

Draft Flora and Fauna Guarantee Action Statement

Southern Barred Frog *Mixophyes balbus*

Description

The Southern Barred Frog (*Mixophyes balbus*) is a large, muscular, terrestrial frog that can grow to approximately 80 mm in length. Its body colour is light brown to grey above with irregular darker blotches on the back where the skin is finely granular. It has a smooth belly which is coloured white or cream tending to pale yellow. Its head has a dark brown to black stripe which begins at the nostril, passes through the eye and continues to the shoulder. The tympanum is distinct and the eyes are large and black with a vertical pupil. A distinct, pale blue crescent appears above the iris in adults. Both the arms and legs have narrow dark bars on the upper parts. The call is a short, harsh trill described as "kook kook kook kra-a-ak kruk kruk" (DSE 2004) and gives rise to another common name of the species - the Stuttering Frog.

Tadpoles of the Southern Barred Frog are described by Anstis (2002) as large, streamlined and broader across the abdomen than deep, growing to about 65 mm in length. The body colour is generally very dark to black on the upper parts and side, although some lighter specimens can display a sandy gold colour along the abdomen (Anstis 2002).

Recent DNA analysis suggests the Southern Barred Frog may be two separate species. Research is currently underway to confirm this (Donnellan & Mahony 2009).

More detailed descriptions of the Southern Barred Frog are available in Barker *et al.* (1995), Cogger (2000) and Tyler & Knight (2009). Anstis (2002) provides a description of the embryo, tadpole and metamorphosis of the species.

Distribution

The Southern Barred Frog has been recorded along the eastern slopes of the Great Dividing Range from tributaries of the Timbarra River around Drake in northern New South Wales to the Cann River catchment in far East Gippsland in Victoria (Gillespie & Hines 1999). The altitudinal range of records extends from 20 metres to over 1400 metres above sea level (Gillespie & Hines 1999). In Victoria, the Southern Barred Frog has been recorded from only three locations: Tennyson Creek, Cann River and Jones Creek, all in far East Gippsland (Gillespie & Hines 1999). The most recent record of the species in the Atlas of Victorian Wildlife is 1983 (DSE 2004). Fauna surveys conducted throughout East Gippsland as part of intensive flora and fauna assessments of forest management blocks in the late 1980s and early 1990s did not record this species (Lugg *et al.* 1993), nor did subsequent searches by Holloway & Osborne (1997) and it is possible that the species is now extinct in Victoria (Hunter and Gillespie, in prep). However, the species is highly cryptic when at low densities, and may persist in remote, poorly surveyed areas.

Habitat

Habitat characteristics of the species within Victoria are poorly known due to the paucity of records of the Southern Barred Frog from this state. Throughout the rest of the species' range, occurrence is often associated with permanent streams in temperate and sub-tropical rainforest, wet sclerophyll forest (Mahoney *et al.* 1997) and moist gullies in dry forest (Gillespie and Hines 1999). Mahoney *et al.* (1997) found the species to occur in first order streams and occasionally springs, but was not associated with ponds or ephemeral pools.

Lemckert *et al.* (1997) and Daly (1998) provide more detailed descriptions of habitat at sites where the species has been recorded from the south coast of New South Wales.

Life history and ecology

The Southern Barred Frog is an obligate stream breeder (Hunter and Gillespie, in prep) with males calling during spring and summer from beside streams or on logs above flowing water (Anstis 2002). Observations by Lemckert *et al.* (1997) suggest that February may be the most active period for breeding in the southern part of the species range. Eggs are deposited into a shallow nest (or several nests) dug by the female in gravel or leaf litter in slow-flowing riffle sections of streams (Anstis 2002). Tadpoles feed among stones and leaf litter in riffles and pools in streams, before metamorphosis occurs after about 15 months (Anstis 2002). Lewis (2000) provides detail of a Southern Barred Frog breeding episode in northern New South Wales.

Adult frogs are terrestrial and highly cryptic, often remaining covered beneath leaf litter and soil in drier periods (Hunter & Gillespie, in prep). Individual frogs have been found up to 100 m away from water bodies during wetter conditions (Lemckert & Morse 1999).

Like other members of the genus, the diet of the Southern Barred Frog consists of insects and smaller frogs (Cogger 2000).

Conservation status

National conservation status

The Southern Barred Frog is listed as “vulnerable” under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Victorian conservation status

The Southern Barred Frog has been listed as “threatened” under the *Flora and Fauna Guarantee Act 1988*.

The Southern Barred Frog is considered “critically endangered” in Victoria according to DSE’s *Advisory List of Threatened Vertebrate Fauna in Victoria – 2007* (DSE 2007).

Threats

Threats to the Southern Barred Frog have not been well studied in Victoria. However they are likely to be similar to the threats posed to the species throughout other parts of its range. These include disease and habitat modification. These threats may also be exacerbated by the effects of climate change.

<i>Standard threat</i>	<i>Source Of Threat</i>	<i>Explanation</i>
Disease.	Disease - Chytrid Fungus.	The disease chytridiomycosis, caused by the fungal pathogen <i>Batrachochytrium dendrobatidis</i> , has been implicated in rapid declines of numerous amphibian species around the world. Members of the genus <i>Mixophyes</i> , including <i>M. balbus</i> , are known to be susceptible to this disease and it is probable that the disease has played a considerable role in declines in this genus.
Habitat damage or loss.	Water - level / flow changes.	Changes to hydrological processes may have an impact on the specific habitats required for breeding, such as shallow gravel-bottomed pools used for nest construction.
Weather.	Weather - climate change.	The impact of climate change on the Southern Barred Frog has not been assessed in Victoria. Reduced rainfall (in terms of volume and /or frequency) resulting in the drying of breeding sites and habitat may have adverse impacts on this species. Climate change may also influence seasonal behaviour patterns, breeding activity, egg and larval duration and prey species.

Important populations

No extant populations of the Southern Barred Frog are known in Victoria. Any populations discovered in Victoria will be considered important and measures described in this Action Statement will be implemented to ensure such populations are protected.

Past management actions

<i>Action</i>	<i>Explanation</i>
Conduct survey to confirm existing records.	An intensive survey was commissioned by the Victorian Department of Natural Resources and Environment in 1995 to search for stream-breeding frogs in Far East Gippsland. No Southern Barred Frogs were detected during this survey (Holloway & Osborne 1997).
Develop/revise management prescriptions	The East Gippsland Forest Management Area Plan (CNR 1995) describes an interim

and/or zoning for State forest.	conservation guideline for the Southern Barred Frog.
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Conservation objectives

Long term objective

To ensure that, if positively located in Victoria, the Southern Barred Frog can survive, flourish and retain its potential for evolutionary development in the wild.

Objectives of this Action Statement

- To secure populations or habitat from potentially incompatible land use or catastrophic loss.
- To increase knowledge of biology, ecology or management requirements.

Intended management actions

The intended management actions listed below are further elaborated in DSE's Actions for Biodiversity Conservation (ABC) system. 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.

<i>Standard objective</i>	<i>Target</i>	
To increase knowledge of biology, ecology or management requirements.	<ul style="list-style-type: none"> • Sufficient targeted surveys conducted to confidently determine whether population(s) remain in Victoria. • Where populations are confirmed, threats have been assessed so that appropriate management can be determined and provided. 	
<i>Action</i>	<i>Details</i>	<i>Responsible agents</i>
Conduct survey to confirm existing records.	Conduct surveys for the species to determine its status within Victoria. All Victorian records of this species are dated, and subsequent surveys have failed to detect this species in Victoria. Targeted surveys should be undertaken by people experienced with this species in the wild.	DSE Biodiversity & Ecosystem Services
Assess threats.	In the event that an extant population of the Southern Barred Frog is located in Victoria, assessing the threats posed to the population will be a priority.	DSE Biodiversity & Ecosystem Services

<i>Standard objective</i>	<i>Targets</i>	
To secure populations or habitat from potentially incompatible land use or catastrophic loss	<ul style="list-style-type: none"> • Best available knowledge (Recovery Team, updated action statement and recovery plan) has been used to guide management of this species. • Where populations have been found in Victoria, interim conservation guidelines have been applied at each location where the Southern Barred Frog is located. 	
<i>Action</i>	<i>Details</i>	<i>Responsible agents</i>
Establish/maintain Recovery Team.	Establish and maintain a Recovery Team to guide the implementation of this Action Statement.	DSE Biodiversity & Ecosystem Services
Implement prescriptions and zoning in State forest.	<p>Should the Southern Barred Frog be found in State Forest in East Gippsland, the interim conservation guidelines for the species, as described in the East Gippsland Forest Management Area Plan (CNR 1995) will be applied. This guideline will be revised if additional information on the species in Victoria is collected and the current protection measures are insufficient to protect populations from land management practices.</p> <p>Current guidelines are as follows: At all sites where the Southern Barred Frog is recorded on first-order streams or at sites away from streams, approximately 50 ha (preferably</p>	DSE Land and Fire Gippsland

	a sub-catchment unit) will be included in the Special Protection Zone (SPZ). Sites on second-or higher-order streams (SPZ) will be included in a linear reserve extending 100 m from each bank for one kilometre upstream and one kilometre downstream from the detection site. Construction of new roads within these parts of the SPZ will be avoided.	
Support Commonwealth policy, initiatives and recovery planning.	A National Recovery Plan is being prepared for the Southern Barred Frog (Hunter & Gillespie in prep). DSE will contribute to the planning and implementation of this plan as required.	DSE Biodiversity & Ecosystem Services

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