

# Flora & Fauna Guarantee Action Statement

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This Action Statement was first published in 1993 and remains current. This version has been prepared for web publication. It retains the original text of the action statement, although contact information, the distribution map and the illustration may have been updated.

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Department of  
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Published by the  
Department  
of Sustainability and  
Environment, Victoria.  
8 Nicholson Street,  
East Melbourne,  
Victoria 3002 Australia

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ISSN 1448-9902

## Otway Stonefly *Eusthenia nothofagi*



Otway Stonefly (*Eusthenia nothofagi*)



Distribution in Victoria (DSE 2002)

### Description and Distribution

The Otway Stonefly (*Eusthenia nothofagi* Zwick, 1979) is an insect (Order Plecoptera, Family Eustheniidae) with a life cycle involving an aquatic nymph stage and a terrestrial adult stage. Nymphs are brown-green, with six pairs of blue-green gills on abdominal segments 1 to 6. They can be found under rocks or on wood debris in slow-flowing areas of streams in the Otway Range, such as small pools and backwaters. Adults, which have distinctive purple-red wings, have been collected up to 200 m from streambanks. Mature nymphs and adults grow to around 3 to 4 cm long. The Otway Stonefly has been recorded only from the Otway Range in south-eastern Victoria, where the entire distribution of the species is not yet known. Specimens confirmed as the Otway Stonefly have been collected from two sites: Melba Gully State Park, and a site 10 km west of Apollo Bay within the Otway National Park (probably Maits Rest picnic area on the Parker River).

Other stonefly nymphs which are either the Otway Stonefly or the closely related *Eusthenia venosa* have been collected from West Arkin, Young and Ciancio creeks, and the Aire, Ford, Grey, Johanna, Parker and Erskine rivers.

These streams pass through State forest, State and National Park, and private land. The specimens are probably Otway Stoneflies, as *E. venosa* is thought not to occur in the Otway Range, although this can only be confirmed by further survey and research. At present, the two species can only be distinguished by the genitalia on adult males.

## Conservation Status

### Current Status

DCE 1991	Endangered
Wells <i>et al.</i> 1983	Endangered
SAC (1991)	Threatened

The Otway Stonefly has been listed on Schedule 2 of the Flora and Fauna Guarantee Act 1988.

### Reasons for Conservation Status

In its final recommendation, the Scientific Advisory Committee (1991) determined that the taxon was known to have occurred in Victoria after European settlement but had not been sighted in the state for 40 years. Since listing under the Flora and Fauna Guarantee Act 1988, the species has been collected from the Otway Range. Although the presence of the species in Victoria less than 40 years ago has been confirmed, its distribution is still not known to be wide as it has only been positively identified from adults collected from the two sites in the Otway Range.

### Major Conservation Objectives

- Determine the species' distribution within three years;
- Identify and manage likely threats to survival and evolutionary development of the species;
- Assess the proportion of habitat under threat, and determine consequences to the survival of the species should these threats continue to operate; and
- Improve the Otway Stonefly's conservation status so that it can be moved off the 'endangered' list within five years.

### Management Issues

Many creeks in the Otway Range which might be habitat for the Otway Stonefly pass through land used for forest production or agriculture. If not managed properly, these activities can damage the stonefly's habitat, by damaging riparian and catchment vegetation and causing changes to water quality and instream habitat (e.g. from roads or runoff).

### Ecological Issues Specific to the Taxon

- There have been few collections of invertebrates, terrestrial or aquatic, from the Otway Range.
- The Otway Stonefly is difficult to distinguish from *E. venosa*, a closely related stonefly. As the only reliable distinguishing feature identified to date is the male genitalia, it has not been possible to confirm the identification of nymphs or adult females. It is likely that previous collections of the Otway Stonefly from the Otway Range have been misidentified as *E. venosa* (R. Marchant, pers. comm.).
- There is no specific information on the ecological requirements and tolerances of the species in any of its life stages.

- The width of vegetation required by adults for breeding and feeding is not known. Adult Otway Stoneflies have been collected about 200 m from streams, in woodland rather than riparian vegetation.
- Habitat protection is likely to be the most successful approach to ensuring the long-term survival of the taxon in the wild. Threats to habitat may arise as a result of timber harvesting, roading, and farming. Such threats include:
  - sediment deposition in streams, which can coat the substrata and fill interstitial spaces;
  - variation in water-flow regimes from background levels, which may be caused by vegetation clearing and regrowth, or water abstraction;
  - discharge to streams of effluent which differs in water quality or temperature from background levels in the streams;
  - loss of or damage to riparian vegetation along streams, including intermittent streams and drainage lines without a permanent surface flow. Riparian vegetation is important for bank stabilisation; as a filter for contaminants (such as sediment) in runoff or airborne biocides from spraying; as habitat for adults; and as a source of organic debris, which provides energy and instream habitat. It is important in bed stabilisation, and in shading the streams (reduction in shading can affect water temperatures);
  - reduction in catchment vegetation through clearing or fire, which can alter flow regimes.
- Any protective measures need to take into account activities in the catchment upstream of sites where the Otway Stonefly is located.

### Wider Conservation Issues

Protection of riparian vegetation would be of great benefit in protecting the Otway Stonefly, and has a beneficial effect on a wide range of biota and habitats. Riparian vegetation is essential to the sound ecological functioning of stream systems. Four processes which may pose a threat to Otway Stonefly habitat have been listed on Schedule 3 of the Flora and Fauna Guarantee Act 1988 as potentially threatening processes. These are:

- increase in sediment input into Victorian rivers and streams due to human activities,
- alteration to natural flow regimes of rivers and streams,
- alteration to natural temperature regimes of rivers and streams, and
- removal of wood debris from Victorian streams.

The Aire River from Hopetoun Falls to the ocean has been recommended as a heritage river by the Land Conservation Council (LCC 1991). This will facilitate protection of Otway Stoneflies in this section of the Aire River, though tributary streams and the Aire River upstream of Hopetoun Falls will still need attention to avoid input of contaminants such as sediment.

The trichopteran (caddisfly) *Taskiria otwayensis* Neboiss, 1984 is known only from the Otway Range. Measures taken to protect the Otway Stonefly will probably benefit *T. otwayensis*, which, like the stonefly, has an aquatic larval and terrestrial adult stage. Surveys for the Otway Stonefly and *T. otwayensis* can probably be performed concurrently.

## Social and Economic Issues

Forestry, which occurs in the catchments of many Otway Range streams, could be a major threat to the species unless managed to protect appropriate buffers of vegetation along all creeks where Otway Stoneflies occur, including intermittent stream and drainage lines. Roads should be constructed and maintained so that they do not disturb or drain into streams.

The impact on forestry production of protecting the Otway Stonefly cannot be predicted until the distribution of the stonefly is better known. Protecting environmental values is already an important consideration in areas used for forestry production. The Code of Forest Practices (CFL 1989), which must be adhered to in forestry operations, was designed to ensure protection of the environment. Minimum standards have been specified for retention of riparian vegetation, but the Code requires these to be increased where appropriate to protect environmental values.

Private landholders may be affected if restrictions on clearing are necessary to protect the stonefly's habitat. However, clearing vegetation is already restricted by the Native Vegetation Clearance Controls State Planning Scheme Amendment (S17), under the Planning and Environment Act 1987. The magnitude of this impact cannot yet be assessed.

Protecting and restoring riparian vegetation may have positive economic benefits by maintaining high water quality, avoiding downstream siltation, and filtering runoff to remove particulates and nutrients.

Social benefits resulting from the implementation of this action statement include increased landscape values and the knowledge that the species is being protected. Increased landscape values may result in economic benefits from increased tourism.

## Management Action

### Previous Management Action

- Several recent collections of stonefly nymphs have been made in the Otway Range.
- Designation of National Parks, various types of Reserves, Reference Areas and water supply catchments in the Otway Range have indirectly contributed to protection of the Otway Stonefly's habitat.
- Proposals are being formulated to include two known sites of occurrence of the Otway Stonefly on the National Estate register. The sites are within the Otway National Park and the Melba Gully State Park.

- The Australian National Parks and Wildlife Service has provided funding for surveys for the Otway Stonefly throughout the Otway Range and for production of a research recovery plan during 1993-94.

## Intended Management Action

### Research and Survey

- Determine whether eustheniid nymphs that occur in streams in the Otway Range are the Otway Stonefly, rather than *E. venosa*, by rearing them through to adults.
- Initiate and encourage research into the ecology of the species, including life history, habitat requirements (in particular the role of riparian vegetation during the adult stage, such as the width of vegetation required), threats, and tolerances to threats.
- Continue surveys for Otway Stonefly nymphs and adults in the Otway Range to establish distribution and abundance. Re-survey sites where previous surveys have noted collection of *E. venosa*. Adults have been located about 200 m from streams, but the greatest possible distance will need to be ascertained. Results of surveys will be published.

### Publicity

- Publicise the stonefly's presence, conservation status and habitat requirements and the importance of protecting rivers and their headwaters, through:
  - articles in local papers,
  - Land for Wildlife newsletter, and
  - an information leaflet about the species, which will include information on the importance of protecting headwater and riparian vegetation.

### Liaison

- Liaise with CNR forest managers, Otway Shire Council, Colac and District Waterboard and any other public authorities with land or water management responsibilities within catchments where the Otway Stonefly occurs, to ensure that they are aware of threats to the Stonefly or its habitat and the requirement under the Flora and Fauna Guarantee Act 1988 for public authorities to take into account the Act's conservation management objectives.
- Prepare public authority management agreements to be entered into by DCE and other public authorities to ensure that actions are performed in such a way as to avoid or minimise threats. If known populations of Otway Stonefly occur within stream environs managed by the authority, specific locations and requirements will be given.
- Liaise with private landholders whose properties are within stream catchments where the Otway Stonefly occurs, in particular those whose properties abut those streams, and where threats to habitat integrity are continuing or are planned (e.g. vegetation clearing, roads, water abstraction) to ensure that they are aware of the presence of the species and of activities which may threaten it or its habitat. If river

frontages adjoining private land require extra protection or rehabilitation, landholders will be consulted.

## Land and Water Management

- Ascertain the status of creeks within the species' range-such as whether the creeks have river frontages or other reserves-and the status of land through which they flow (e.g. State forest, National Park, Regional Park, State Park, Reference Area, Flora and/or Fauna Reserve, private land). If necessary, recommend further protection measures.
- Determine whether current stream classification in the Otway Range based on native fish conservation also applies to the conservation requirements of the stonefly (DCE 1991). If not, the conservation classification may need to be revised to take the stonefly's requirements into account.
- Protect streams and riparian vegetation within the stonefly's range by ensuring adherence to the Code of Forest Practices, the Management Plan for the Otway Forest Management Area, Native Vegetation Retention Planning Scheme Amendment, State Conservation Strategy, Wetlands Strategy and the LCC Rivers and Streams Final Recommendations.
- Monitor works proposals within catchments of streams where the Otway Stonefly occurs. Prevent or modify activities so they do not pose a threat.
- Determine the critical habitat of the stonefly following surveys to determine distribution.
- Produce a recovery plan for the Otway Stonefly.

## Other Desirable Management Action

- Where necessary, maintain or upgrade roads, bridges and stream crossings within the Otway Stonefly's range to ensure that sediment is not deposited in streams.
- Determine the appropriate width of buffers of riparian vegetation required to protect the species.
- Maintain a buffer of riparian vegetation 50-100 m wide along all streams within the critical habitat of the Otway Stonefly. This is consistent with buffers established for other rare or threatened stream biota in the Otway Forest Management Area (DCE 1991). If future research shows that a different width is appropriate, then it will be reviewed.

## Legislative Powers Operating Legislation

Flora and Fauna Guarantee Act 1988: provides for listing and requires preparation of an Action Statement. Also provides for determination of a critical habitat and for preparation of Public Authority Management Agreements to be entered into by DCE and public authorities.

Wildlife Act 1975: the Otway Stonefly automatically assumes the status of 'protected wildlife' as a consequence of listing on Schedule 2 of the Flora and Fauna Guarantee

Act and is protected under the Wildlife Act. A permit under this Act will be required for collecting.

Water Act 1989: contains provisions for environmental flows. When any new water diversion from creeks, rivers etc. is proposed (e.g. damming, pumping), the requirements of downstream users must be taken into consideration. The environment is considered a valid user of water, and its needs must be met.

National Parks Act 1975: controls activities within National Parks.

Conservation, Forests and Land Act 1987: provides for establishment of Land Management Co-operative Agreements. Requires the Secretary to CNR to be consulted on plans for public works in waterways.

Planning and Environment Act 1987: provides controls over clearing of native vegetation through the Native Vegetation Clearance Controls, an amendment to the State Section of Planning Schemes, administered under this Act.

## Other Guidelines

- Brinkman, R. & Farrell, S. (1990) Statement of Resources, Uses and Values for the Otway Forest Management Area. Department of Conservation and Environment, Victoria.
- DCE (1992) Management Plan for the Otway Forest Management Area. Department of Conservation and Environment, Victoria.
- CFL (1989) Code of Forest Practices for Timber Production: Revision No. 1. Department of Conservation, Forests and Lands, Victoria.
- EPA (1990) Construction techniques for sediment pollution control. EPA Publication No. 275, Environment Protection Authority, Melbourne.

## Licence/Permit Conditions: Guidelines and Instructions

- Permits are required under the Wildlife Act to take the Otway Stonefly. Permits will only be issued for the purposes of research which will provide information useful for protection and management of the species.
- Collecting in National Parks requires a permit under the National Parks Act.

## Consultation and Community Participation

Land for Wildlife properties within the known range of the stonefly will receive information on the stonefly's habitat requirements.

## Implementation, Evaluation and Review

The action statement will be implemented by CNR Colac Region and the Freshwater Ecology Section. All research will be performed in consultation with the Museum of Victoria Invertebrate Survey Department.

Colac Region will participate in surveys, prepare publicity material, ascertain the status of creeks within the species range, determine if current conservation classifications of creeks are applicable to the stonefly, ensure adherence to relevant codes of practice and other controls, and monitor works proposals.



# Flora & Fauna Guarantee Action Statement

Freshwater Ecology Section will participate in survey work, initiate and encourage research, and provide advice where required.

The action statement will be reviewed following initial survey research work to determine whether actions are still appropriate or need revision.

## **Contacts**

### ***Management***

CNR Colac Region.

CNR Freshwater Ecology Section.

### ***Biology***

Museum of Victoria Invertebrate Survey Department.

CNR Freshwater Ecology Section.

## Compilers

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## Further information

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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## Personal Communication

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