REINVENTING THE PAST. RETURNING FIRE TO FRASER ISLAND

The eleventh century Persian poet-philosopher, Omar Khayyam expressed a cynicism about learned discussion processes somewhat akin to what I feel about the processes to date of fire management planning for Fraser Island.

> "Myself when young did eagerly frequent
> Doctor and Saint, and heard great Argument
> About it and about, but evermore
> Came out by the same Door as in I went."

I am neither doctor nor saint, nor even particularly learned, but I have heard great argument and I have noted many strong resolutions and helped to contribute to a very thick management plan. As far as I can determine, however, where Fraser Island and its habitats are concerned, it has all been rather irrelevant. Little has changed in on-ground management.

Why are we so strong on planning and so weak in action? I believe I know the answer to that question and suggest that the problems are both institutional and philosophical. Without directly addressing those, neither this workshop nor any more discussions and planning exercises, will achieve anything.

I am constantly confronted by the realisation that there is a large number of people, in academic institutions, in the conservation movement, and in government departments who are of the firm belief that fire has no legitimate place in Australian ecosystems. I would be surprised if there were not a number here of that persuasion. Often this belief is disguised by a veneer of science. How often have I heard it said "I am not against burning but let it be guided by the science", while the speaker fails to accept even the most basic scientific fact that sclerophyll habitats have evolved with fire and depend on it for their long term survival. There is often a clear strategy guiding this approach in that it is clear that we never will have in the foreseeable future, enough research to guide our management of other than a minute fraction of even the most significant of our sclerophyll habitats.

I have no answer to these arguments, because they fly in the face of the evidence of ecology and pre-European history. If they dominate to guide our actions they will lead to the degradation or loss of much of the remaining natural Australian landscape.

Allied to this response is the one that says "Let nature take its course." How extraordinary it would be if after more than 200 years of destruction we now abrogate our responsibility for the future of the few pathetic remnants of natural Australia.

Beyond the attitude of denial, there is a fear of fire itself. There is no understanding whatsoever of the number of ways in which fire can be used as a regenerator and protector – the essence of prescribed burning. Reinforcing this fear are the journalists who with emotive language such as "forests destroyed by fire" create an impression that there is only one type of fire – fierce and destructive. In addition, prescribed fire is scarcely separated in its effects from wildfire when it is described in such terms as "back burning" or "hazard reduction". I am not against the appropriate use of those terms, but given the mostly disastrous results of the haphazard operations described by them there is clearly a need to highlight the fact that fire can be used in a prescribed way to achieve a wide range of desirable results.

Unfortunately, even where the role of prescribed fire is accepted, institutional problems usually stand in the way of a useful outcome. Staff are usually inexperienced, lacking in confidence, or fearful, usually with justification, that they have little support from their senior managers, and that if things go wrong they will bear the blame. Usually an excuse is found not to proceed with planned operations at any particular time – the weather, lack of equipment, other more urgent priorities - and action gets delayed until it is too dangerous to do anything. It is easier to do nothing rather than to face the prospect of things going wrong.

The history of fire management on Fraser Island, during the days of the Qld Forestry Department, and ever since, has illustrated the conjugation of the forces of denial of basic facts of ecology, institutional inertia, and ineptitude in action. In addition, there was in forestry days, in my opinion, a basic misunderstanding of the ecology of the main commercial forests. This led, in the case of blackbutt forest, to large areas of clearfelling with regeneration burns. Although I am aware of some spectacular failures of regeneration with this approach, I have seen nothing which allows me to evaluate its overall success of failure, and that is irrelevant now. More importantly for future action, it is clear from the few examples of virgin blackbutt forest that I have seen in Queensland and Northern New South Wales that blackbutt was not a species that depended on catastrophic fire for its regeneration. It relied on episodic but scattered regeneration in a light, largely bracken and grass covered ground cover maintained by regular, mostly cool, fires.

Right up until the 1990's, and for all I know, even now, the fuzzy ecological understanding that guided much of Fraser Island's management led to such insanities as "control areas" where fire was to be permanently excluded, and the placement of at least one of these right alongside a major recreation area.

We do not need any formal work to demonstrate the results of fire exclusion. Most of south-eastern Qld and eastern New South Wales is already one big experiment in that. How many more scrub or lantana choked wastelands, or disastrous fire events do we need to demonstrate its results.

As the policies that drive fire management in most states lead to their inevitable conclusion and catastrophe quickly follows catastrophe, and climate change gets the blame for mismanagement, fear for life and property becomes the main driver of fire management. In the case of Fraser Island, firebreak construction and banksia bashing have become the main agents of habitat destruction, replacing the sandminers.

On Fraser Island it is so easy to evaluate the problems of past and present, but where do we go from here? I'm afraid I don't have the precise answers for you, but I can give some guiding principles based on my experience of long years of hands-on involvement, which continues to the present. We need to make a start, for no amount of theorizing or planning can ever anticipate the vagaries and exigencies of fire management that will emerge from the experience of doing. In my opinion the only appropriate time to write a fire management plan is, after about ten years of doing and learning, guided by "best bet" in relation to whatever understanding of the ecosystems, however limited, we might have, and appropriate monitoring of the results of what we are doing.

First we must accept what history clearly tells us, that aboriginal fire practices gave us the varied and rich habitats of Fraser Island that we came to exploit well over a century ago, many of which we have now altered beyond anything the original inhabitants would have recognised. What were these aboriginal fire practices? It is common to say that we don't know; but the basics are clear

from the numerous records of early explorers and settlers, and from studies of recent and contemporary practices in Arnhem land. Throughout the woodland and forest habitats of Australian aborigines were continually burning, throughout the year, so that hundreds or even thousands of small fires covered, in one year, areas which are now only infrequently burnt by single large fires. They burnt systematically for a variety of reasons, but above all they managed the fuel around them. Their survival instincts were too well developed to allow them to let a situation develop where a discarded firestick or escaped camp fire could threaten their very survival. I would wish that we were so smart. Wherever reference is made to frequency of burning, and the historical record is replete with these from around Australia, it is clear that most woodland and forest areas were burnt at a 2-3 year interval. This fits in well with the contemporary observation that in such habitats it is difficult to burn the same area, at least in the cool season, two years in a row, but after 3 years, hot late season fires are possible.

While acknowledging aboriginal practice, however, blindly trying to emulate it is not a good place to start. Fraser Island is not the land that the Aborigine knew. Its habitats have been altered by changed fire regimes, dominantly fire exclusion over large areas, by logging, road construction, and weed invasions. To turn around over a century of neglect, however, we must start with the most basic principle of aboriginal burning. We must replace infrequent fire with frequent fire, because, contrary to what popular language implies, frequent fires, burning as they do in light fuel accumulations, are mostly cool fires.

If, however, after all these years of neglect, there is to be a road to Damascus conversion to an enthusiasm for fire management at all levels of the Parks and Wildlife Service (or the Department that now envelops them), I would be even more fearful for the future of the island than I am now. I am told that there are signs of such an awakening this year, and I hope that if that is the case, it is not largely driven by reaction to the Victorian fires. If so, it will not last.

My fears are based on the belief that there are now probably massive areas of uniformly heavy fuel accumulations across a range of habitats. For easy and appropriate fire management in future years, fire must be reintroduced so that the island reflects a mosaic of fires at different intervals and at different times. It will require considerable skill to do this in a way that reflects the varying requirements of a range of inter-twining habitats with different fire sensitivities, and that is where major problems arise. Where are the staff who now have the skills to undertake such work? You can’t shut down effective fire management in an organisation, if it ever existed, and then assume that when you want to do something useful that staff who know what they’re doing will suddenly materialise. Inevitably, in this march towards a more enlightened future it will be the case of the blind leading the blind, and the opportunity for some disastrous outcomes will be great.

Let me describe the possible problems I see, based on the hindsight of past events. Firstly, there is the likelihood of massive loss of hollow trees – as likely in prescribed burns as it is in wildfires. Throughout the scribbly gum forests, in particular, there are large numbers of ancient hollow trees, prime wildlife habitat, wracked by the damage and scars of past wildfires, and surrounded, at their bases, by large accumulations of litter. It will require great judgement, only gained through experience, to ignite landscape fires that will reduce these piles of litter without destroying the trees in the middle of them. I should emphasise, however, that these trees are mostly in their scarred and hollow condition because of past wildfires. If they ignite and collapse in a cool fire, this is not proof that such fires are harmful, rather it is an example of the final straw that breaks the camel’s back.

Then there are the cypress forests, nurtured in an environment of cool fires, which penetrate them with difficulty. Given a fire at the wrong time in surrounding communities, such as in very dry windy weather, they can be destroyed, with no prospect of regeneration in other than long time frames.

I have serious concerns for the swamp communities and the *Casuarina equisetifolia* communities of the recent aeolian dunes of the east coast. In the case of the former, fires in surrounding country in drought time, when they are devoid of surface water, can enter them and burn in the peat layers for weeks or months, fundamentally altering their ecology. Peat fires in paperbark forest will kill the trees. In the case of the casuarina woodlands I have seen how a wildfire that burnt through thousands of hectares under severe conditions burnt against the wind into the casuarina stands without destroying them. In the same year a fire was lit the easy way by the park service by lighting above the strand line with a drip-torch, and letting the wind drive the fire inland. The result was many kilometres of dead casuarinas.

I have seen concern for the welfare of rainforests expressed in action to exclude fire from a buffer zone around them, only to see fire burn into that buffer when fuel moisture levels were low and then creep into the rainforest, destroying its ground layer.

I could go on, but one more example will suffice to illustrate the skills that will be needed to create that much desired landscape mosaic. It concerns those habitats developed on the tumultuous recent aeolian dunes of the east coast. Here in places, cypress pine dominates the high points, there are small melaleuca swamps, and lantana dominates the dry hollows. It has been amply demonstrated, particularly in North Qld, that repetitive fire can eliminate lantana, and perhaps that is the only feasible way on a landscape scale. However, most cool fires in these areas will not invade the lantana. It will therefore require skill and micro-management of fuel levels, to put fire in the lantana areas without seriously affecting the swamps and cypress pine areas.

I will now turn attention away from potential problems to outline what I think an appropriate fire management system for Fraser Is would look like. Before that can begin to evolve, however, we must break up large areas of uniform fuel accumulation. It could take a couple of years to do that, and the risk of mishap leading to some severe habitat damage is high. That risk will have to be accepted, however, as abandoning the island to a wildfire regime, with its attendant emphasis on fighting wildfires, will inevitably lead to far more severe damage in the long run.

There is no scope for detail here as to how the programs for that initial period might be conducted, but it should be treated as a learning period for all involved. A cautions approach is essential, with burning beginning as soon after summer rains as fires will carry and continuing progressively until the end of August. Unlike the situation in tropical Queensland, the often dramatic shifts of wind and humidity in springtime and early summer in south-east Queensland, make burning at that time very hazardous No guidelines as to the total area to be burnt annually can be provided as the pattern of distribution of fire across the landscape is as critical as the area burnt. I would, however, suspect that the program was failing to meet its objectives if, after 2-3 years, less than 50% of those habitats that readily carry fire had been burnt.

After this initial period, I would hope that staff had overcome their fear of fire, and had learnt some useful lessons so that the long term work can begin. At this point we meet the most critical of institutional problems: the need to dedicate staff to long term tenure in fire management work and no program can succeed without such people. I appreciate the impediments to achieving this, but Departmental structures need to bend in order to meet the organisation’s essential objectives.

The Department will also need to adapt in many other ways. It is essential that structures are in place to ensure that when conditions are right for burning, nothing else takes precedence.

I would define the objectives of a burning program for Fraser Island to be threefold:

a. To protect life and property;

b. To reduce as much as possible the risk of single event high intensity fires burning out large areas of the island by using numerous small fires lit at different times to create a mosaic pattern of fuel types, fire intensities and return intervals;

c. To use fire to control noxious weeds, principally lantana.

At the risk of appearing to have a shallow approach in the face of complexity of habitats and their ecological requirements, I will confine myself to defining some principles that should guide operations across all those habitats.

First, avoid a mechanistic approach which would decide a certain fire return interval for particular habitats, and then cut that habitat into an appropriate number of blocks to burn each year. With this approach there is a heavy reliance on firebreaks, which themselves are quite destructive of landscape, habitat, and soil values. There is always a tendency to pursue a clean burn for each block thus losing the opportunity to develop the patchwork of burns with widely varying return intervals that more random fires can achieve.

Avoid also the reductionist approach that would seek to understand the phenology of individual species and build a precise fire management strategy around that knowledge. If we have so much difficulty undertaking adequate burning programs on a landscape basis at present we are certainly not going to be able to handle the requirements of micro-management. Nor do I think concern about the fate of individual species, other than specific action to ensure the survival of those deemed rare and threatened, or priority species, is very useful. From my observations we can maximise the opportunities for survival of most species by developing, across the landscape, fine scale mosaic patterns of fire intensity and return interval.

My ideal strategy would involve burning whenever conditions are suitable from April to August, ceasing only when fuel and soil moisture levels are low or during periods of strong wind, periods of drought and when swamps are dry. In that period I have found it matters little if occasional fires burn for several days or more, providing burning has, beforehand, been extensive and well distributed across the landscape. When fires do start to show a tendency to burn strongly through the night, I would confine further burns to back-burns, lit along natural or man-made breaks.

Apart from its use for preparation of fire-breaks around infrastructure, I would discard the drip-torch. More control and safety can be achieved if fires are spot lit, and widely spaced across the landscape. On any one day, depending on the judgement of ground conditions and the pecularities of individual habitats, fires could be lit kilometres apart.

I would emphasise, again, how critically such a method of fire management is dependent on the skills of experienced staff whose avenues of promotion lie in the job they're doing, and who are provided with other incentives to stay in it. While policy and direction need to be provided at senior level, the day to day judgement of when and where to burn has to be left to the man on the

ground, and he has to be protected from interference that would force him to give precedence to other activities when conditions are right for burning.

While I am not enthusiastic about the use of aerial ignition, because of the inflexibility it imposes when aircraft have to be ordered in advance, I do concede that in inaccessible country, and for programs covering vast areas, it is, considering limited resources and work place safety issues, a necessity. It should not, however, be used as a one-off operation each year. At least two flights per year over the same areas should be budgeted for, the first very early in the season and the second perhaps mid-year.

In relation to those burns designed to eliminate lantana, a late season fire is critical. This can only be attempted if all surrounding areas have been covered by earlier fires and are in a condition where fire can't spread through them. Experience in North Qld has shown that at least 3 fires in quick succession (every two years) are necessary for success.

The fire management approach that I have outlined involves a very different one from that adopted on most conservation reserves in Australia. It is far from being an impractical and idealistic approach however. I can point to a number of places where it has worked to ensure both community safety, and to increase habitat diversity across the landscape. In one 60,000ha area in North Qld I have the evidence of detailed monitoring programs to show that these things are so. Clearly, if we are to learn from each year's experience on Fraser Is, and progressively adapt our practices, similar monitoring programs are essential. Above all, this approach is simple in concept and practice, and demands far fewer resources of staff and equipment than any other.