

Responses to paper by V. Jurskis in Volume 63(3)

1. Vegetation and fire

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There a number of issues that concern us about a recent article published in *Australian Forestry* 63(3) pages 166-173 by V. Jurskis (2000). The article deals with the nature of native vegetation and fire regimes prior to European settlement in south-eastern Australia. Jurskis (2000) provides a commentary on a number of previous publications including a booklet by Ryan *et al.* (1995) and our critique (Benson and Redpath 1997) of this booklet and other views, including Tim Flannery's *The Future Eaters* (1994).

Fire

We agree with Jurskis's assertion that there is some common ground between our views and the views of Ryan *et al.* (1995) on vegetation management in relation to fire. However, there is also major disagreement. We consider Jurskis (2000) falsely states our intention in writing Benson and Redpath (1997). We did not set out to propose a "philosophical" stance as he suggests on page 166. Nor are we proponents of "passive management" as he writes on page 172. Moreover, it appears on reading Jurskis (2000) that he is an advocate for frequent controlled burning of forests. Therefore, his critique should not be seen to be an objective analysis.

Throughout Benson and Redpath (1997), and in a subsequent publication that responded to comments by Flannery (Benson and Redpath 1998), we emphasise that at the time of European settlement, there were a wide variety of vegetation types. These would have been subject to, and would have adapted to, a variety of fire regimes - some frequent, some infrequent. We challenged simplistic notions and unsubstantiated observations about the composition, structure and fire regimes in pre-European vegetation across south-eastern Australia depicted in Ryan *et al.* (1995) and Flannery (1994).

Contrary to Jurskis (2000, page 168), both Ryan *et al.* (1995) and Flannery (1994) advocate that most of the pre-European landscape was composed of a grassy understorey and was frequently burnt by Aborigines. We illustrated that this scenario was unlikely by correcting, and placing in proper context, historical quotes used by Ryan *et al.* (1995) to justify their views. Secondly, we summarised the scientific literature on the nature of pre-European vegetation in south-eastern Australia.

Benson and Redpath (1997) state that Aborigines would have applied a mosaic-burning pattern to some types of vegetation including grasslands and grassy woodlands. We also provided other interpretations and explanations for Aboriginal use of fire for other purposes, such as a weapon or defence against early settlers. Nevertheless, shrubby forest and woodlands, heaths, inland Acacia and chenopod shrublands, alpine woodlands and herbfields are unlikely to have been burnt frequently. Our views are largely supported by a thorough review of the literature on fire and Australian vegetation by Bowman (1998).

There also is evidence that in shrubby forests, including heath, many species of plants will become extinct if burnt every few years (Keith 1996). This type of vegetation is not as restricted as suggested by Jurskis (2000). It includes coastal sands and escarpment and tableland granites and sandstones. These areas make up more than half the area of national parks in eastern NSW. Yet Ryan *et al.* (1995) and Flannery (1994) would have us burn these areas as frequently as grassy woodlands. It is this over-simplification that we attempted to counter in Benson and Redpath (1997).

Fire and fauna

It appears that some species of fauna are threatened by frequent fire - due to loss of cover from predators, shelter and food. Jurskis (2000) seems to underplay the evidence supporting this view. On page 168 of Jurskis (2000) the author seems not to accept that frequent control burning may lead to loss of forest floor litter and debris that provide cover for animals. We understand that wildlife surveys in places such as Guy Fawkes National Park on the north coast of NSW reveal a loss of ground fauna due to frequent, illegally lit fires.

Jurskis (2000, page 170) suggests that total fire exclusion from a Western Australian nature reserve, containing the rare Western Bristlebird (*Dasyornis longirostris*), goes "against the wealth of Australian experience indicating the failure of fire exclusion policies". However, in criticizing Smith's (1987) suggestion that fire be excluded from Western Bristlebird habitat, Jurskis (2000) fails to acknowledge the reasons for this policy given in Smith (1987) and reiterated in a recent publication by Abbott (2000). Abbott (2000) confirms, on page 294 of his assessment of the impact of agricultural development and changed fire regimes on avifauna species composition, that frequent burning is detrimental to the long-term persistence of the Western Bristlebird and several other rare bird species.

Smith (1987, page 273) states that for 50 years before the mid-1980s there were many fires in the reserve but he emphasises that it is unlikely that all of the reserve was ever burnt simultaneously. This implies there were always unburnt refugia for the birds. Smith (1987) states that the absence of fire since 1970 has led to a growth of all populations of the rare bird species in the reserve. Jurskis (2000) fails to mention this and has used Smith (1987) out of context, in a similar manner that Ryan *et al.* (1995) used quotes from explorer journals.

The NSW Scientific Committee has listed "frequent fire" as a threatening process under the NSW Threatened Species Conservation Act. They would not have done this if there were not ample scientific evidence to show that this process threatens species. The challenge for scientists is to define what constitutes "frequent fire" as a threatening process for different types of vegetation.

Clearing

Jurskis (2000, page 167) states that agricultural clearing was concentrated in open grassy woodlands of coastal valleys, tablelands and western slopes. While most clearing has occurred in those regions, substantial clearing also took place in dense forests in eastern NSW. For example, Lott and Duggin (1993) document the clearing of 99.3% of the 75 000 ha Big Scrub sub-tropical rainforest on the north coast of NSW. Similarly, dense *Eucalyptus*, *Melaleuca*, *Allocasuarina* forests and rainforests growing on the alluvial floodplains of coastal rivers were extensively cleared (Benson 1989). Additionally, other forests in regions with high nutrient soils and high rainfall such as the Robertson Plateau on the Southern Tablelands (Benson 1999), northern suburbs of Sydney (Benson and Howell 1990) and coastal settlements such as Coffs Harbour were cleared for agriculture in the early decades of European settlement.

Conclusion

Given we now have a fragmented landscape where pre-European fire regimes (whatever they were) are no more, fire management should be determined by management objectives. If there is a requirement to protect biodiversity, then fire regimes should be driven, at least in part, by understanding the population dynamics of a range of species. If patchy, frequent burning is not threatening species extinction then it may be an appropriate management strategy. Certainly, this may apply to grassy ecosystems. Or it may apply to areas of vegetation for the protection of private property, structures or fire-sensitive forest plantations.

We consider that burning is a legitimate land management practice irrespective of land tenure - including wilderness areas in national parks. However, if the protection of biodiversity is a primary consideration, scientific evidence should underpin imposed fire regimes.

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