

Action Statement

Flora and Fauna Guarantee Act 1988

No. 173

Strzelecki Burrowing Crayfish *Engaeus rostrigaleatus*

Description and distribution

The Strzelecki Burrowing Crayfish *Engaeus rostrigaleatus* Horwitz is in the family Parastacidae (Decapoda). The genus *Engaeus* to which this species belongs is restricted to south-eastern Australia. In common with most other burrowing crayfish, the species is cryptic and small, with adults having a carapace length of around 24-29 mm and a total length of around 60 mm. The species can be distinguished from other *Engaeus* species by its distinctive rostrum ('beak'), which is tuberculate, conspicuously blunt and projected downwards. Eyes are moderately large, extending to the anterior half of the rostrum, and chelae (claws) are dimorphic. The species is 'intersexed' (individuals carry both male and female sexual organs but only one type is functional). Therefore sexing specimens is difficult without dissection although reproductive females may be distinguished by secondary sexual characters.

The Strzelecki Burrowing Crayfish has a very restricted distribution and occurs along a 30 km section of the Eastern Strzelecki Ranges in South Gippsland at high altitudes generally above 400 m (Horwitz 1990a, 1990b). The type locality is Rhyton Junction on the Midland Highway, about 30 km south of Morwell. This locality was described by Horwitz (1990b) as a small creek which originated as a spring in wet sclerophyll forest dominated by Mountain Ash *Eucalyptus regnans* and abundant tree ferns. The local topography of the site consisted of a flood-bed approximately 2-4 m wide, across which water from the spring trickled. The flood bed banks were steep and led to the hill-slopes.



Distribution in Victoria

[source: Atlas of Victorian Wildlife, DSE 2004]

Other localities include the headwaters of Billy Creek, Jumbuck, Morwell River, O'Gradys Creek, Boolarra, and the headwaters of Macks Creek near Balook and within Tarra-Bulga National Park.

Habitat

The burrows of the Strzelecki burrowing crayfish occur in soils with a heavy clay component in wet or seepage areas. When located in the flood-bed, burrows are very shallow and almost without a descending or vertical component. In contrast, burrows located in banks adjacent to a flood-bed, are vertical and often descend to the flood-bed level (Horwitz 1990b). These are described as 'type 2' burrows by Horwitz and Richardson (1986) which refers to burrows that are

connected to the water table and the water is derived from ground water and surface run-off. Horwitz (1990b) comments that the crayfish can be easily located by peeling back the root matting of tree ferns to expose the horizontal tunnels of the burrows.

The Strzelecki burrowing crayfish is sympatric with the burrowing crayfish, *E. hemicirratulus*, a larger common and more widespread species of burrowing crayfish. It can be distinguished from the Strzelecki burrowing crayfish by the presence of a distinct tuft of long bristle setae on the dorso-anterior region of the rostrum and bright orange claws. Both species exhibit a distinct microhabitat separation with burrows of *E. hemicirratulus* restricted to yellow-orange clay dominated soils of hill top slopes above the level of the flood-bed where the soil is less saturated (Horwitz 1990b). This is termed a 'type 3' burrow system by Horwitz and Richardson (1986) which describe burrows that do not connect to the water table.

Life history and ecology

Very little is known about the life history and ecology of the Strzelecki Burrowing Crayfish.

Conservation status

National conservation status

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

Victorian conservation status

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

Decline and threats

The Strzelecki Burrowing Crayfish is restricted to an area of habitat occurring along streams over a linear distance of approximately 30 km, encompassing Tarra-Bulga National Park, public land leased for private forestry and some privately-owned land. Virtually nothing is known about the biology and habitat requirements of this species or the impacts of forestry and agricultural practices on its habitat. The species has been largely recorded from the very high, steep parts of the Eastern Strzelecki Ranges, in wetter gullies where there is no clear demarcation between the gully and the hillside. Burrows have also been located in head water regions. These regions are particularly susceptible to degradation by forestry practices if the prescriptions in the 'Code of Forest Practices for Timber Production' (NRE 1996) are not strictly followed or developed in accordance with the

ecological requirements of the Strzelecki Burrowing Crayfish.

Crayfish that are restricted to high altitudes are generally thought to be more sensitive to changes water quality due to their occurrence within cooler temperature regimes and clear water, compared to more opportunistic lowland crayfish. All freshwater crayfish appear to be highly susceptible to chemical pollutants such as herbicides and insecticides (Horwitz *pers. comm.*). The species has not been found in areas cleared of native vegetation (Horwitz *pers. comm.*).

Habitat modification

The key threats to Strzelecki Burrowing Crayfish are those activities which cause or accelerate the degradation of the stream bed and banks (Gippsland Regional Forest Agreement Steering Committee 1999). These activities include roading, clearing of vegetation, grazing by domestic stock and recreation.

Private Land

At present, the known distributional range of the Strzelecki Burrowing Crayfish encompasses only a small proportion of privately-owned land. Privately owned land in this region is primarily used for agriculture including cattle grazing and dairy production. Creek frontages are generally unfenced, allowing stock access to the streambed. Due to the clayey nature of the soil and the nature of the floodplains in which the Strzelecki Burrowing Crayfish burrow, the soil of this riparian habitat is particularly sensitive to pugging and compaction by cattle. Indigenous vegetation has been removed from some private land, although scattered remnants are present along stream banks. The Strzelecki Burrowing Crayfish is most likely to occur in association with remnant vegetation. Removal of riparian vegetation combined with the impacts of stock grazing contribute to soil erosion, stream bank damage, siltation of streams and possible damage to the crayfish burrows. While the exact role of native vegetation in the survival of the species is not known, its importance is indicated by the fact that it has not been found in cleared land and that the Narracan Burrowing Crayfish *Engaeus phyllocercus*, a neighbouring species, also occurs predominantly in areas where remnant riparian vegetation remains (Horwitz 1990a).

Forest and plantation management

The extent of the distribution of the Strzelecki Burrowing Crayfish within land used for timber production at this stage is unknown. However, a substantial amount of land within the range of the species distribution is used for plantations. The species has been recorded from above Grand Ridge

Road (Rhyton Junction) on Crown land is leased to Grand Ridge Plantations, a subsidiary of Hancock Victorian Plantations Pty Ltd. This area contains both hardwood and softwood plantations. Forestry activities may pose direct and indirect threats to the Strzelecki Burrowing Crayfish from construction, use and maintenance of logging roads, snig tracks, and removal of vegetation. Potential threats include habitat destruction and crushing of burrows, deposits of sediment into burrows and alteration of water table levels (Horwitz 1990a). Any activity which may lead to an alteration in the nature of the stream-side water table or drainage patterns could impact on the species' survival locally. Guidelines for forestry operations have been developed in the *Code of Forest Practices for Timber Production* (NRE 1996) to minimise any impacts from these activities.

Existing conservation measures

- Surveys and conservation recommendations for the species were made by Horwitz (1990a).
- Surveys were undertaken for this species as part of the Regional Forest Agreement process for the Gippsland Region.

Conservation objectives

Long term objective

To ensure that the Strzelecki Burrowing Crayfish can survive, flourish and retain its potential for evolutionary development in the wild.

Objectives of this Action Statement

1. To improve knowledge of the distribution, abundance and biology of the Strzelecki Burrowing Crayfish.
2. To protect habitat and manage potential threats.
3. To increase awareness of the Strzelecki Burrowing Crayfish among land managers and the community.

Intended management actions

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.

Surveys and Monitoring

1. Conduct surveys to establish the distribution of the species within the 30km stretch of riparian habitat and search likely habitat outside this area.

Responsibility: DSE (Biodiversity & Natural Resources Division), Parks Victoria

2. Monitor key populations represented within National Park, Crown land plantation areas and any occurring on private land.

Responsibility: DSE (Biodiversity & Natural Resources Division), DPI (Gippsland Region), Parks Victoria

Habitat protection

General

3. Incorporate actions to protect, enhance and restore Strzelecki Burrowing Crayfish habitat into relevant Regional Catchment Strategies or their 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: DPI (Gippsland Region), West Gippsland 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: DPI (Gippsland Region)

Tarra Bulga National Park

5. Protect Strzelecki Burrowing Crayfish habitat within the Tarra-Bulga National Park by minimising or eliminating the impacts of recreation and park management activities which might pose a threat to this species or its habitat.

Responsibility: Parks Victoria

Grand Ridge Plantations

6. Liaise with Grand Ridge Plantations to protect habitat of Strzelecki Burrowing Crayfish within plantations, including zoning such habitat and appropriate buffer zones to manage timber harvesting, roading and other activities or to minimise any adverse impacts.

Responsibility: DPI (Gippsland Region)

Private land

7. Provide landholders with information and advice regarding measures to protect Strzelecki Burrowing Crayfish if surveys confirm the presence of this species on or near private land.

Responsibility: DPI (Gippsland Region)

8. Pursue funding under the Natural Heritage Trust and /or provide incentives to support fencing of habitat on private land to exclude stock.

Responsibility: DPI (Gippsland Region), West Gippsland Catchment Management Authority, local government authorities

Research

9. Encourage research into the biology and ecology of the Strzelecki Burrowing Crayfish (possibly in conjunction with the Narracan Burrowing Crayfish *Engaeus phyllocercus* and the South Gippsland Spiny Crayfish *Euastacus neodiversus*, both of which are listed species) over a three year period and identify the effects of forest management practices using the population found in Tarra-Bulga National Park as a control. Priorities for research include:
- Determining the number, size and geographic distribution of Strzelecki Burrowing Crayfish populations.
 - 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.
 - Determining the impact of various disturbances upon aspects of the Strzelecki Burrowing Crayfish ecology, habitat use and population size.
 - Determine and monitor the effects of forestry activities including altered hydrology, prescription burns and removal of vegetation.
 - Monitoring the effectiveness of buffer strips in protecting the crayfish.

Responsibility: DSE (Biodiversity & Natural Resources Division), Parks Victoria

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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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