit high sensitivity to certain pesticides (Davies

*et al.* 1994). Those species that do not burrow are most at risk (Doran and Richards 1996).

Trampling and grazing by cattle may also be detrimental to this species, particularly as it is not protected by burrows.

Inappropriate fire management including uncontrolled fire of high intensity or inappropriate burning practices could also be a potential threat to the species. The peat habitat of these swamps could be lost or could smoulder for long periods. This is most detrimental when burning occurs at the driest time of the year, which can result in the loss of peat itself (Gaffney and Horwitz 1992, Horwitz 1995).

### **Wider Conservation Issues**

- Wider conservation issues are unclear until more information regarding species distribution and habitats are known.
- Protection of the swamp habitat has broad benefits for other native species that occur within the range of the Western Swamp Crayfish.
- Red Gum Swamp Community No. 1 is listed under the Victorian Flora and Fauna Guarantee Act 1988 as a threatened community.

### **Previous Management Action**

- Zeidler and Adams (1990) carried out surveys for the Western Swamp Crayfish and conducted biochemical studies.
- At least one to two known localities occur within the Grampians National Park.
- A Management Plan for the Grampians National Park is being prepared and will incorporate strategies for protection of rivers, catchments and wetlands within the Park.

### **Conservation Objectives**

#### **Long-term objective**

To ensure that the Western Swamp Crayfish survives, flourishes and retains its potential for evolutionary development in the wild.

#### **Objectives of this Action Statement**

1. Determine the distribution and abundance of the Western Swamp Crayfish
2. Protect the wetland habitat of the known populations of Western Swamp Crayfish
3. Improve the understanding of the biology and ecology of the Western Swamp Crayfish as the basis for future management

### **Intended Management Action**

The intended management actions listed below are further elaborated in DSE's Actions for Biodiversity Conservation database. Detailed information about the actions and locations, including priorities, is held in this system and will be provided annually to land managers and other authorities.

#### **Systematic Surveys**

1. Survey the swamps and drains in those catchments most likely to contain populations of the Western Swamp Crayfish both within the Grampians National Park and areas to the west towards the South Australian border.

*Responsibility: DSE (Biodiversity & Natural Resources Division, South West Region) Parks Victoria*

#### **Research**

2. Encourage research into the biology and ecology of the Western Swamp Crayfish. Priorities for research include:
  - The long term life history, biology and ecological requirements for the species;
  - Identification of critical habitat including soil types, vegetation requirements, hydrological parameters and catchment-based characteristics
  - Determine the effect of drainage and lowering water tables upon the survival of this species.

*Responsibility: DSE (Biodiversity & Natural Resources Division, South-West Region), Parks Victoria*

#### **Habitat Protection**

3. Incorporate actions to protect, enhance and restore Western Swamp Crayfish habitat into the Glenelg-Hopkins Regional Catchment Strategy or its subordinate strategies via Biodiversity Action Plans. Implement these actions, according to priority, as resources become available, in conjunction with other agencies, community groups and landholders.

*Responsibility: Glenelg-Hopkins Catchment Management Authority*

4. Provide information and advice, including maps of habitat, to local government authorities for inclusion in environmental significance overlays as part of the local planning schemes.

*Responsibility: DSE (South West Region)*

5. Protect Western Swamp Crayfish habitat within the Grampians National Park by excluding recreation and park management activities which might pose a threat to this species or its

habitat, including construction or upgrading of roads, tracks and visitor facilities, and fire prevention or suppression activities.

*Responsibility: Parks Victoria*

6. Protect Western Swamp Crayfish habitat on Crown land outside parks and reserves, including:

- ensuring that swamps and drains in the vicinity of the known populations of the Western Swamp Crayfish are protected from drainage activities. Any drainage activities within the known range of the Western Swamp Crayfish should be monitored and sites surveyed for the species before any activities resulting in altered drainage are carried out;
- restricting access by livestock at sites where the species is known to occur (if necessary);
- protecting fringing vegetation at known Western Swamp Crayfish sites;
- avoiding the application of herbicides and pesticides at known Western Swamp Crayfish sites;
- avoiding hazard reduction burning during summer when water tables are at their lowest and pets most vulnerable to fire.

*Responsibility: DSE (South-West Region), Glenelg-Hopkins Catchment Management Authority, local government authorities*

#### **Staff awareness**

7. Ensure that all relevant Parks Victoria and Department of Natural Resources and Environment staff working in the known range of the Western Swamp Crayfish are aware of its existence and report suspected records of the species to the Atlas of Victorian Wildlife.

*Responsibility: DSE (South-West Region), Parks Victoria*

The following actions apply if Western Swamp Crayfish populations are discovered on or adjacent to private land:

8. Provide landholders with information and advice regarding measures to protect Western Swamp Crayfish.

*Responsibility: DSE (South-West Region)*

9. Pursue funding under the Natural Heritage Trust (or similar programs) and /or provide incentives to support fencing of riparian habitat on private land to exclude stock.

*Responsibility: DSE (South-West Region), Glenelg-Hopkins Catchment Management Authority, local government authorities*

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Further information can be obtained from Department of Sustainability and Environment Customer Service Centre on 136 186.

Flora and Fauna Guarantee Action Statements are available from the Department of Sustainability and Environment website: <http://www.dse.vic.gov.au>

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