

# Flora & Fauna Guarantee Action Statement

#61

This Action Statement was first published in 1994 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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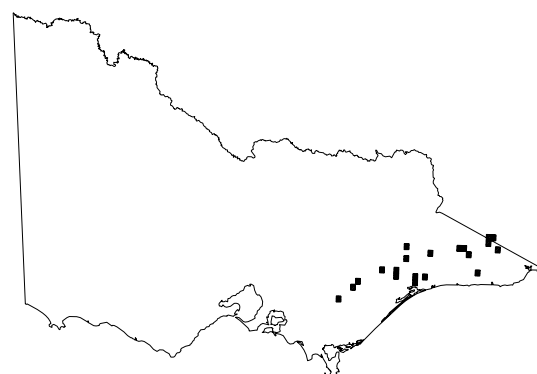
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## Giant Burrowing Frog *Heleioporus australiacus*



Giant Burrowing Frog (*Heleioporus australiacus*)  
(Illustration by John Las Gourgues)



Distribution in Victoria (DSE 2002)

### Description and Distribution

The Giant Burrowing Frog (*Heleioporus australiacus* Shaw & Nodder 1795) is a large, robust species with a maximum body length of 100 mm. Body colour is chocolate brown above and white beneath with scattered yellow spots, usually capping warts, on the flanks and around the cloaca. The back and sides are covered with small warts each with a small black spine. The throat may be washed with brown and may also have black spines, otherwise the ventral surface is smooth and white. In mature males, the girth of the forelimbs usually exceeds the hindlimbs (never in females). A series of black conical spines is obvious on the first, and usually the second and third fingers. The tympanum is distinct and the pupil is vertical. The call is a low-pitched, owl-like 'ou-ou-ou'. More detailed descriptions of the Giant Burrowing Frog are available in Lee (1967) and Cogger (1992).

Records of this species are confined to the

coastal slopes of the Great Dividing Range below 1000 m altitude, between Gosford in New South Wales and Walhalla in central Gippsland. No records are known between Jervis Bay and Eden, indicating that the species may be composed of two disjunct populations. Gillespie (1990) gives a detailed coverage of Victorian records since 1982. All Victorian records of the species have been from eucalypt forest of various types. There are no records from rainforest or ash-dominated wet sclerophyll forest. The Giant Burrowing Frog appears to use small flowing streams as breeding sites. Records of several individuals substantial distances from water indicate that the species uses a wide range of forested environments. The species appears to be absent from cleared farmland and it may be dependant on aspects of forest habitats for feeding, sheltering and suitable breeding sites. Four individuals have been located at dams within forests but it is not known whether dams are used as breeding sites.

## Conservation Status

### Current Status

CNR 1993	Rare
SAC (1991)	Threatened

The Giant Burrowing Frog has been listed as a threatened taxon under Schedule 2 of the Flora and Fauna Guarantee Act 1988.

### Reasons for Conservation Status

Within Victoria only 26 adult frogs, one juvenile frog and three groups of tadpoles have been recorded at 24 localities (Atlas of Victorian Wildlife 1993) scattered over a large area of central and eastern Gippsland. At the majority of sites only a single adult has been found.

During the last decade 25 flora and fauna surveys have been conducted by CNR and its predecessors within the known range of the Giant Burrowing Frog. Only nine individuals have been recorded during these surveys, demonstrating the rarity of the species (Gillespie 1990). Given this level of survey effort it is unlikely that the lack of records is simply due to an inability to detect the species, even with an animal as cryptic as the Giant Burrowing Frog. The species may prove to be widely spread at very low densities or conversely to occur in small isolated colonies.

Gillespie (1990) considered the Giant Burrowing Frog may be adversely affected by current silvicultural practices and fuel reduction burning. These activities may damage potential breeding sites, diminish water quality and remove the litter and groundcover layers which harbour the species' food items. However, several individuals have recently been recorded near Nowa Nowa in a forest area with a history of disturbance from harvesting and fuel reduction burning. Given the lack of knowledge of the species' habitat requirements it is inappropriate to re-evaluate the effects of disturbance, particularly fuel reduction burning, at this stage. Consequently a conservative management strategy has been adopted. The research proposals contained in this action statement should result in a better understanding of the frog's ecology and may allow modification of the management prescriptions outlined in the Intended Management Action section.

Giant Burrowing Frogs use small flowing streams as breeding sites. Their tadpoles are likely to be adapted to the natural fluctuations in stream flow, chemical composition and sediment yield of these streams. Fluctuations of stream conditions caused by human activities such as timber harvesting and roading may not be within the tolerance ranges of these tadpoles resulting in reduced recruitment to the adult population.

In its recommendation for listing under the Flora and Fauna Guarantee the Scientific Advisory Committee (1991) found that the Giant Burrowing Frog was very rare in terms of abundance.

### Major Conservation Objectives

To ensure the long-term conservation of all known populations of the Giant Burrowing Frog in Victoria.

To conserve and manage the habitat of Giant Burrowing Frogs at sites where they have been recorded.

To attain greater understanding of the distribution, habitat, abundance, breeding biology and general ecology of Giant Burrowing Frogs and incorporate the information gained into all relevant CNR management plans.

### Management Issues

Significant areas of potential habitat for the Giant Burrowing Frog are within parks and reserves in Gippsland, however only two of the known records are within formal reserves (Snowy River and Coopracambra National Parks). Four other records have been incorporated into sites of significance from flora and fauna surveys in forest blocks in the East Gippsland Forest Management Area. Although not harvested under current practices, these sites are subject to review under the Forest Management Plan. Individually and collectively, these sites may not be large enough to ensure the species' long-term survival.

Information on species biology and population dynamics is not adequate to determine habitat requirements, impact of forest management practices and status of existing populations. Consequently definition of appropriate management strategies and prescriptions will involve a high degree of extrapolation from the ecology of other anuran species until such information is available.

Processes which threaten the species are those affecting breeding sites such as changes to water flow and quality or to streamside vegetation, or those affecting the wider forest environment, such as removal of litter from the forest floor or a combination of both. Such disturbances could include timber harvesting and regeneration activities, road construction and maintenance, fuel reduction burning, weed invasion and subsequent herbicide spraying, and predation by exotic species.

Several individuals have been recorded long distances from waterbodies indicating that the species utilises, or at least disperses through, forested areas between watercourses. Conservation of narrow buffers along streams is therefore unlikely to provide adequately for all the frog's habitat requirements and these buffers need to be connected to larger areas of reserved forest.

Extractive mining upstream of breeding locations would potentially conflict with the conservation of the species because of increased sediment inflow and possible chemical pollution of the stream.

### Ecological Issues Specific to the Taxon

The biology, distribution and habitat requirements of the Giant Burrowing Frog are very poorly known.

The Victorian population is widely separated from the main NSW population centred around Sydney (Gillespie 1990) and so will be managed as a separate entity. The status of the NSW population is currently under investigation but results are not yet available (M. Mahony pers. comm.). Most records from the Sydney area are from damp scrub and heath habitats on soils

derived from sandstone. This appears to differ from the habitat types favoured in Victoria.

The species is geographically isolated from congeneric species (the other five species of *Heleioporus* are found in south-western Australia). The Giant Burrowing Frog differs from the rest of the genus in some important biological characters, notably time of breeding and habitat preference. Research is difficult because of the dispersed nature of records and the cryptic habits of the species. However a few sites are known where it may be possible to study a number of individuals.

## Wider Conservation Issues

Research into the frog would be most effectively undertaken in conjunction with research into other species such as the Southern Barred Frog (*Mixophyes balbus*), or the effects of forest management practices on amphibians in general. These are subjects about which virtually nothing is known.

Research on the Giant Burrowing Frog may also provide more information on the effectiveness for amphibian conservation of prescriptions for streamside protection within timber harvesting prescriptions established under the Code of Forest Practices (CFL 1989).

Protection of sub-catchments or streamside corridors should reduce soil erosion, stream sedimentation and flooding intensity within catchments and provide habitat for a wide range of other flora and fauna species.

## Social and Economic Issues

Giant Burrowing Frogs are not known from private land in Victoria, therefore most conservation issues will affect land managed by CNR and will be dealt with through departmental planning processes.

The major social and economic issues relate to restrictions placed on forest management, particularly harvesting around known localities of this species, and management of localities which may be discovered in the future. Currently the impact of the Giant Burrowing Frog on the area available for harvesting is small, and it is not expected that this will increase significantly in the life of this action statement.

Minimising disturbance to sub-catchments and control of weed infestations can have positive benefits for recreational bushwalking and camping.

Protection of known Giant Burrowing Frog sites is unlikely to affect grazing licences or water authorities and may enhance water quality through retention of forest cover along creeks.

## Management Action

### Previous Management Actions

#### Timber Harvesting

Current prescriptions require linear reserves of a minimum 20 m to 40 m width either side of permanent streams be protected from harvesting to preserve water quality and other environmental assets (CFL 1989). It is expected that

these prescriptions would benefit any adults or tadpoles present.

All known Giant Burrowing Frog sites within the East Gippsland Forest Management Area have been included in the planning process for delineation of Special Protection or Special Management Areas under the Draft East Gippsland Forest Management Plan.

#### Survey

Since 1983, CNR's ecological survey program has encompassed intensive surveys in a significant proportion of potential Giant Burrowing Frog habitat within East Gippsland with seven individuals being found. Most sites discovered during these surveys have been incorporated into sites of biological significance that have not been subject to timber harvesting. All known sites have been included in the Atlas of Victorian Wildlife.

During 1991-92, staff from CNR's Orbost office undertook some additional survey work in areas where Giant Burrowing Frogs have previously been recorded. None were found.

#### Biology

The genus *Heleioporus* has been extensively studied in Western Australia (Lee 1967).

The Giant Burrowing Frogs advertisement call has been recorded, its diet investigated and its eggs and tadpoles described (Littlejohn & Martin 1967; Watson & Martin 1973; Webb 1987).

A pilot scheme for the 'Frogwatch' program was initiated by DCE in 1991 and a 'Frogwatch' kit was launched in 1992. This program aims to increase awareness within the community about frog habitat and the decline of frogs in south-eastern Australia, as well as create a database of frog distribution. As part of this scheme, the plight of threatened species, such as the Giant Burrowing Frog, is highlighted.

## Intended Management Action

### General

The Gippsland Area will implement this action statement with assistance from the Flora and Fauna Branch.

- Ensure, in part through this action statement, that all relevant CNR field staff are aware of this species and actively report all records.

### Timber Harvesting

Introduce the following management practices at all sites where the Giant Burrowing Frog has been recorded since 1980 and at all sites discovered after the production of this action statement:

- Stream records on first-order stream: no harvesting or new roading in the catchment.
- Stream records on second or higher order stream: no harvesting or new roading inside a 100 m buffer each side of the stream for 1 km upstream and downstream of the record.
- Offstream records: no harvesting or new roading inside a 50 ha block of forest around the record or equivalent area of suitable habitat nearby. This prescription will be included in the conservation zoning system of Forest Management Plans for State forests.

These prescriptions may be varied at particular sites in consultation with flora and fauna staff depending on site conditions.

Note: For the purposes of this action statement, a first order stream is the headwaters of a catchment and is the smallest stream mapped on the 1:100 000 Natmap series. Second order streams are the next level of stream further down the catchment. For first order streams the size of each catchment will vary, however target size is approximately 50 ha.

### Fuel Reduction Burning

- Incorporate the following guidelines for the Giant Burrowing Frog into the yearly fuel reduction burning plan:
  - Stream records on second or higher order stream: burning will be carried out so that a 100 m buffer on each side of the stream remains unburnt.
  - Other records: burning will be carried out so that either the area around the Giant Burrowing Frog site is not burnt or a mosaic of burnt and unburnt patches will be formed.
  - If burning at the site is unavoidable because of operational difficulties or fire protection imperatives, flora and fauna staff will be consulted.

### Pre-1980 Records

Investigate all sites where Giant Burrowing Frogs were recorded before 1980 to determine if the species is still extant at these locations. If so, these sites will be treated as outlined above.

### Research

Carry out biological and habitat studies on the species.

Areas that require research include:

- habitat preferences,
- effect of habitat alteration on survival and breeding,
- breeding habitat and timing,
- breeding biology,
- extent of utilisation of surrounding forest by adults and metamorphlings,
- ranging and dispersal behaviour, and
- incidence of return to particular breeding locations.

### Monitoring

Monitor sites where the species has been recorded in recent years, targeting sites which are accessible and where there is a realistic chance of locating individuals (e.g. Coast Range, Colquhoun and Mt Alfred Forest Blocks).

Techniques would include censusing, playing back calls, pitfalling, mark-recapture, searching streams for tadpoles and searching for individuals while driving along tracks on wet nights.

### Publicity

- Produce a pamphlet similar to that for the Spotted Tree Frog, showing similar species and how to distinguish them.
- Raise awareness in the local area via newspaper articles and the Frogwatch scheme to encourage community participation in reporting frog sightings. Given the paucity of records this would be valuable in conservation of the species.

- Encourage field naturalist clubs and similar organisations to search areas of likely habitat and report any sightings.

### Permits

- Issue research permits involving this species only where they are consistent with the research and monitoring aims outlined above.
- All individuals found dead will be lodged with the Museum of Victoria.
- Collection by the public is unlikely to be significant for this species because of the difficulty of locating individuals.

### Planning

Identify all sites of the Giant Burrowing Frog on all relevant CNR site registers and plans.

### Captive Studies

These are very expensive to maintain and have limited relevance at this stage. CNR will not conduct any captive studies but would support such studies at tertiary and other recognised institutions.

### Other Desirable Management Actions

- Conduct a habitat assessment of all historical sites using Bioclim and GIS to suggest likely localities for survey.
- Encourage tertiary institutions to investigate the taxonomic status of northern (Sydney) and southern (Victoria) populations.
- Investigate the effects of introduced predators on adults and of introduced fish on tadpoles.

### Legislative Powers Operating

#### Legislation

*Flora and Fauna Guarantee Act 1988*: regulates taking of listed taxa from the wild, provides for habitat protection and promotes conservation actions.

*Wildlife Act 1975*: controls research, management and taking of protected wildlife including all native vertebrates and listed invertebrates.

*Forests Act 1958*: regulates taking of forest produce and roading.

*National Parks Act 1975*: provides for reservation and protection of natural areas within Victoria.

*Crown Lands (Reserves) Act 1978*: provides for reserving and protecting areas of public land not managed under the National Parks Act.

*Vermin and Noxious Weeds Act 1958*: provides for the control of pest plants and animals.

#### Licence/Permit Conditions

A permit for live trapping will only be issued by the Manager, Flora and Fauna Branch, if the proposal is consistent with the objectives of this action statement. Permits for collecting specimens will only be issued where the collection will not adversely affect the extant population.

#### Consultation and Community Participation

Liaison with Melbourne University Zoology Department and other relevant researchers will improve access to new information concerning this species and thus its management.

## **Implementation, Evaluation and Review**

The Area Manager, Gippsland, will be responsible for co-ordinating the implementation of this action statement. The Co-ordinator, Flora, Fauna and Fisheries at the Orbost Office will monitor the annual implementation of the actions.

When biological and habitat information from initial studies becomes available, management implications will be considered and some sections of this action statement may be re-evaluated. When 50 sites have been located, the above prescriptions may be reviewed with a view to maintaining a high level of protection of sites in good-quality habitat. A full review should be undertaken in 1988.

## **Contacts**

### ***Management***

Flora, Fauna and Fisheries Officers from Orbost, Bairnsdale and Central Gippsland Offices.

Wildlife Section, Flora and Fauna Branch.

### ***Biology***

Graeme Gillespie and Peter Robertson, Flora and Fauna Branch, CNR.

Murray Littlejohn and Angus Martin, University of Melbourne.

Terry Mazzer, NSW National Parks and Wildlife Service, Broken Hill.

## Compiler

T. Mazzer

## 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 Communications

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