Fire Control and Nature Reserves

By H. B. Shugg

The following address was given by Mr H. B. Shugg, Conservator of Wildlife, Department of Fisheries and Wildlife to a Bush Fires Board training course held at Wanneroo in 1978.

"The Wildlife Conservation Act, 1950–1977, was enacted 'to provide for the Conservation and Protection of Wildlife'. It declares all fauna to be protected and makes it an offence to take (i.e. to kill, capture, or to molest or disturb by any means, etc.) any of the indigenous Australian fauna, except under the authority of a license issued pursuant to the Act and Regulations.

"That is the broad charter and responsibility which devolves on the Department of Fisheries and Wildlife and the Western Australian Wildlife Authority—to protect and conserve wildlife. Parliament, however, has given other Departments and Statutory Authorities responsibility to do other things which, at times, conflict with the requirements of the Wildlife Conservation Act.

"Without exploring the tortuous channels of legal paramountcy between Acts, administrators have to accept that Parliament rightly expects them to find ways by which the intent and purposes of its laws may best be given effect.

"We cannot do this unless we are prepared to accept that our legislation, rights and powers are not meant to over-ride other Acts. Instead they must be applied so as to achieve as much or as many of their aims as is possible at any given time or place.

"So what I am asking you to do is to understand what we are doing and why we want to do it.

"Habitat Reserves

"All wild animals depend on natural habitat to survive. Generally speaking, wildlife is pretty secure from extinction as long as sufficient habitat suitable for each species remains. When European man first came to Australia, Aborigines and the then surviving wildlife co-existed because the Aboriginal people left all the habitat relatively undisturbed. They cleared no land for agriculture, nor for housing or for industry. They didn't fill in swamps or dam or pollute the lakes, rivers and streams to any real effect. European man changed all that with his 'busyness', agriculture and industry. With Europeans came the first need for a wildlife conservation programme and the present system of nature reserves slowly evolved. It is not a complete system—we are still adding to it as scientific and general knowledge show it to be necessary and opportunity and finance permit. My own view is that we need to reserve at least 10 per cent of each habitat type and we are a long way from that goal.

"What our reserve system now amounts to is a patchwork of remnant habitats. Actually, the nature reserves look more like a rash on the face of the State than a patchwork. The greater part of our reserves, particularly in the South-West, are small isolated pockets when viewed against the State as a whole. But without them we could not hope to keep more than a handful of the once vast array of species. How many of which species we can keep depends on how we look after and treat the reserves.

"HABITAT, FOOD AND FIRE

"Every species of wild animal requires a particular sort of natural habitat. If we alter its habitat sufficiently the species will become extinct. It won't cry, it won't go on strike, it won't make headlines. Like an old soldier, it will simply fade away.

"Life has been well described as an improbable state. It is not a state that will persist 'no matter what'. Its various forms have evolved in incredible complexity—the so-called web of life. Destroy any part of that web and its peculiar plant, animal and soil relationships will be affected.

"To do their job, nature reserves must be allowed to provide the life support systems on which our wildlife depends. This calls for a wide array of plant associations of all ages and various structures. Fire, where it doesn't alter plant associations, certainly modifies them. For example, look at what it does to ground litter. Depending on the characteristics of the fire, it will either convert the total ground litter, or part of it, to ashes. 'So what?' you might ask.

"Perhaps the importance of ground litter—the 'fuel bed' as you know it—is best appreciated by considering a research finding of Professor J. B. Cragg, that even in a simple agriculture ecosystem, the weight of animals below the surface—in the soil—may be as much as 10 to 50 times the weight of sheep grazing on the surface.

"Litter provides the basic food source for all the little beasties—bacteria, millipedes, slaters, beetles, spiders, ants and termites, and so on—that the larger animals in turn, rely on for food. The soil bacteria, little beasties, and their predators through their droppings, etc., convert the litter into nutrients which the plants in turn can take up again. The plants can then keep on shedding leaves and sticks and bark and so on for further processing in a continual cycling of nutrients to sustain the whole variety of life in the bush or forest.

"Litter is more than food. It also provides shelter and cover. It is a blanket to protect the soils, reptiles and small mammals from the elements—heat and cold, rain and wind. It supplies nesting material—for birds and other animals.

"Fire reduces or destroys the litter. It destroys the food of animals and breaks or bends the nutrient cycles. The fuel bed that is your concern is the food store of wildlife. Take away any part of it and you starve or expose a whole section of the wildlife web and so destroy it.

"Some very persuasive arguments have been adduced to try to show that fire has little lasting effect on Western Australian plants and animals. Anthropologists and others have postulated from very little evidence that Aborigines were continually burning to facilitate food gathering. Whatever use Aborigines did make of fire, there can be little argument that well-meaning experts have greatly exaggerated it. There can also be no doubt that many well-meaning people have been persuaded to ravage natural habitats with fire regimes that were designed with a lack of understanding of or care for their effects on plants, animals and soils.

"To put in perspective the claims that Aborigines used fire widely and continually, one needs to look at a few indicator species that depend directly on ample litter in their territories. Take two—the numbat and the mallee fowl. Both were once widely distributed through the woodlands and mallee. Numbats deliberately eat only termites. The termites which form the bulk of their food move along sub-surface channels and feed on fallen branches, logs and stumps. Remove these and their food goes and they die.

"You simply can't continually burn territories and keep numbats. In the case of mallee fowl, a similar story unrolls. These birds incubate their eggs in mounds of litter. As you know they dig a depression then fill it up with litter and soil, scrape over an area of 50–100 square metres. Various experienced people have estimated that after a fire in the arid mallee country it would take 30 or 50 years to accumulate enough litter to meet the needs of a successful mallee fowl's nest.

"As numbats and mallee fowl were widely distributed when European man came, the lower rainfall areas particularly must have been rarely burned deliberately by Aborigines. No doubt lightning strikes occurred as much then as now, and in all probability some camp fires occasionally got away.

"A further indication that fire must have occurred infrequently and/or irregularly before European man came can be deduced from the flora itself. Many plants that are easily killed by fire regenerate only from seed and some take longer than others to reach maturity and produce seed. Even when seed has been shed, the right conditions are needed for germination. We wouldn't have found plants like sheoaks for example, to have been widely distributed if the Aborigines had traditionally burned at periods less than 7 years. Animal populations dependent on particular plants, and vice versa, could not have been maintained if the Aborigines had imposed a fire regime different from that which allowed those associations to persist.

"FIRE POLICY AND NATURE RESERVE MANAGEMENT

"If it weren't for pressures brought about by neighbours, perhaps the best fire policy (for large reserves at least) might be—

(a) for fires that God lights—let 'em burn!

(b) for fires that Man lights—put 'em out fast.

"However, at least at present, that policy is not politically sustainable in most instances.

"Accordingly, the Wildlife Authority has adopted a general policy of trying to make fires more easily suppressible at least on those reserves most likely to suffer as a result of fires sweeping in from adjoining private land.

"Like other responsible organizations, we do this by installing firebreaks around perimeters and through reserves so as to divide them into compartments that can be deliberately burned when appropriate and, hopefully, in accordance with the requirements of wildlife and the law.

"There are approximately 1 000 nature reserves in the State approximating eight million hectares or about three per cent of the State. Every year, new firebreaks are installed which results in continual growth in the total that have to be maintained. In the 12 months ending June 30, 1977, for example, 665 kilometres were constructed on 44 reserves while a total of 1 018 kilometres were ploughed.

"Cabinet approval has been obtained to appoint three reserve management teams on a regional basis. We are in the process of recruiting the first of these to be stationed at Pingelly and the other two will be stationed at Wongan Hills and Katanning respectively. Each will consist of a professional officer, a technical officer and wages hands and will have appropriate fire fighting equipment. These, with our existing unit at the Wildlife Research Centre will bring a much greater effort and a high degree of professional skills to the better care and management of nature reserves.

"However, the rising cost of fire control on land reserved for conservation is a matter for concern to Government.

"In addition, some of us who are responsible for conserving wild plant associations and animal populations are becoming increasingly concerned that we should not fail in our task through falling in too easily with current thinking about the so-called necessity to burn.

"Departmental research and compilation of accurate historical data on fires in certain reserves is leading us to question previously accepted hypotheses. We now have 10 years of data and research experience for reserves like Tutanning and Boyagin. In that time there have been no fires started through natural causes on either reserve. We have carried out some preventative burning, and some fires have got away. Other fires have come in from adjoining farms, but none have been started by lightning strikes or other natural means—not in them, nor in our other wheatbelt reserves that we know of.

"Research into the ecology of our flora, and into fire ecology, is suggesting that the role of fire in maintaining species may have been seriously misinterpreted. Evidence is coming forward from the study of flora on islands for example, that have not been burned for very long periods, that the number of species is not necessarily diminished by the absence of fire.

"We need to keep an open mind at this stage on the relationships of fire regimes and flora associations. This is not to say that fire doesn't have a major influence on the wildlife. I don't mean to suggest that. Nor do I mean to avoid the importance of maintaining the greatest possible diversity of plants in our reserve system. In fact, I wish to emphasize that need because it is so important. But we cannot possibly maintain an acceptable diversity in any reserve that is subjected to a simple regularized burning programme.

"So, taking these things together, I see a real need to question whether the management of nature reserves should be approached primarily from a farm or property protection angle. I believe we should be questioning whether we should burn any part of a conservation reserve to protect a farm.

"I am not saying that farms should be left without a fire protection policy. On the contrary—reserves have to be protected from the fires which all too frequently get into them from stubble and clover burns and so on. So there must be, from our needs too, an effective farm fire control system.

"We need firebreaks on either side of boundaries between farms and reserves—and it might be cheaper to the taxpayer to ensure that the breaks between crops and the reserves' flora are sufficiently wide to make burning of the reserve unnecessary from either a farm protection or a reserve point of view. While the payment of compensation for loss of productivity is ever a frightening prospect to the Treasury, it might sometimes at least be cheaper than maintaining expensive fire fighting organizations. I think this approach needs to be given much more thought by all concerned.

"Whatever the future holds, we need to keep talking to each other and co-operating. We will not overcome the problems arising from the conflicting aims of Government unless we try to understand each others points of view.

"I hope this paper achieves something towards that end."