



FLORA & FAUNA  
GUARANTEE

FLORA AND FAUNA GUARANTEE - SCIENTIFIC ADVISORY COMMITTEE  
FINAL RECOMMENDATION ON A NOMINATION FOR LISTING

High frequency fire resulting in disruption of life cycle processes in plants and animals and loss of vegetation structure and composition  
(Potentially Threatening Process)

Date of receipt of the nomination: 28 May 2001 File No.: FF/54/0153  
Date of preliminary recommendation: 7 August 2001  
Date of final recommendation: 13 November 2001

**Validity:** The nomination is for a valid item

**Prescribed Information:** The prescribed information was provided.

**Name of the Nominator** is adequately provided.

**Name and Description of the process:**

In the opinion of the SAC the process is adequately defined and described.

High frequency fire is defined as two or more successive fires close enough together to interfere with the ability of plants to recruit new individuals into a population at a sufficient rate to compensate for adult mortality, or to build up a seedbank sufficient in size to maintain the population beyond the next fire. Sustained high frequency fire will consequently lead to a loss of plant species and hence a simplification in vegetation structure. For animals, high frequency fire indirectly affects survival of species through modification of habitat and most probably also because life cycle processes are disrupted.

- The nominated process potentially ranges across all areas that experience fire in Victoria, although the likelihood of occurrence of high frequency fire is currently greatest in some mallee areas, foothill forest habitats and in forest areas close to settled areas. No one interval can be used as an acceptable time between fires for the maintenance of biodiversity across Victoria, i.e. it is not possible to say all fire intervals should be greater than say five years across the state. This is because the timing of critical life history processes of communities differs markedly across ecosystems (or Ecological Vegetation Categories).
- There is strong evidence that many flora and fauna species and the communities they inhabit are adversely affected by high frequency of fire. The specific frequency of fire that will be detrimental to a species or community will vary from place to place, depending upon the survival mechanisms that the species or community exhibit and local conditions. The number of fires over any set time period that will constitute a detrimental high fire frequency will therefore be specific to particular localities and communities.

**The range of flora or fauna affected or potentially affected** was adequately stated in the nomination.

**Significance of the threat which the potentially threatening process poses or has the potential to pose** was adequately stated in the nomination.

**Eligibility for listing as a potentially threatening process under the Flora and Fauna Guarantee**

The nominated item satisfies at least one criterion of the set of criteria prepared and maintained under Section 11 of the Flora and Fauna Guarantee Act 1988, and stated in Schedule 1 of the Flora and Fauna Guarantee Regulations 1991.

**Evidence that criteria are satisfied:**

**Criterion 5.1** *The potentially threatening process poses or has the potential to pose a significant threat to the survival of a range of flora or fauna.*

**Evidence:**

Plants and animals have a variety of mechanisms to survive individual fires. The long-term survival of plants and animals over repeated fires is dependent upon two key features: i) the ability of species to maintain life cycle processes; and, ii) the maintenance of vegetation structure over time as habitat for animal species. Where fires occur very close together in time (high frequency fire) both these key features can be disrupted. High frequency fire is defined as two or more successive fires close enough together in time to interfere with or limit the ability of plants or animals to recruit new individuals into a population, or for plants to build up a seedbank sufficient in size to maintain the population through the

next fire. Sustained high frequency fire will consequently lead to a loss of plant species, a reduction in vegetation structure and a corresponding loss of animal species.

**Sub-criterion 5.1.1** *The potentially threatening process poses or has the potential to pose a significant threat to the survival of two or more taxa.*

**Evidence:**

High frequency fire has been identified as a threat to a number of threatened and/or listed species and communities. These include:

**Birds**

*Calyptrorhynchus lathami* (Glossy Black-Cockatoo), *Dasyornis brachypterus* (Eastern Bristlebird), *Leipoa ocellata* (Mallee Fowl), *Pezoporus wallicus* (Ground Parrot).

**Mammals**

*Dasyurus maculatus* (Spot-tailed Quoll), *Dasyurus viverrinus* (Eastern Quoll), *Isodon obesulus* (Southern Brown Bandicoot), *Ningauai yvonneae* (Southern Ningauai), *Petaurus norfolcensis* (Squirrel Glider), *Potorous tridactylus* (Long-nosed Potoroo), *Potorous longipes* (Long-footed Potoroo).

Populations of some currently common animal species could become threatened by high frequency fire. Some examples of mammals include:

*Acrobates pygmaeus* (Feathertail Glider), *Antechinus flavipes* (Yellow-footed Antechinus), *Antechinus swainsonii* (Dusky Antechinus), *Cercartetus nanus* (Eastern Pygmy Possum), *Pseudocheirus peregrinus* (Common Ringtail Possum) and *Petaurus breviceps* (Sugar Glider).

**Sub-criterion 5.1.2** *The potentially threatening process poses or has the potential to pose a significant threat to the survival of a community of flora or fauna.*

**Evidence:**

Some examples of listed plant communities potentially threatened by high frequency fire include:

- Cool Temperate Rainforest, Warm Temperate Rainforest.
- Semi-arid Herbaceous Pine - Buloke Woodland Community, Semi-arid Herbaceous Pine Woodland, Community, Semi-arid Northwest Plains Buloke Grassy Woodlands Community and Semi-arid Shrubby Pine - Buloke Woodland Community.

**Additional Information**

- There is a large literature related to fire and its affects on native flora and fauna in Australia (see references).

**Advertisement for public comment**

In accordance with the requirements of Section 14 of the **Flora and Fauna Guarantee Act 1988**, the preliminary recommendation was advertised for a period of at least 30 days.

The preliminary recommendation was advertised in:

'The Age' - on 26 September 2001

'The Weekly Times' - on 26 September 2001

The *Government Gazette* - on 27 September 2001

Submissions closed on 31 October 2001.

**Further evidence provided:**

Four submissions were received, although no evidence was provided to warrant a review of the Scientific Advisory Committee's preliminary recommendation that the taxon is eligible for listing.

**Documentation**

The published information provided to the SAC has been assessed. To the best of their knowledge, the SAC believes that the data presented are not the subject of scientific dispute and the inferences drawn are reasonable and well supported.

**Final Recommendation of the Scientific Advisory Committee**

The Scientific Advisory Committee concludes that on the evidence available the nominated item is eligible for listing in accordance with Section 11 of the Act because primary criterion 5.1 has been satisfied. The SAC also concludes that sub-criteria 5.1.1 and 5.1.2 have been satisfied and that no evidence exists to suggest that primary criterion 5.1 cannot be satisfied as a consequence of sub-criteria 5.1.1 and 5.1.2 being satisfied.

The Scientific Advisory Committee recommends that the nominated item be supported for listing on Schedule 3 of the Flora and Fauna Guarantee Act 1988.

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- Caughley, J. (1985) Effect of fire on the reptile fauna of mallee. In 'The Biology of Australasian Frogs and Reptiles' (eds. G. Grigg, R. Shine and H. Ehmann), pp. 31-34. Surrey Beattie and sons, Sydney.
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