



Bev Dick
Vice President, Rubicon Forest Protection Group
admin@rubiconforest.org

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The Hon Ingrid Stitt MLC
Minister for Environment

By email

Dear Ms Stitt

Unrestrained tree fern destruction breaches the RFA, the Code and the FFG Act

It is now approaching two months since we wrote to you on the above matter (16/1), and 4½ months since we raised the matter with your predecessor Ms D'Ambrosio. Such a long delay in responding to such a critical issue involving the loss of both biodiversity and ecological resilience is disappointing.

In preparing your response, I draw your attention to a document prepared in 2000 by the former Department of Natural Resources and Environment that dealt with the consequence of loss of treeferns from our forests. The document to which I refer is the *Draft Victorian Tree Fern Management Plan – Background Paper 2001-2006*. It was removed, long ago I believe, from your Department's website but is still available in the State Library.

Section 3 on p.3 of the document, *Tree-Ferns as a Keystone Species* (attached), highlights the variety of ecological features that make treeferns so ecologically critical, many of which I identified in my letters to you and Ms D'Ambrosio.

Below are other key extracts from the Report:

Research in the wet forests of Victoria's Central Highlands also indicates that clear-fell timber harvesting has led to the loss of tree-ferns from the understorey, with no evidence to date that they have the potential to recover their previous numbers or ecosystem function (Ough and Murphy 1996, 1998, Ough⁸ pers comm).

There are several aspects of this research that needs to be considered. These include the survival of tree-ferns in a coupe post logging, the efficacy of understorey islands, recruitment in regrowth forest and the impact of past forestry on tree-fern range and/or geographic variation.

The survival of Soft Tree-ferns post logging varies from 0-40%, the average being 15%. Of this percentage, most of these are relatively small (less than 1.5m) and non-epiphyte supporting. Furthermore, initial survival rates are not a reliable indicator of the impact of clear-felling. Tree-fern mortality has been seen to continue after the initial year of clearfelling (Ough pers comm.).

Soft Tree-ferns have characteristically slow death rates (Neyland 1986, Robin 1985). It is not clear what factors lead to this mortality. Undisturbed moist forests provide adequate moisture for Soft Tree-ferns for most of the year. However, logged forests and regenerating forests have a drier microclimate (Ashton 1975, Adams *et al* 1991 cited by Blake 1995). Photosynthesis in Soft Tree-ferns is unable to occur when atmospheric humidity is low.

3 Tree-ferns as a keystone species

The trunks of tree-ferns, particularly the Soft Tree-fern, when it exceeds about 1.5 m height, are important substrates for obligate epiphytes such as orchids, ferns and bryophytes (mosses and liverworts). The trunks are also the nursery sites for some tree and shrub species, which are facultative epiphytes and are important for the re-establishment of these species in forests (¹Cameron pers. comm.). For some epiphytic species, including both facultative and obligate epiphytes, the trunks provide the major substrate for germination. Some of obligate epiphytes such as Fork Ferns (*Tmesipteris* species) are virtually restricted to the trunks of tree-fern species (Cameron pers. comm.). Fork Ferns have a high phylogenetic significance since they provide an important evolutionary link to the early colonisation of freshwater and terrestrial habitats by advanced vascular plants some 400 million years ago (²Drinnan pers comm.) These plants have changed little over this period, and are an example of what may be referred to as living fossils. Sites with tree-ferns supporting threatened *Tmesipteris* species are of National Significance under the National Estate Criteria and should be protected.

In undisturbed Wet Forest the trunks of Soft tree-ferns also act as a nursery site for the establishment of seedlings of some tree and shrub species such as Banyalla (*Pittosporum bicolour*), Prickly Currant Bush (*Coprosma quadrifida*), Mountain Pepper (*Tasmannia lanceolata*) and the Musk Daisy Bush (*Olearia argophylla*) (Ough and Murphy, 1996).

Animals have also been shown to be reliant on tree-ferns ranging from invertebrates to mammals. The genus of native bees, *Exoneura*, which utilises a wide range of flowering plants collecting nectar and pollen, nests in the tree-fern fronds that accumulate around the trunks (Sugden 1988, Blows and Schwarz 1991). Colonies of *Exoneura bicolor* are rarely found in substrates other than tree-fern and are distributed according to tree-fern occurrence (Blows and Schwarz 1991).

Mountain Brushtail Possums (*Trichosurus caninus*) are known to feed on tree-ferns (Seebeck *et al* 1984). Although the reason is not clear, there is a positive correlation with the numbers of these possums and vegetation with high numbers of tree-ferns (Lindenmayer *et al* 1994). Another food source, hypogean fungi, is highest in such vegetation as well.

Crimson Rosellas, *Platycercus elegans*, commonly feed on tree-fern spores. Furthermore, Rufous Fantails, *Rhipidura rufifrons*, have been observed foraging on invertebrates on the fronds and around tree-ferns (Loyn pers comm).