

INVESTIGATION REPORT

DETECTION OF ORBOST SPINY CRAYFISH (*Euastacus diversus*)

Aberdeen Road - Jungle Creek Catchment
Goongerah Forest Block – East Gippsland
VicForests Logging Coupe: 891-507-0006

Abstract

This investigation report details the detection of the endangered Orbost Spiny Crayfish (*Euastacus diversus*) encountered during an investigation of threatened species values within VicForests scheduled logging coupe 891-507-0006.

The regulatory framework governing logging operations in Victoria, through the 'Code of Practice for Timber Production 2014' and its incorporated documents require that for records of *Euastacus diversus* (Orbost Spiny Crayfish), an "SPZ extending 100m from each bank for 1 km upstream and 1 km downstream" must be established within which all logging must be excluded.

Relevant Legislation

- 'Code of Practice for Timber Production 2014', Department of Environment and Primary Industries, The State of Victoria, 2014
Incorporated documents:
- 'Management Standards and Procedures for timber harvesting operations in Victoria's State forests 2014', Department of Environment and Primary Industries, The State of Victoria, 2014
- 'Planning Standards for timber harvesting operations in Victoria's State forests 2014- Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria's State forests 2014', Department of Environment and Primary Industries, The State of Victoria, 2014

Status of Site: Logging:

Vicforests clear-fell logging coupe 891-507-0006 is currently **Approved** on Vicforests Timber Release Plans, logging operations are **currently active**. Vicforests logging coupe covers an area of approximately 26.3 hectares, and is situated in Bonang state forest, in the Bendoc district.

Status of Site: Threatened Species, Modelling HCV/EVC, Reserves & Zoning

Listed Values	Within Proximity To Coupe	Within Catchment
<u>(<i>Euastacus diversus</i>) Records (VBA25)</u>	<i>Euastacus diversus</i> within 2km owls coupe	<i>Euastacus diversus</i>
<u>(<i>Euastacus diversus</i>) Records (VBA100)</u>	Null	Null
<u>Modelling: Old Growth (MOG03, MOG09)</u>	~4.5 (MOG09) ~18ha (Mog03)	MOG03 / MOG09
<u>Recent Logging History:</u>	VicForest2008-2009	VicForest2008-2009
<u>Management Zones: SMZ, SPZ</u>	Special Management Zone (coupe within)	Special Management Zone, Special Protection Zone Linear Reserve
<u>Modelling: Ecological Vegetation Class</u>	Shrubby Dry Forest (EVC21), Damp Forest (EVC29), Wet Forest (EVC30)	Shrubby Dry Forest (EVC21), Damp Forest (EVC29), Wet Forest (EVC30), Warm Temperate Rainforest (EVC32)
<u>On Site Assessment / Observations</u>	Crayfish habitat, Hollow bearing trees, Old growth value, Yellow Bellied-Gliders	Crayfish habitat, Hollow bearing trees, Old growth value, Yellow Bellied-Glider
<u>State Forest, Parks, Reserves & Zoning</u>	Bonang State Forest	Bonang State Forest

Date of Investigation:
03/11/2018 - 04/11/2018

Date of report:
07/11/2018

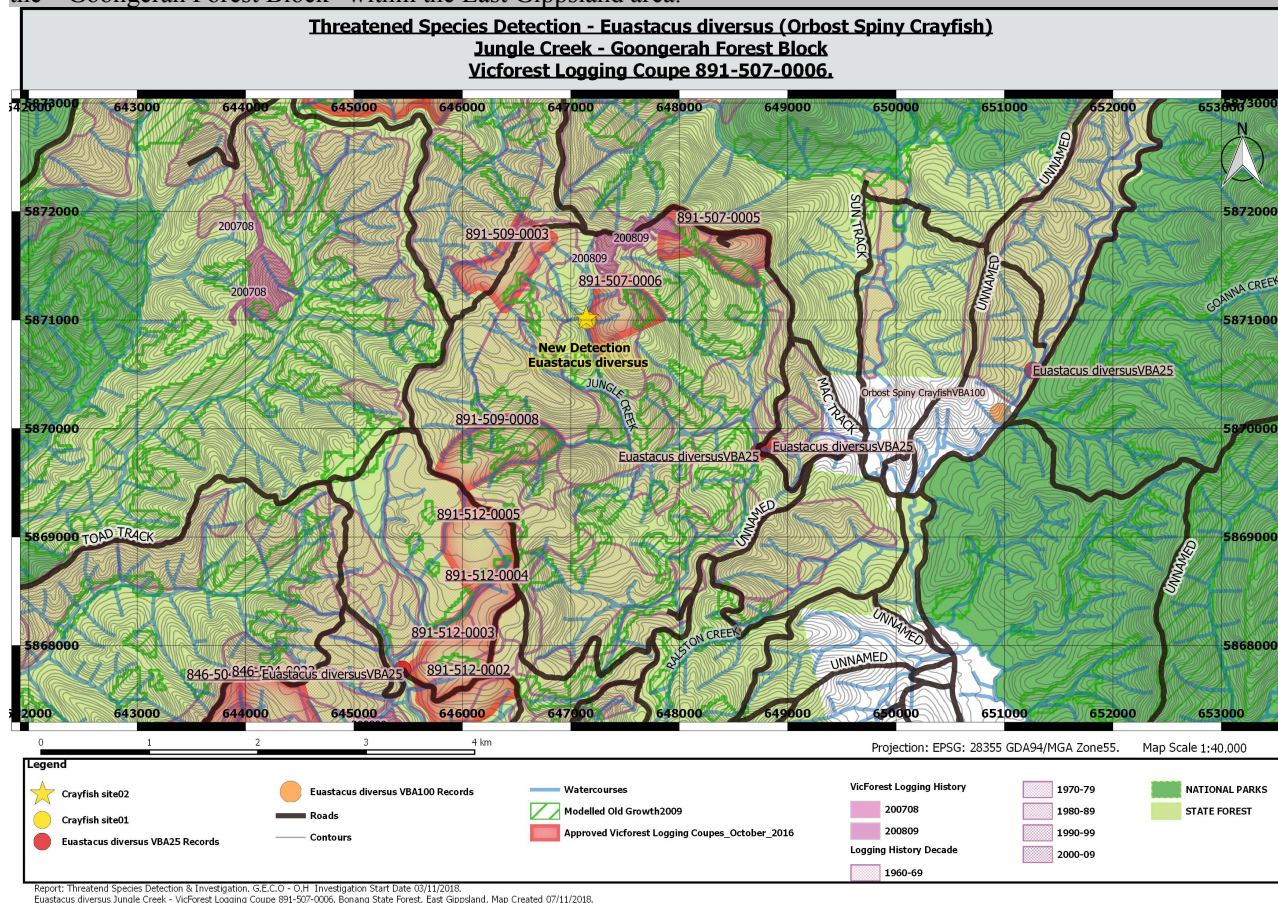
Surveyors:
GECO survey team Nov-18
Owen Hanson

Author: Owen Hanson

Organisations Associated:
Goongerah Environment Centre Office. geco.media@gmail.com

Study Location Overview

Figure A. VicForests scheduled logging coupes 891-507-0006 off Aberdeen Rd in the “Goongerah Forest Block” within the East Gippsland area.



Method Used and Results Summary

Equipment Used

- Digital Camera
- Head torch
- Global Positioning System (GPS)
[Garmin GPSMAP 64s]

Method used/Results Summary: 03/11/2018-04/11/18

Riparian Search, walking night spotlight search/inspection of creeks for Aquatic fauna

- On the night of the 3rd & morning of the 4th of November 2018 surveyors conducted a nocturnal active riparian search covering sections of the watercourses on the western boundary within and adjacent to VicForests logging coupe 891-507-0006. Suitable habitat was found in the tributaries that were explored during surveys, this consisted of small stream flow and pools in saturated ground along tributary.
- At ~1:23am on the 4th at approximately 55 H 647151 5870996 (location 01), a young crayfish individual was observed within the tributary on the western side of coupe 891-507-0006. The crayfish did not have sufficiently developed features to formally identify beyond *Euastacus* genus, although it is thought likely to be *Euastacus diversus*. Photographs and location were taken of crayfish individual.
- At ~2:43am at approximately 55 H 647143 5871014 (location 02), a crayfish was observed in a pool of the tributary along the western side of the coupe.
- Photographs were taken of the *Euastacus diversus* individual at location 02 and was identified to the East Gippsland Spiny Cray Group (EGSCGroup) as per the Victorian Government Department of Environment, Land, Water and Plannings' survey standards “10-Spiny-Cray-Euastacus-spp-Survey-

Method Used and Results Summary- (Continued)

Standards-FINALv1.0_2MAY11" as published on their website.¹ Identification to species is derived from *Euastacus* spp. distributions spatially delineated within the Victorian Biodiversity Atlas' spatial dataset (VBA-25) records within catchment, and with reference to "A Guide to Australia's Spiny Freshwater Crayfish" (McCormack, R. B., 2012).²

5. Photographs of Orbost Spiny Crayfish (*Euastacus diversus*) encountered are provided in the Results 2. section as Figures 1 & Figures 2. Further location details are provided in the maps of Results 2. below.

Results 1 (Table of Detections)

Riparian Search, walking night spotlight search/inspection of creeks for Aquatic fauna on the 30/01/2017

Time/Date:	Location: UTM/UPS:	Species:	Number of Individual/s: Condition :	Male: Female: Unknown:	Waterway Class ^{1st,2nd,3rd} . Stream/Pool:	Photograph Taken: Y/N	Identifying Features:	Distinguishing Features: Y/N	Identification Confirmed: Y/N
1:23am- 30/01/17	Loc.1 55 H 647151 5870996	<i>Euastacus</i> Spp.	Juvenile/	Unknown	1 st order/ Pool	Y	Null	Null	N
2:43am- 30/01/17	Loc.1 55 H 647143 5871014	<i>Euastacus</i> <i>diversus</i>	1 Mature	Female	1 st order/ Pool	Y	1\6	Y	Y

Results 2 (Photos and location details)

Photos taken of *Euastacus diversus* during nocturnal active-riparian search on 04/11/2018 found at location 01 (55 H 647151 5870996 GDA94 UTM) as identified in Figure B. See map below.



Figure 1(a). Young *Euastacus* species

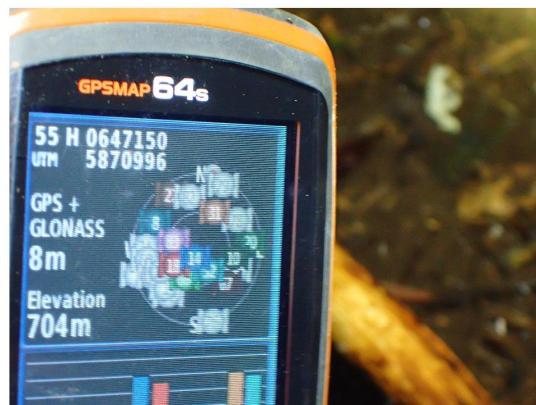


Figure 1(b). (location 01)

1 "Survey Standard: Spiny Crayfish, *Euastacus* spp. (including the Orbost Spiny Crayfish)" The Department of Sustainability and Environment Approved Survey Standards: Spiny Crayfish *Euastacus diversus*., v.1.0, 2 May 2011
 2 McCormack, R. B., A Guide to Australia's Spiny Freshwater Crayfish, CSIRO Publishing, Melbourne, 2012

Results 2 (Photos and location details)

Photos taken of *Euastacus diversus* during nocturnal active-riparian search on 04/11/2018 found at location 02 (55 H 647143 5871014 GDA94 UTM) as identified in Figure B. See map below.



Figure 2(a). *Euastacus diversus* (location 02)

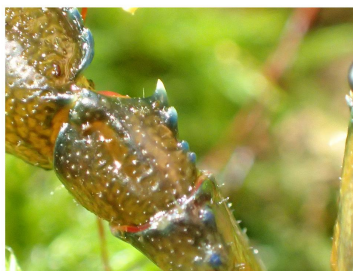


Figure 2(b). Mesial Carpal Spines (left claw)



Figure 2(c). Mesial Carpal Spines (right claw)



Figure 2(d). Female sex organs

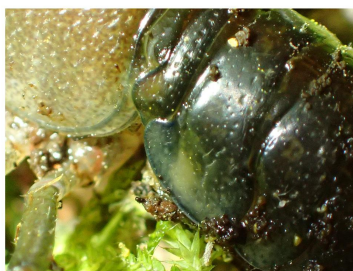


Figure 2(e). Dorsal Thoracic Spines (not formed)



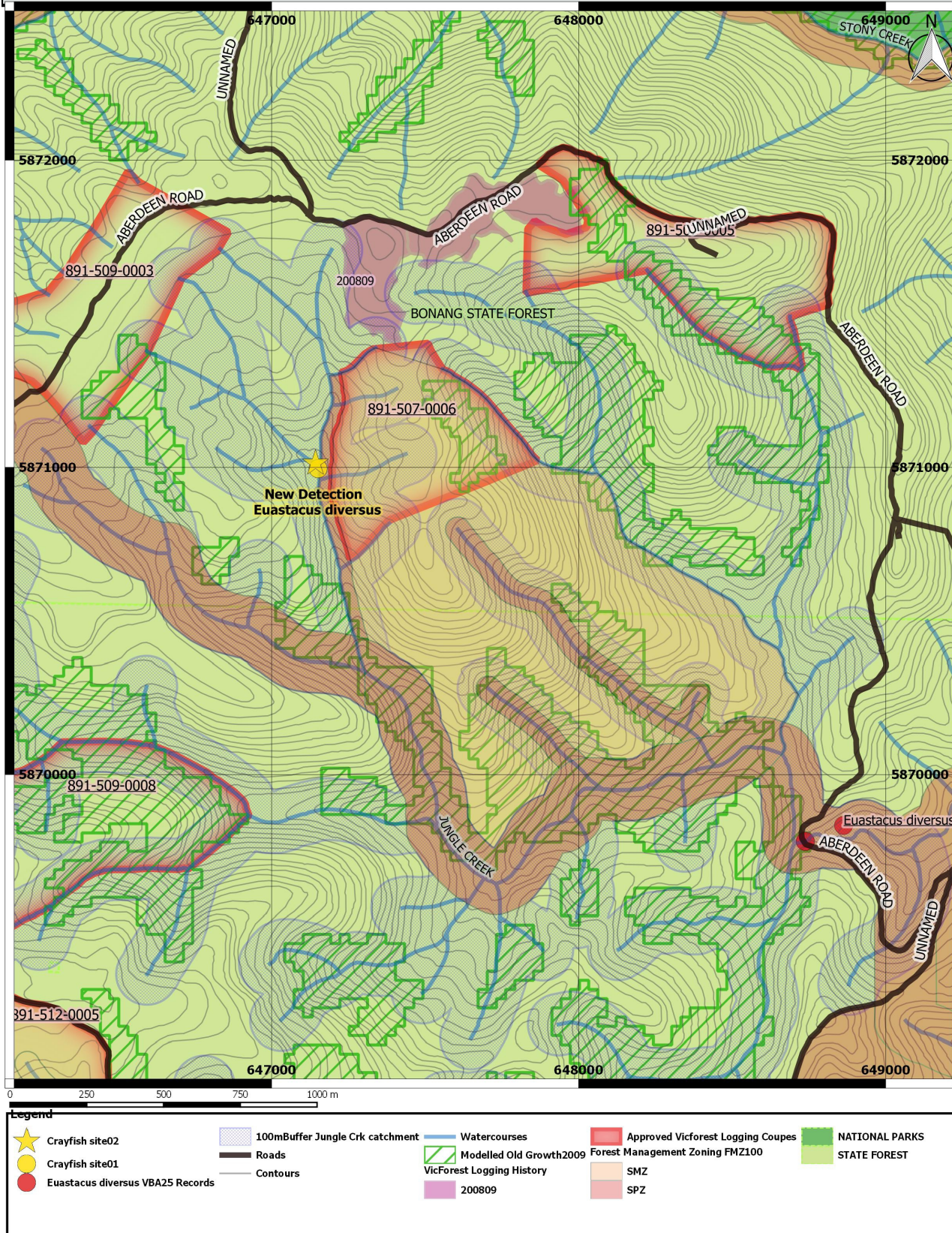
Figure 2(f). Abdominal Spines (not formed)



Figure 2(g) Female *Euastacus diversus* found at 55 H 647143 5871014

Results 2 Figure B. Jungle Creek - *Euastacus diversus* records and Recommended 100m

Threatened Species Detection & Protective Buffers - *Euastacus diversus* (Orbost Spiny Crayfish) Jungle Creek - Goongerah Forest Block Vicforest Logging Coupe 891-507-0006



Buffers.

Results 3 Analysis & Recommendations

Excerpts from: “Code of Practice for Timber Production 2014, Department of Environment and Primary Industries, The State of Victoria, 2014”³

1 General - 1.2 The Code of Practice for Timber Production

1.2.6 Compliance on State forest

Under the *Sustainable Forests (Timber) Act 2004*, compliance with this Code is mandatory for any person planning for or conducting a timber harvesting operation on **State forest**. Penalties for non-compliance may apply if timber harvesting operations on State forest are not in accordance with the Code.

The Code is a prescribed legislative instrument made and enforced under relevant law listed in the *Conservation, Forests and Lands Act 1987*. For the purposes of each relevant law the **Secretary** is an **authorised officer** and is therefore responsible for ensuring compliance with the Code on State forest. Compliance is also monitored by other authorised officers appointed by the Secretary pursuant to the *Conservation, Forests and Lands Act 1987*.

2 Code Application – State Forests - 2.2 Environmental Values in State forests

Timber harvesting operations in native forests may have local impacts on environmental values such as water quality and **biodiversity**. Appropriate planning and management through the lifecycle of the timber harvesting operation can minimise these impacts. This section includes requirements that must be observed during planning, roading, harvesting, tending and regeneration of native forests.

2.2.2 Conservation of Biodiversity

Operational Goal Timber harvesting operations in State forests specifically address **biodiversity** conservation risks and consider relevant scientific knowledge at all stages of planning and management.

Mandatory Actions Addressing biodiversity conservation risks considering scientific knowledge

2.2.2.1 Planning and management of timber harvesting operations must comply with relevant biodiversity conservation measures specified within the **Management Standards and Procedures**.

2.2.2.2 The **precautionary principle** must be applied to the conservation of biodiversity values. The application of the precautionary principle will be consistent with relevant monitoring and research that has improved the understanding of the effects of forest management on forest ecology and conservation values.

2.2.2.3 The advice of relevant experts and relevant research in conservation biology and flora and fauna management must be considered when planning and conducting timber harvesting operations.

2.2.2.4 During planning identify biodiversity values listed in the Management Standards and Procedures prior to roading, harvesting, **tending** and **regeneration**. Address risks to these values through management actions consistent with the Management Standards and Procedures such as appropriate location of **coupe infrastructure**, **buffers**, **exclusion areas**, modified harvest timing, modified silvicultural techniques or retention of specific structural attributes.

2.2.2.5 Protect areas excluded from harvesting from the impacts of timber harvesting operations.

2.2.2.6 Perpetuating the biodiversity of harvested native forests

2.2.2.8 Long-term (strategic) **forest** management planning must incorporate **wildlife corridors**, comprising appropriate widths of retained forest, to facilitate animal movement between patches of forest of varying ages and stages of development, and contribute to a linked system of reserves.

Glossary ‘precautionary principle’ means when contemplating decisions that will affect the environment, careful evaluation of management options be undertaken to wherever practical avoid serious or irreversible damage to the environment; and to properly assess the risk-weighted consequences of various options. When dealing with threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

From: “Planning Standards for timber harvesting operations in Victoria’s State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014”⁴

“4. Biodiversity - 4.3 Fauna – detection based zoning - 4.3.1 Statewide

4.3.1.1 Apply the management actions outlined in Table 4 (Detection based FMZ rules for fauna) below for zoned rare or threatened fauna.

4.3.1.2 Implement FMZ amendments and reviews in accordance with Table 4 (Detection based FMZ rules for fauna) below for new verified rare or threatened fauna records and FMZ amendment requirements outlined in section 2.

Table 5 Detection based FMZ rules for fauna.⁵

FMA	Common name	Scientific name	Zoning management actions	Management actions	Review
East Gippsland	Orbost Spiny Crayfish	<i>Euastacus diversus</i>	Establish a SPZ extending 100 m from each bank for 1 km upstream and 1 km downstream of verified detection sites.	Avoid constructing new roads and stream crossings within the SPZ. Manage nearby regeneration burns to ensure the SPZ is not burnt.	Review this strategy when 20 sites are established.

3 Code of Practice for Timber Production 2014, pp. 11, 21, 23, 31-32, 34-35

4 Planning Standards, p. 36

5 Planning Standards, “Table 4 Detection based FMZ rules for fauna”, p. 45

Discussion, Conclusions & Recommendations

Euastacus diversus (Orbost Spiny Crayfish)

1. *Euastacus diversus* (Orbost Spiny Crayfish) were recorded and identified from edge of VicForests active logging coupe 891-507-0006 at the locations displayed as the "yellow star" symbol; for *Euastacus* crayfish recorded but not identified their locations are displayed as the "yellow circle", in Figure A and B. of Results 2 above.
2. The management prescriptions relevant to the Orbost Spiny Crayfish in the "Planning Standards for timber harvesting operations in Victoria's State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria's State forests 2014", section 4.3.1.1-2, requires that for all verified records of *Euastacus diversus* (Orbost Spiny Crayfish) the "FMZ amendments in accordance with Table 4" must be applied. Table 4 requires that for records of *Euastacus diversus* (Orbost Spiny Crayfish), a SPZ extending 100m from each bank for 1 km upstream and 1 km downstream must be established.
3. As a regulator of operations within Victoria's State Forests DELWP must ensure VicForests and their logging contractors abide by these prescriptions including applying the minimum 100m Special Protection Zone (displayed in Results 2. Figure B.) for the *Euastacus diversus* (Orbost Spiny Crayfish) locations displayed and any others found within 1000m along a watercourse of VicForests' scheduled logging coupes. The purpose of this legislative prescription is the protection of the waterways against the effects of logging.
4. DELWP must restrain VicForests from logging in the areas of these *Euastacus diversus* (Orbost Spiny Crayfish) records including within coupe 891-507-0006 as well as any additional surrounding areas where the species is present.
5. A thorough search for the presence of and evaluation of the extent and health of *Euastacus diversus* (Orbost Spiny Crayfish) population must be undertaken within any further areas where VicForests intends to log and the species' presence is possible. The tributary within which the *Euastacus diversus* (Orbost Spiny Crayfish) was recorded is along the western boundary of coupe 891-507-0006.
6. Protection must be afforded to threatened species and their habitat, this includes protection through the precautionary principle (as described in the code). If Vicforest **fail** to conduct **adequate** and **thorough** surveys to ensure that threatened species are identified and then afforded protection by prescription. The department **must** then restrain Vicforest from conducting timber-harvesting operations within coupe 891-507-0006 and enforce protection through a precautionary approach for the threatened species that were failed to be identified, or failed to have adequate surveys conducted in a manner to suit the particulars of species, or failed to conduct thorough surveys for species across suitable habitat & range.
7. Post-survey analysis of data set VBA-25 shows records of *Euastacus diversus* dating from 1994-2014 within this catchment (~2km down stream). The VicForest pre-harvest fauna surveys (Package 19) do show that VicForest **failed** to conduct adequate surveys to sufficiently find the protected species.
8. The map of Results 2. Figure B. shows that logging is planned by Vicforest along sections of the tributaries of Jungle Creek where *Euastacus diversus* have been discovered recently. This logging is within the area that is required as 100m SPZ buffer, the SPZ is protection that must be afforded to the *Euastacus diversus* detections cited in this report.