THE STUDY OF THE EFFECT OF FIRE ON FOREST FAUNA IN W.A.

by

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INTRODUCTION

Views on the deliberate burning of vegetation for fire hazard reduction are sharply divided in Western Australia. On the one hand we have those people, primarily foresters and agriculturists, who recognise fire as a management tool in their day to day working. By far the greatest numerically are those that have little to do with land-use management – we can call them the city dwellers if you like – and I believe that this large segment of the community has a general fear of fire; a fear born of ignorance.

We live in a climatic region of the world, in common with the Mediterranean countries and South-Western United States, where fire has been a natural and regular phenomenon for millenia. Mild, wet winters produce a vigorous flush of vegetation which dries out in the severe, long dry summers. Fires due to lightning are inevitable under these conditions. Indeed, early explorer's first impressions of W.A. frequently mention a thick smoke haze as part of their first view of the country. That W.A., and the South West forested areas in particular, have been subjected to fire for a long period has been well documented. The reader is referred to Wallace's (1966) excellent recent historical account of fire in the Jarrah forest. Churchill (1968), writing in the Australian Journal of Botany, produces evidence of the association of fire with the south west forests for at least 7,000 years and he finds that some of the fires were severe ones.

The detractors of fire as a land management tool will say that we are destroying the ecological balance by its use. However, if the forest has been burnt over a period of 7,000 years or more this seems unlikely. No doubt, were burning stopped the fauna and flora would change. But the existing ecological balance has in all probability developed together with fire, in other words the plants and animals of the forest have adapted themselves to a habitat that is burnt periodically. In fact the fauna and flora that exists at present are the natural ones. There is a considerable weight of evidence that the rabbit (by competing for food) and the domestic cat (by predation) between them have altered W.A.'s fauna more than any other factor.

We are now in the day of conservation, and we have to prove our theories. The Forests Department is undertaking a massive exercise in what can be partly described as apologetics. We know that hazard reduction burning is essential to the very existence of our forests and we now are setting out to find what effects our controlled burning practices have on the flora and fauna. This, then, is the background to a comprehensive programme of studies now being undertaken by the Department to determine what happens to plants and animals when we burn. This article deals only with the animal side of the studies.

Probably the greatest difference between the natural fires of centuries past and controlled burns today is exemplified by the aerial controlled burn where a very large area is lit up over a relatively short period. It is this type of burning on which our investigations will be concentrated as it has, on the face of it, the greatest potential for animal destruction.

AIMS OF THE STUDY

The broad aim is to determine the relationship between forest fauna and fire, particularly at the frequency and intensity of the controlled burning as it is now practised. The aims can be put in more detail as follows:—

(1) To find the effects of controlled burning on the larger animals with wide habitat ranges (Kangaroos and Brush for example).

(2) To find the effects of burning on those species with narrow or specialised habitat requirements where the burning of a small area of a particular vegetation type could have a profound effect on the numbers of that particular species (examples are certain types of swamps inhabited by Quokkas and, in some cases Tammars).

(3) From the findings of the first two aims, any vegetation types that require protection from fire or special burning techniques can be defined and recommendations made for their application.

(4) The preparation of a comprehensive check-list of the forest fauna. The range of animals to be covered will have to be limited of necessity. It is likely to be confined to mammals, birds and some reptiles.

THE STUDY PROGRAMME

The study will be conducted in a number of stages which we can classify under two main headings. Firstly extensive surveys of animal distribution in the forest will be made. Secondly a far more intensive investigation will be made into the effects of fire on these animals.

(a) Extensive Studies.

(1) A forest-wide survey of the large, easily recognised animals (particularly Kangaroos, Brush, and Emu) was started on 13th October and most staff members of the Department took part in it. The object was to gain some knowledge of the distribution, density, and habitat preferences of these three species. The survey was remarkably successful, due in no small part to the keen interest of all staff in the project. The results are still being summarised but one outstanding fact has already emerged – both Kangaroos and brush show a stong preference for young scrub. There is a strong correlation between the number of kangaroos and brush observed and the period since the area was last burnt; the longer this period the less of the two species were seen.

A repeat of the original survey will take place at a later date. The two surveys together will complete this part of the project.

(2) Stage two of the extensive studies involves the collection and collation of existing knowledge of forest animals. Most members of the Department will by now have been asked for any information they have on forest fauna. The data collected in this way will give us a broad, but probably still incomplete picture of what species live in the forest.

(3) To complete the picture an intensive search will be made in selected areas for species which are suspected (from literature on the subject) to be present but which so far have not been located.

Thus the stage of extensive studies is expected to enable us to prepare the check-list, mentioned in the section on aims of the survey; also it will yield detailed information on the habits and numbers of the larger, more obvious animals.

(b) Intensive Studies

Closer, more intensive studies will then be made in three or four carefully selected areas. These areas will, as far as possible, be chosen to coincide with an aerial burning block. Each area will be surveyed and mapped by vegetation types. The fauna associated with each type will be determined, both qualitatively and numerically at various intervals before, and after controlled burning. Similar study areas will be selected outside the aerially burnt block to compare animal numbers with those inside the block.

Separate additional studies may be necessary for animals with narrow, specialised habitats which are not represented in the three or four main areas.

These intensive studies are expected to yield the important information we are seeking. In particular any habitats and species which may be endangered by fire will be recognised and measures can be taken to prevent their being harmed.

CONCLUSION

I would like to finish with a word of explanation. It is quite certain that we are killing young birds and some smaller animals in our controlled burning operations. This much we realise and it is not the object of this study to prove or disprove this point. Our objective is to determine whether these inevitable mortalities are having an overall effect of reducing animal populations or not.

REFERENCES

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