

in the text) against CALM. The comments on monitoring related to two issues. Firstly, there is inadequate monitoring of forest biota in Australia (including in Western Australia). Secondly, the scientific (academic) community views monitoring (as opposed to experimental studies) as second

rate. This dissuades many scientists (particularly at university) from initiating or participating in such work.

It is encouraging that CALM places such importance on monitoring. I look forward to the publication of the studies from Kingston and other CALM

forest monitoring programmes. As Calver and Dell (this issue) demonstrate, there is a serious lack of such (published) data on which to develop plans for the conservation and management of forest biota in Western Australia.

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## CORRESPONDENCE

### Jarrah Forest Birds

IN 1974 I began a project lasting seven years in which I recorded wildlife sounds in Western Australia's south-west forests. Twelve years later, in 1993, I began a second project with new equipment for the purpose of upgrading the sounds of my first project.

The procedure in both projects was to select an area of forest where birds and bird song were plentiful. I then placed microphones in trees and bushes before sundown and camped nearby. At day break I put on headphones to monitor the bird calls. If they were of good quality I began recording.

It was not easy to find healthy forest where bird-life was vibrant. I found that birds were only numerous in areas which had remained unburnt for several years. In the early project I obtained no useful recording in areas which had been burnt within five years. It was only worthwhile placing microphones in patches of forest which had remained unburnt for six years or more. Nevertheless, by persevering for seven years, I succeeded in obtaining a satisfactory representation of the bird calls of the Jarrah and Karri forests<sup>1</sup>. The work was much easier in the Karri forest than in the Jarrah forest because little burning had been done in the Karri areas at that time.

I commenced the second project armed with a knowledge of good bird spots from the previous project. The new project, I thought, would be easy and take only a fraction of the time which the first project took. I was sadly disappointed. The good areas were good areas no more. For six months I crisscrossed approximately half of the accessible Jarrah forest, testing many prospective areas by camping, looking and listening. Areas which in the early project were useful if unburnt for six years were consistently short of

bird-life in the second project. To obtain worthwhile recordings it was necessary to find areas unburnt for more than 10 years. I found one area which I estimated had not been burnt for 15 years. The bird-life there was vibrant; the forest was healthy. It was the only area which satisfied me for my project. Areas burnt between 10 and 15 years were too hard to work in.

The reason for areas unburnt for six years giving satisfactory results in the first project and not in the second project is understandable on the basis that the humus-related food in the frequently burnt forest was depleted. I found that healthy, unburnt forest patches had a thick ground layer of leaves and litter at various stages of decomposition. By digging down through this layer numerous insects were found which were instrumental in the decomposition process and which I assumed obtained their sustenance from the leaves and litter. Birds, small mammals and reptiles consumed the insects for food for themselves and their off-spring. Some birds also ate the reptiles.

Where the forest was repeatedly and frequently burnt the leaves and litter were destroyed before they contributed to the decomposition mechanism, resulting in the forest having a declining ability to support wildlife. Whereas the ground in unburnt forest contained a thick layer of decomposing material, the ground in the frequently burn areas had little or no decomposing layer and consisted principally of bare ground with a freshly fallen leaf cover. The difference in bird numbers between 6 and 15 year unburnt areas I believe to be directly related to the decline of the soil litter ecosystem and thus directly related to forest burning.

During the second project I did a week's recording in the Goldfields, then made my way back through the agricultural areas to the forests again. There had been good rains in the Goldfields which enabled me to find some excellent areas of wildlife. After leaving the Goldfields and returning through the agricultural areas I investigated areas of untouched bush where wildlife was again good. On heading towards Collie I reached the fringe of the Jarrah forest. Immediately the character of my surroundings changed. Whereas I had been travelling for a week through areas of natural, unburnt bush in the Goldfields and agricultural areas, I was now in the midst of burnt forest. There was a corresponding sharp decline in bird-life. This experience was a shock and left me frustrated and depressed. The suddenness of the change was a clear indication that the heavily timbered forest, not the lightly timbered bush, was the focus of maltreatment.

My six months comparative study of Jarrah forest wildlife has spanned portions of both winter and summer seasons. I claim that this study is sufficient to show that in the 19 years since the commencement of my first project, the bird-life of the Jarrah forest has dramatically decreased. I also claim that frequent burning of the forest is responsible for this decrease.

<sup>1</sup>Editor's note: Jarrah *Eucalyptus marginata* and Karri *E. diversicolor*, along with Marri *E. calophylla*, are the dominant trees over most of the forest area of southwestern Australia.

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