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Full transcript of an interview with

BRIAN GEPP & SIMON LEWIS

on 12 December 2006

by Noel Richards

for the

**FLINDERS UNIVERSITY DEPARTMENT OF
GEOGRAPHY**

Recording available on CD

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Interview with Brian Gepp and Simon Lewis recorded by Noel Richards on the 12th December 2006 for the State Library of South Australia Oral History Collection.

DISK 1

This is an interview with Brian Gepp and Simon Lewis by Noel Richards. The interview theme is the history of prescribed burning in high-rainfall areas of South Australia from the 1960s through to 2000. The interview is being conducted in Brian Gepp's home near Birdwood on the 12th December 2006. Brian, would you perhaps like to kick off and give us a bit of an intro, some of your background and relationship and experience with prescribed burning?

BG: I joined Forestry in 1974 to look at the impact of clearing native vegetation on wildlife, because native vegetation was being cleared for pine plantation establishment. I then realised that I'd joined an organisation which had been prescribed burning and using fire in native vegetation since the 1960s. As a relatively green young graduate I knew little about it and, having seen many areas, quote, 'burnt to bare ground' – and if it weren't a good clean burn where the ground was bare it was frowned upon – as an ecologist, not a forester, I became both interested and concerned. And, to be fair, at that stage, even in the early '70s, there wasn't a lot of real conservation interest in native vegetation because it was just beginning to evolve as an area of conservation research or ecological research in its own right.

So, having stepped into an organisation which was prescribed burning, I tried to find out what the background was, what the purpose was. And the primary purpose was for reducing fuel loads to protect the pine assets, or, where plantations or native vegetation was close to towns, to protect them. Planning for, at some stage, a wildfire to come through.

The policies that evolved actually came out of the Australian Conservation Foundation in 1964, which started to make forestry organisations realise that there were perhaps ecological impacts of prescribed burning just as much as protection values. And so, over the period from '74 to 2000 I have both conducted research on the impacts of prescribed burning on flora and fauna as

well as developing policies as well as putting prescribed burning plans into management areas for native vegetation.

Simon, perhaps if you could do the same for us.

SL: Right. I'm about the same vintage as Brian, I joined the State Environment Agency in 1975. That was a time when, as Brian mentioned, I think, there was just the initiation of interest in native vegetation issues. In fact, in '74 an interdepartmental working group was formed to look at vegetation clearance issues, it put a report down in '76, which really was the forerunner to initially the State Heritage Agreement Scheme for protecting native veg on mainly private land, and then leading on to the clearance controls in '83 and beyond.

So in joining the Department in '75 I was very much involved in some of that work, part of what was then called a special projects group but that had very much a native vegetation focus. I guess in the '70s it was mainly an involvement with local councils and, to some extent, landowners who were involved in what we can define, I think, as prescribed burning – we might come back to our definition of prescribed burning a bit later on. But in those days that was perhaps the main focus for the Environment Department. We weren't probably talking very much with Forestry SA or Woods and Forests at that point about prescribed burning issues, but we did have a number of proposals and, I guess, interested councils who were keen to burn roadsides and small reserves around townships and so on. So there was a fair involvement with prescribed burning back in those days – not, perhaps, highly-informed involvement, but a burgeoning involvement, which I guess grew in terms of its informedness, if that's a word, through to the late '70s and early '80s and beyond.

So my involvement commenced then and really continued in the native veg area through till about 2000 or so, which included a session as Executive Officer with the Native Vegetation Council. So within that context a number of issues relating to prescribed burning, both under legislation – that is the *Native Veg[etation] Act* – or, in some instances, before the Act came in, in terms of encouraging land managers to do the right thing when it came to prescribed burning. So twenty-five years' involvement, I guess you could say.

How would you define prescribed burning?

BG: There are probably two ways of looking at it. There was a rather cynical approach to the definition in the earlier days, which was called a ‘controlled burn’, and that was usually described as it was controlled within the boundaries of where you wanted to burn, so it didn’t get out. Because, if it got over the fence or into somebody else’s land tenure, you were potentially liable. So that was a controlled burn, which had the mild suggestion that there was some way in which you managed more the intensity rather than the A ‘prescribed burn’, as far as I understood it, was you set a prescription according to the weather conditions, and according to the weather conditions you could determine either how much you could burn or how much would burn or wouldn’t burn, because that related to fuel loads, and also whether you lit it up in autumn or winter/spring, because that also influenced the intensity of the fire and the amount of vegetation that was burnt. So it was more like a recipe for prescribed burning, or recipe for using fire; hence the prescription.

SL: I think I’d agree with that, but I’d also probably take a more simple approach to *my* definition. To me a prescribed burn, in the broader sense, is a planned burn that seeks to achieve certain objectives, and then you can argue about how good the planning is and how valid and well-defined the objectives are. I think essentially it’s that: planning to burn, to achieve a defined objective.

BG: And I think the other point to add to that is native vegetation and fauna don’t respond to a single fire, so it’s the sequence of fires – which is both the season, the time interval between them – which regulates their either survival or demise or the overall impact on the particular community.

SL: And to me a prescribed burn may have nothing at all to do with native vegetation. It might be that some – well, to me a misguided person, perhaps – is out there burning an area of *Phalaris* on a regular basis to reduce the fuel load, temporarily. So it doesn’t necessarily have to relate to native veg; it’s any fuel, in my view.

BG: And traditionally stubble burning –

SL: Stubble burning, that’s a good example.

BG: – is a good example. And then gradually over time stubble burning has reduced because of the realisation of the loss of the organic material, so that's an example of how things have evolved over time as well.

Its history, then, in South Australia – perhaps starting with you, Brian – recount for us, perhaps, how you saw it emerge, where, by whom?

BG: Well, as I mentioned, when I joined Forestry they were prescribed burning and continued to prescribed burn according to their own prescriptions up until the inception of the *Native Vegetation Act* in 1983, and that's when Simon and I met more frequently over various issues. So that all forestry organisations were conducting prescribed burning, and it was being taught in – then the Australian National University in Canberra was the sole Forestry School and then there was another Forestry School at Creswick in Victoria – but they were routinely teaching about prescribed burning, so that the forestry organisations throughout Australia had this culture of prescribed burning. And in some areas, for example in Tasmania, there were very intense burns after logging to stimulate seedling recruitment. But South Australia had very little native vegetation – and I think we must emphasise that the Woods and Forests Department then had its plantations and its native vegetation in the higher rainfalls of the state, where it was in the Lower South-East, Mount Lofty Ranges, Southern Flinders Ranges, where also there'd been extensive land clearing, both for plantation establishment and for agriculture and for towns, so that all of the native vegetation that was left was really just remnant pockets – and I use the word 'pockets' loosely. The largest pocket that Forestry have managed in the South-East was two thousand hectares. And so both the perception of the impact and what you were protecting were influenced by the fact that you had these little areas which were both possibly more sensitive to fire because you didn't have as much of it, so both sensitive to wildfires because they could easily be burnt out, or sensitive to prescribed burning because, dependent upon the amount of area that was burnt, then the ability for flora and fauna to recolonise was much reduced.

And the agencies that were using – you mentioned Forestry; did you observe other agencies and how they were applying it, or was it *only* Forestry?

BG: It was only Forestry at that stage, and Forestry was sub-contracted or allowed to do some controlled burning or prescribed burning in some of the reservoir reserves, particularly Mount Bold. And when the then Engineering and Water Supply Department took on a guy called Geoff Raison, he started to query the role of prescribed burning. There were some interesting debates at that stage, when what was the relative impact of prescribed burning on what might have been the flow of carbon, say, down into the base of the reservoir when in fact going straight down the slope at Mount Bold were bare soil firebreaks, fifty to a hundred metres wide. And so, again, relativities of impacts was an interesting discussion.

The Prescribed Burning Working Group, how did that emerge out of all this, what stimulated that?

BG: I actually suggested it because DEH or Department of Environment [and Heritage] was developing or National Parks were considering prescribed burning. Forestry had been doing it and had both the management of fire experience – and I had actually initiated a number of flora and fauna studies in native vegetation. CFS¹ were naturally involved – both interested and involved – because of their fire protection role, and Engineering and Water Supply were involved as well because many of the catchments were in fact surrounded by native vegetation. And so it seemed a good idea to suggest to the Department at the time that something like this should happen, and it was initiated out of that, and we sat around the table many times with many different opinions and I think the chief executives all became quite frustrated at times but it eventually ended up with a draft, state-wide prescribed burning policy which was signed off and basically said, ‘Yes, there is a role for prescribed burning for both protection and biodiversity management.’

But I think, if we can go back, Simon might like to add a bit more of the history through there as well.

SL: Yes.

When it began, who was there?

¹ CFS – Country Fire Service.

SL: Yes. Well, I think it's perhaps appropriate to add a little bit more on the prehistory, if you like, before the Prescribed Burning Working Group, because that group was I guess late '80s, early '90s –

BG: Yes, I would think so.

SL: – round about. I think it's just worth expanding a little bit more on some of the earlier aspects of prescribed burning. Way back, the initial exponents, I suppose, of prescribed burning to me were, as Brian has said, the Woods and Forests Department, but on the other hand also the private sector. So around Mount Lofty Ranges, for example, I suppose largely encouraged by the local CFS brigades and so on for what they would have seen as being quite legitimate reasons, a lot of small-scale prescribed burning of roadside patches, of maybe small areas surrounding towns or farmhouses and so on. And I think they were the two aspects of prescribed burning in the beginning, if you like: the Woods and Forests doing it in a fairly planned and organised way; the private groups, encouraged and assisted by CFS, working in much smaller, localised, targeted sort of fashion.

I'm interested, you mentioned the stubble-burning: that was probably a third arm, even in that same era, in areas like Yorke Peninsula, where stubble burning I think has been practised for quite some time.

BG: And I think it's true to say that, just at the same time, there was also burning of areas of the mallee as well, in the wheat belts. Now, whether that was because the stubble burning drifted into some patches of scrub or whether the farmer who had a patch of scrub decided to burn it for fire protection or even a bit of additional grazing, because at that time there was no real generalised concern about the values of native vegetation; and also the *Native Vegetation Act*, which prevented clearing, hadn't come in, and so that it was only the individual farmer who felt warm and fuzzy about shutting up a piece of native vegetation who didn't actually maybe burn a bit of it or not be too concerned if a fire got into it. But perceived it as a very severe hazard to himself.

SL: Yes. I think there are a couple of good examples we can throw in, too, from those earlier days. One is one we've discussed in other venues, about a burning proposal down near Padthaway or Willalooka in the South-East, where there was

concern about the fuel load along the roadside. There was consultation involving landholders, local council, CFS and ourselves within Environment about how to deal with this, and the local push was to burn it. Our more conservative approach was, 'Ooh, we're a little bit concerned about the amount of exotic grass, *Phalaris*, in this area and we're concerned that if it's burnt off then we might in fact finish up with a higher fuel load in two or three years' time because of the grass than we had in the first place. And the eventual decision was made, okay, we won't burn.

Shortly after then there was, let's call it an 'accidental' fire, let's call it a 'lightning strike', as often happens, and in fact yes, the consequence of that was that the *Phalaris* took over to a greater extent from the native vegetation. Now, I think there are two points from that: one is that there are many areas where prescribed burning is of limited value unless it's followed up with activity to control particularly exotic regrowth, but the more important point at the time was that that example was used as an argument for not promoting prescribed burning. So okay, here's a roadside that has burnt, and we've got more of a problem now than we started with. So that type of example was used back in the late '70s to dampen the ardour, if you like, of some of the prescribed burning people.

BG: I think there's another extension on that as well, because, having travelled up and down that road for many years, firstly the visual impact was there for at least fifteen to twenty years that I can remember still seeing the dead twigs of whatever the overstorey was, which was only about five to six metres high, just topping off the tops of the *Phalaris* which was above the fence lines. But the point I'm really wanting to make as well is that, particularly in the areas of native vegetation that have been close to cities and towns that required a firewood supply or the local timber mill was cutting timber in the early days for construction purposes – this was all before the plantation industry established – was that the areas that were close to towns were extensively cut over. What that actually did was mean that the height of the trees that were left was actually regrowth, so that in an area which may have trees now even up to ten metres tall, the original stumps show that the trees might have been almost twice that height, and so therefore any impact of fire in the understorey was much greater on the

overstorey and had therefore the ability to spread far more quickly and more intensely.

SL: I was going to relate one other, quite different example of prescribed burning that we may not have discussed before: up in the Ragless Range near Quorn, where for decades the local landowners have routinely burnt off areas of spinifex. It's sheep-grazing country and after a while the spinifex communities tend to become relatively inaccessible for sheep because of the prickly nature of the vegetation, so the landowners – a few landowners – in the Ragless Range have, almost every year, just taken the ute up, dropped a match here and a match over there, and just – I guess they've picked the weather conditions so they've known 'If we do it this morning it's going to burn down the gully there and up that ridge over there.' A fairly uncontrolled form of prescribed burning, in terms of dropping a match here and there and just letting it go, but very much a burning program with specific objectives in mind. And that, too, had in effect a backlash effect with the Green Brigade, because they saw relatively-unplanned, relatively-uncontrolled prescribed burning happening, probably too frequently from an environmental point of view. And in fact the Native Veg Council has spent quite a bit of time looking at that specific issue in the last ten or fifteen years to work out just what's the best way of managing that prescribed burning scenario. So that's just another example where prescribed burning has been used in very much a pasture management context.

BG: I think it's important just to record, for anybody who's listening to this, that the Aborigines used fire for land management. And so when – and I'm just making some assumptions – when the early settlers came and saw the fact that the Aborigines were burning, either to flush out kangaroos or to provide new shoot growth, then they saw it as a practice as well. And I know from some of the early people down at Second Valley where I was working, quite frequently they would say from basically Backstairs Passage up to the Range was burnt off every few years. And it also jaggged in the back of my mind that there were some stories I was told about some of the early forest district managers, just riding around on their horses in the middle of safe periods dropping a match here and there, and I would have assumed that was, presumably, for some generalised fire protection.

And so there was almost a long-term culture of actually trying to manage for something before even the terms ‘controlled burning’ or ‘prescribed burning’ were formalised.

SL: I can recall reports, I think from the early surveyors, who in some areas of the Mount Lofty Ranges, for example, reported of areas where you could freely ride a horse through fairly open vegetation, up around Mount Lofty itself, for example, where now it’s just impossible because of the nature of the vegetation. So that would suggest that the Aboriginal burning regimes kept it at a much more open structure of vegetation in at least some areas.

BG: Plus I’ve got to add on the other comment that, as the timber was cleared, as the big trees were cleared, particularly through the Mount Lofty Ranges but also in the South-East, that opened up the canopy, which then let more light come through and then, with the clearing, more seedling dropped and so there was more regeneration both of overstorey and understorey. So progressively the clearing also helped that increase in density.

The change in structure coming from that. So we’ve got this history, then: an Indigenous one and a European one, leading up to agricultural uses and forestry uses. What was the stimulus for the need to create a working group, a Prescribed Burning Working Group? What was happening that initiated that?

BG: I think, if I can be bold, (laughs) –

SL: Right.

BG: – to say it was partly to try and get all of the people with different ideas and different opinions into one room to try and sort themselves out.

SL: Yes.

Was there a problem that needed sorting out?

SL: I think that also you can make a link with the *Native Vegetation Act* with all this as well. We had others, such as National Parks, starting to realise that there was something in the way that the old Woods and Forests Department was managing its native forest reserves, so there was that growing awareness about there’s something in this prescribed burning notion that we should know more about.

BG: Could I just add a comment? And that ‘something in it’ could mean good or bad.

SL: Or bad. And it was also following, probably a few years after, the Native Veg legislation came in. So there were also perceived to be – and probably were – additional barriers for people who were interested in prescribed burning. So I think those two things were fairly important in prompting the formation of the Prescribed Burning Working Group.

Because importantly the *Native Veg Act* treats burning as a form of clearance requiring approval of the Native Veg Council, and that's the –

SL: That's correct.

– barrier that was presented.

SL: Yes. There were one or two exemptions that allowed burning under particular circumstances: funnily enough, not relating to burning for environmental benefit, there was always a requirement for approval for that; whereas burning for just a fuel-reduction objective, there was an exemption covering that, to some extent at least. But in the context we're talking about, in terms of largely burning for a combination, perhaps, of fuel reduction and environmental benefit, then yes, there were particular steps landowners, land managers had to go through with the Native Veg Council.

BG: I had the feeling that when the Act was brought in – and it's true to say that – – –.

About when was that, sorry, Brian?

SL: The legislation initially came in in '83. Just to clarify this before we go too far, under the Planning Regulations in '83, quite a backlash at that point, because the legislation was brought in overnight. That led to the *Native Vegetation Management Act* being introduced in 1985, which had the main benefit of providing – we didn't call it 'compensation', but in effect compensation to landowners who were refused permission to clear vegetation. And then finally – so far – finally in 1991 the *Native Vegetation Act* itself was brought in to I think focus more on management. A bit ironic that the '85 Act was the *Native Veg Management Act*, but in 1991 the *Native Veg Act* came in to focus a little more highly on managing and providing support for native veg management. And that Act has been in place ever since.

BG: We had the feeling in Forestry that, when the *Native Vegetation Act*, both under the Planning and the first, '85 Act was brought in, that the interpretation of prescribed burning was more for prescribed burning for land clearing, to stop that, because obviously three or four quick fires can take most of the understorey out and then it's not a difficult job to actually roll the few remaining dead trees that are there. So that Forestry was quite upset that the use of prescribed burning for both – what we were trying to do was both for fire protection in some areas, and my focus was also on biodiversity burning – was treated as if it was this land clearing approach; and I think that also led to some fairly intense discussions about what is it actually for and 'we are not burning for land clearing, we are burning for another purposes, and is it in the Act really meaning land clearance?' Because at that time the focus was more on stopping clearance of land, and I was well aware of two or three examples – I think one or two occurred on the Fleurieu Peninsula – when the first *Planning Act* was brought in, that there was some clearing which went on both on the Fleurieu Peninsula and I think on Eyre Peninsula very quickly –

SL: And Kangaroo Island.

BG: – just almost virtually the day before.

SL: Yes.

So out of these concerns, now, this working group is created to try and address this issue.

SL: Indeed, yes. I don't think we should overstate the importance of the, let's call it the 'outcomes' from the Working Group. It was certainly a group that was in its time, it was a very timely group and covered, as Brian I think mentioned, a broad range of interests. And I guess the – what was the end result, Brian? A series of guidelines and general management guidelines in terms of prescribed burning?

BG: There was that. There was the state-wide policy, which I mentioned before –

SL: That's right, yes.

BG: – which was a joint agencies, government agencies, policy. The interesting thing about the Prescribed Burning Working Group was that there was no

representative of local government or Farmers' Federation. It was solely a government agencies, government landowners.

We did a couple of interesting things. One was to fund a bibliography for exclusively South Australian material, recognising that South Australia was both structurally different in terms of its rainfall – and the consequence of that is the vegetation wasn't as tall and whatever, particularly in the higher-rainfall areas – and secondly that maybe there was some information that was already there that not many of us knew about which could be used. There was also a series of seminars presented to the CFS and other invited groups. There was actually a series of seminars or one national seminar funded down at the University of Adelaide which involved bringing Libby Metitschke back from Western Australia, who had done some long-term work at Mount Bold. Then there was another document which was the recommendations to government, and one of those key recommendations identified that the lack of knowledge of the biological impacts of fire, particularly in South Australia and particularly in the agricultural regions or in the high-rainfall agricultural regions – not so much say in the mallee regions where the mallee was continuous with Victoria and so therefore the Victorians were interested in that – – –. But it was because of our limited knowledge and small areas in this high-rainfall belt – in the Lower South-East, the Mount Lofty Ranges and the Southern Flinders, where there'd been extensive land-clearing – and the clearance report which really led to the *Native Vegetation Act* identified there was something like eighty-five per cent of the landscape had been cleared of its original vegetation, and *that* really helped the government get the community support to actually bring it in because it was the first act brought in in Australia.

SL: Yes. And it was brought in overnight, without consultation – the initial Planning Regulations, '83. And initially, again, strong backlash to the Regulations, and, as I said before, that was really only I suppose overcome to some extent with the compensation provisions of the 1985 legislation.

BG: So that when it came in and Forestry wished to continue prescribed burning is when the real intensive and frequent debates occurred, both between some of the staff of National Parks or the then National Parks Service and also different staff

and the changing staff through what was then the Native Vegetation Secretariat or the Native Vegetation Branch. And probably one of the key issues was that I'd been involved for a number, at least ten years at that stage, and Simon should comment: I think a lot of the people who were then brought into the Native Vegetation Branch had basically freshly arrived out of university training, where in fact they were probably told about or had the innate ethic that protection equals do nothing, apart from getting rid of the weeds and fencing off to keep the cattle and sheep out. And so for somebody to come in and have both a reasonable amount of data and be quite forceful I think was quite challenging.

SL: I think that's a valid point. I think quite a few of the staff of the Environment Department who were assessing vegetation clearance or prescribed burning applications did come at it with a fairly, let's call it 'puritanical' viewpoint, perhaps fairly fresh from tertiary study somewhere, and tended to regard burning of native vegetation – without knowing precisely what the results might be – as something that shouldn't be encouraged. And that's a mindset that's still partly around the place, obviously, and I guess the issues that Forestry SA is having now with the Native Veg Council still reflects a certain reluctance to go ahead with prescribed burning unless you've got relatively clear and confident understanding about what the end result's going to be.

BG: There was an additional attitudinal factor in there as well, because the then National Parks employed some people from interstate, from National Parks Services interstate and from academic institutions interstate, where they had seen forestry burning large areas for the protection purposes, and so they also brought with them an attitude that prescribed burning was wrong. And I think then the other part of it was, both with the *Native Vegetation Act* there was this ethic that 'we want to protect this', and 'protect' meant focusing on all of the other things rather than the actual use of fire for biodiversity management – – –.

SL: So I don't think you'd call the Prescribed Burning Working Group a specific turning point in this whole process; it was an important aspect and a gradual evolution that's still proceeding, I think. The work that we were both involved in from our respective viewpoints with the Native Vegetation Council I think was, again, an important step in the evolution of the process. That type of progress, I

think, prompted National Parks to start to think more seriously about prescribed burning, and then they had a funding opportunity about three years ago to employ some fire ecologists or fire management type people. And I think it's probably in the last three to five years that National Parks has become much more attuned to using prescribed burning as part of park management.

BG: I think the big initiative – sorry, the more recent big initiative – was that Premiers' Conference about fire. But if we can go back a step, Ash Wednesday I in 1980 created some attitudes about the role of fire and prescribed burning and also the preservationists' view. For example, there were a couple of examples where, particularly down at Second Valley, a senior member from the Department of Environment said, 'Do not put a bulldozer line through here', and more of Deep Creek was actually burnt than – it could have been saved. Those sorts of things also caused quite negative attitudes between the two Departments. It happened again in '93 at the Kyema fire, but that jumped forward. So in 1980 there was Ash Wednesday; in 1981, what was it, Ash Wednesday one-and-a-half; and then in 1983 was the big one. And so with the Prescribed Burning Working Group carrying on through that it was very important to have some joint government agency approach because we three owned or managed for the community most of the native vegetation. And so at that stage, with a lot of the native vegetation burning, and having impacts on the built assets – the farms and other things – that also gave us more impetus. And that was needed.

There was also the Coronial Inquest after Ash Wednesday where National Parks, Forestry and SA Water, as well as others, all submitted their reports and feelings; and even then there was probably the concept that the Prescribed Burning Group had produced recommendations, the Senate Select or the Upper House Committee had produced recommendations, and Forestry *still* had its own attitude that prescribed burning was a useful management tool. And there was one example: despite the fact that everybody would say, 'Prescribed burning will have no impact on an Ash Wednesday type fire', we had already in 1980 and 1983 Ash Wednesday two examples of prescribed burning actually having an effect. Didn't actually stop the fire. But it's important to point those two out. Firstly, it was by chance that some of the areas had been burnt within one or two

years before, so therefore the fuel loads were low. Secondly, the other big factor was that all of the areas of native vegetation managed by Forestry were subdivided by firebreaks. So it meant that an incoming fire came up to a bared road or a bared firebreak, and then if it happened to have an area that was burnt within a couple of years over the other side of the firebreak the fire was virtually going nowhere. And the firebreaks also allowed the firefighters safely into areas, so that if they could see where the fire was coming they actually were able to in fact light up some of these defined blocks as a backburn. And there are now, I can think of both the 1980 wildfire at Caroline, which is now Wild Dog Flat Native Forest Reserve [and] in the Nangwarry Native Forest Reserve on the second night of Ash Wednesday, there was the ability to get in and light up and burn back some areas, so that was a combination of access, previous fire history and currently, immediately being able to light up; and up here at Mount Gawler Native Forest Reserve near One Tree Hill the same thing happened in 1988 and 1991, where a combination of access and previous fire history – and in the Mount Lofty Ranges in particular in 1991 there was aerial fire support as well – allowed the wildfire to be rounded up far more quickly. So it's not just prescribed burning; the fire prevention was a combination of a number of different activities.

SL: One of the dilemmas that we face – not so much in forest reserves or National Parks or water reserves – one of the dilemmas in other areas in the Mount Lofty Ranges is a link to the fragmentation, I think, that one of you mentioned before, the fact that native vegetation areas – well, across most of the southern part of the State, really, but Mount Lofty Ranges are a prime example – the native vegetation has been fragmented to such a degree that we have most of the blocks of vegetation are quite small. So the scope to have, let's say mosaic burns over a planned period of ten, twenty years or whatever it might be, is very limited if you've only got a five-hectare or less block of native vegetation, and that becomes quite a dilemma for conservation in those areas if perhaps some of those smaller patches are vital habitat for particular species and fire is maybe a necessary component to maintain the vegetation and, in a sense, some of those species: how you can actually manage that within highly-fragmented vegetation, with also the added bonus, if you like, of fire in smaller blocks tending to

exacerbate weed invasion issues as well. So that's just another aspect of it, particularly in the private land sector: how can prescribed burning be used effectively in that situation? It's a fairly difficult dilemma for us, and where it is used in that situation generally needs quite intensive follow-up, particularly to control that weedy invasion process. So that's another aspect of it.

BG: Can I just elaborate on that a bit more, or try and clarify a couple of things? Simon mentioned the weeds. And weeds are, no doubt, a problem in conservation areas. They're particularly a problem, as I would suggest, in areas where the rainfall is higher and so therefore they're more aggressive. For example, down near Second Valley in the early days of settlement, there was actually a nursery to grow gorse for roadside hedging and it was extensively planted, and I read an 1888 horse-ride story from Victor Harbor through to Angaston, and this guy was describing the Torrens Valley down here between Woodside and Birdwood, and all of the small farms had English-style gorse hedgerows around them. So (a) the high-rainfall areas had more weed invasion and greater weed history, (b) a lot of the parks that were established in the Mount Lofty Ranges therefore had previous grazing and a high level of weed invasion. That led to the next issue which was most of the conserved greenies or even some of the National Parks people who were being forced to look at some of these areas tended to focus on weeds plus fire equals more and more weeds –

SL: More weeds.

BG: – and Forestry suffered from that because Forestry's native vegetation, many areas identified in the management plans I was writing having been in their tenure since the 1880s or even to the 1920s or thereabouts. They hadn't ever been totally cleared. They hadn't ever been extensively grazed. They were used as a firewood resource and occasional grazing. So part of the biological argument was: 'Your prescribed burning is going to promote weeds.' And I was saying, 'But we don't have as many weeds as you are seeing in parks or areas which have been bought from now-disused farmland.' And that also had a second battlefield to it, in that most people at that time were focusing on plants rather than fauna. And I think for two reasons: one, they're easier to go out and study, particularly when you're starting to talk about reptiles and small mammals

– birds are much simpler – because they’re there and they move; but plants you also don’t have to get up quite so early in the morning to – – –.

SL: Yes. The other side of that weeds question, though, is that prescribed burning is now I think recognised as having a definite role in weed control. So on the one hand it can exacerbate a weed problem in a given situation; on the other hand, it has been used by people like John Wills of Animal and Plant Control in the Mount Lofty Ranges as an important tool in controlling the very gorse that Brian was talking about, particularly in perhaps areas that are difficult in terms of access. A prescribed burn followed by a follow-up spot spraying of any gorse weed regrowth really is one of those genuine win–win type situations, where you get a better native vegetation cover eventually and you gradually get rid of the weeds, and prescribed burning is in that situation an important part of the process.

Through all this process, what research was going on, did you observe in various agencies? Was there much, and what was the focus – – –?

BG: I initiated in 1979, through some contacts with the South Australian Museum with a man called Peter Aitken, who was a wonderful mammalogist, some surveys, and Forestry funded him and some of his team to come to what is now Nangwarry Native Forest Reserve, which is just south of Penola, which is a block of two thousand hectares subdivided into fifty-eight different compartments – possibly should be called the ‘Colonel Light Native Forest Reserve’. And we developed an interest and devised a study which looked at three different compartments with different fire histories: one which had been burnt quite frequently up until the late ’70s, and that was about five times in twenty years; one which had been totally unburnt since the ’50s as far as we could find out; and another area which had a longer inter-fire interval. And one of the reasons for trying to make this comparison by including an area which had a very long absence of burn history [was] most studies had focused on the fact that fires and frequent fires were the greatest impact on flora and fauna. And nationally there was a recognition, through what was then called the – – –. Sorry, I’ll clarify that: under the Australian Forestry Council were a series of research working groups for all sorts of purposes on forest land. One was nutrition and silviculture and so

on. But there was one that was called 'Fire' and there was another one called 'Wildlife Habitat', which was established in '75. And we used to liaise quite strongly and actually had a joint meeting at Creswick in the late '80s where the fire, the silviculture and the wildlife people all got together. But the point that was being made out of the fire group was 'nobody is looking at this long absence of fire', because there are ecological effects with a long absence of fire as well, and that was one of the points that we were also trying to say yes, areas need some fire; but the real dilemma that everybody was bringing up was 'how much and how often?' – which is still current today. So anyway, that study was formally established in 1981, with small mammal trapping, and in 1985 Woods and Forests Department managed to get some money under the Community Employment Program and it did a baseline survey of selected areas in all of its areas of native forest throughout the State, which became the basis for the current management plans which are being prepared. The Mammal Club and the Nature Conservation Society were invited down and we held a camp out over one Easter, and so that became a focus of Forestry's research into prescribed burning.

The information that came out of that was what I then started to put into the evolving policies, and a couple of key things came out of that. Firstly, I recommended that adjacent compartments shouldn't be burnt within three to five years of one another, because that allowed particularly small mammals and reptiles and the birds – although they could move further – to actually disperse from one burnt area to the next. Secondly, that alternative fires should be in summer–autumn and winter–spring, so that successive prescribed burns, at a time interval which could be anything from seven to fifty years, should be alternative, but if you bring it back to more frequently ones, let's say from eight to sixteen, should be in those alternative seasons. And that meant that the patchiness of a winter–spring burn would create more patchiness for the subsequent autumn burn, and that the burning program was scattered over the reserve.

A chap called Barry Grigg, who had been with Forestry for a long time in the South-East, and I sat down and, to be honest, played God – a little bit like playing darts with an area of native forest but with compartments on a board – and all we did was we looked at what had the previous fire history of a compartment been. Then, with that limited amount of biological data, we said, okay, having

determined that we don't want adjacent compartments burnt, we added dates on and, having developed a fire interval formula which was designed specifically for the stringybark communities which said, 'We do not want to burn off any recruitment plants' – in this case the stringybark – 'before they've started to set seed.' And some data was gathered in 1924 which said that should be about eight to ten years. And so I developed that into a formula. So therefore we were adding eight to ten years and alternating seasons onto any area that had previously been burnt, which took the Forestry people from when they frequently were trying to burn more frequently purely for fire protection – might have been down as low as five years. And I can remember one particular discussion that Simon and I had had, which was, 'Instead of burning so frequently for fire protection, had you thought about slashing around in under the trees?' And we discussed more of the ability to do it rather than the ecological impacts. So that Forestry was slowly accumulating more and more data and continuing on with this data gathering, although budgetary restraints and economic rationalisation by staff movements and that type of thing changed the intensity with which it was being sampled, and that was the basis for all of the presentations I took back to the Native Vegetation Secretariat.

SL: I think apart from the area that Brian's been referring to that the amount of research in South Australia has been relatively low, I think one would have to say, and to some extent contentious. The main example I can think of is we actually engaged Roger Goode to do a specific project on Kangaroo Island looking at the potential for, the value of, prescribed burning in I suppose the parks and heritage agreement areas on the island, and his report – this is back late '80s, early '90s once again, I think – his report was quite favourable in terms of the potential for prescribed burning in many areas on KI. But I think it was released at a time when, for some reason and I can't think of the exact reason, but for some reason there was a fairly high level of sensitivity about the whole prescribed burning issue. And the work was done essentially for the Native Veg Council and, to cut a long story short, the report basically never saw the light of day. It was reviewed by certain staff within the agency, within National Parks, and certain Kangaroo Island staff – and that was probably a fairly important

factor in this, too, that certain Kangaroo Island staff were not entirely happy with the recommendations coming out of the document. So that remains buried in a drawer somewhere, but it was a fairly major piece of work and it would be interesting to track it down, and we've made some effort to track it down over the last twelve months or so.

Apart from that, I think the research broadly falls under the title of monitoring. The example I referred to a while ago in the Flinders, in the Ragless Range, has been monitored by people in the Native Veg Council for many years, so some useful data's coming out of that and I guess you can call that research.

There was, likewise, a body of research done down in the South-East, as a joint exercise involving the Conservation Council, the Farmers' Federation and, to some extent, Environment Agency, looking at the pros and cons of burning in a heritage agreement area owned by one Michael Gaden near Keith, and that resulted in a prescribed burn and I think that's been monitored to some extent since the burn.

But I think by and large, given what we might call the importance of the topic, the amount of research done in South Australia has been fairly lack-lustre.

Gentlemen, we're just coming to the end of this disk, so perhaps we'll take this opportunity for a break and resume.

SL: Good idea, excellent.

BG: I'd like to comment, when we start up, about ---.

END OF DISK 1: DISK 2

This is disk two, resuming the interview with Brian Gepp and Simon Lewis. Simon, would you just like to go briefly back over the Michael Gaden research?

SL: Yes. That was a good example, I think, of a co-operative effort to explore the potential, I suppose, of prescribed burning: a landowner with a heritage agreement area with concerns about, I guess, primarily fire hazard reduction, but also with some interest in to what extent prescribed burning can enhance the ecological value of the area. The Conservation Council and the South Australian Farmers' Federation joined forces in a co-operative look at the whole proposal, a good deal of information was collected under the guidance of Con Council, Farmers' Federation and the Department for the Environment. The prescribed

burn was carried out on the basis of the data collected, there was at least some monitoring carried out after the event, I'm just not quite sure to what extent that's been carried through. But overall I think it was a valuable and valued effort at prescribed burning on a reasonable scale, it was a fairly sizeable heritage agreement area.

BG: Was that down near Tintinara in the mallee?

SL: It was on Gaden's property, which is just near Bordertown, is probably the best way of describing it, between Bordertown and Keith.

This would have been about 1996?

SL: Round about ten years ago. So yes, a good example of prescribed burning and I think the outcomes have been quite good in terms of the way the vegetation has responded.

So an endorsement of the process, perhaps.

SL: An endorsement of the process. And a good indication of what can be achieved when varying interests get together and work together on a particular prescribed burning issue.

BG: Can I just add a couple more studies that come to mind? One was in the very early '70s with Keith Casperson, who was looking at an area of native vegetation on Forestry land in the South-East, down near the Glenelg River. And strangely enough I was asked not to be involved in it, so that may just once again reflect some inter-agency type cultural attitudes. But there are two other things which have happened more recently: Joan Gibbs, who was once with what was then the Salisbury CAE which is now Uni of South Australia, has had for many years students going out to Ngarkat or one of the big mallee parks. And then David Paton of Adelaide Uni, when he came back after doing his postdocs in different places, has also started looking at some of the mallee parks and at Ngarkat in particular, I think. Then there was Hugh Possingham, who was the mathematical modeller in Adelaide who started to look at prescribed burning and he and I wrote a paper on prescribed burning and looking at a computer model. Then, more historically, there are one or two theses done in the Botany Department

looking at some fire effects in the Mount Lofty Ranges. So, apart from that, there wasn't very much directly related to South Australia.

There was, however, one study which was started at CSIRO² on litter accumulation, and the researcher I think died or, once again, that died from refunding, and that's one of the key issues. By a key issue I mean out of the prescribed burning work came a group called the Fire Research Co-ordinating Group, with the idea that two things: firstly, there was a recognition that there was a dearth of biological understanding of the role of both fire and prescribed burning; and secondly, there was some money to be provided for funding projects through the Fire Research Co-ordinating Group. And – as an aside, I wasn't actually permitted by Forestry to be on it although I was the wildlife expert – one of the suggestions I made to the Fire Research Co-ordinating Group was that, because fire studies take such a long time to establish and to gather data, that there should be a rationalisation about what should be done, where it should be done, so that maximum amount of effort was put in one or two places. I made the suggestion that Ngarkat should be a key theme area for mallee vegetation systems and that the Nangwarry Native Forest Reserve, which the studies have been now ongoing for ten or fifteen years, should have been a focus for the high-rainfall ecosystems. And you can slop around with the data a bit or with the plant community, but at least there was useful pre-existing data. I was, I would say, gently, bitterly disappointed that this concept had never been picked up despite also extensive discussions with senior staff in the Department of Environment or National Parks at the time, and it's probably true to say that the only time co-operative research has now really started to pick its way up is since the Premiers' Conference and this is mainly transpired because some of the Forestry staff have gone into the fire group in National Parks and have been aware of what's been going on in the Forestry land, so not only do National Parks have more fire ecological expertise, but they are more aware of some of the prescribed burning histories. And the greatest value of Forestry is that it's kept the accurate records of where the fires were conducted and when they were conducted. There are obviously gaps in a lot of the data saying – the date may be just a year rather than

² CSIRO – Commonwealth Scientific and Industrial Research Organisation.

the day, month, week; but at least you know that the fire was injected into that area.

Probably the other issue that came out of research which Simon also meant about monitoring is, with a research background, I'm trying to always ask the question, because everybody likes to talk about monitoring: 'What's it for? Who's going to use it? Where's it going to be stored? How long is it to be done for?', without saying, 'Oh, we must go and monitor.' Hence – here endeth the lesson on that – – –. (laughter)

SL: One of the aspects we haven't touched on as yet, I don't think, is the link between prescribed burning and the decisions made by local councils in terms of what type of developments they allow and where they allow them, and I guess we're probably well aware of many examples of particularly residential development that's been permitted – over decades – where really it shouldn't have happened. The classic that I always think of is not far away in Crafers–Stirling area in Vantage Way: you've got a housing development sitting right on top of the Cleland Conservation Park, and there have been numerous planning decisions of that type made over the years. Now, that then links really to two things: one, the development itself has displaced important natural habitat; and, secondly, it's placed in a position where the infrastructure is very much at risk from fire, which then leads on to the need for management including prescribed burning to lower the risk. And in fact, as part of the National Parks' growing awareness of prescribed burning, that area just below Vantage Way at Crafers is now prescribed burnt on a planned basis. But that's still an area, I think, where there's a fair bit of work to be done. It applies, obviously, to much more management issues than just prescribed burning, but I guess having development decisions made under the *Development Act* that pay due regard to natural resources and to the way in which those developments are going to either directly affect natural resources or require natural resources to be manipulated to keep them safe, and I think that's still a body of work that needs to be sorted through because we don't have, I don't think, any great clarity in terms of clear requirements upon local councils or even the State Planning Department to give sufficient consideration to those sorts of issues in working through planning decisions.

BG: I'm interested also, Simon, from the point of view that you can see in a real estate ad 'such-and-such a property, near conservation park' or 'next to the forest', as if that's a big bonus – which it is, I mean *can* be –

SL: Can be, yes.

BG: – but nobody puts in the ad: 'such-and-such a property, totally surrounded by native vegetation in extreme fire risk', and I would think that both the Sydney fires and the Canberra fires and the fires of today that are going on in Tasmania where twenty-odd houses were lost, once again will bring back this whole planning and protection issue for one-in-a-hundred-years fires, where nothing, basically nothing, will stop them. And whether either the local government planners or the state planning departments or the real estate agents or the institutes will ever accept any responsibility for what they're doing.

SL: We see it at both ends of the spectrum, don't we? We see it from the fire point of view and we see it on flood plains as well.

Exactly, yes.

SL: That's a real paradox there, that at both ends of the spectrum we still see planning decisions made that are really at odds with what should be, I think, NRM³ or land management objectives for particular locations.

Is there a role, then, for the new NRM structure to consider?

SL: I think there certainly is, Noel, yes. The Natural Resources Management Boards, which are now well and truly in place across the State, they are charged with integrating our whole approach to the way in which natural resources are managed, be it water, soils, vegetation, *et cetera*. And at the moment they're going through a very comprehensive planning process with the idea of having regional natural resource management plans, NRM plans, in place by the middle of 2008. So undoubtedly there's a whole raft of issues that those plans will cover, but equally undoubtedly there's scope for those NRM plans and for the Boards to I think have a fair amount of input and influence on issues such as prescribed burning as a land management–habitat management mechanism. So I

³ NRM – natural resource management.

really think for South Australia at least the NRM Boards are becoming a key focus for the way in which these resources are managed. While bodies like Forestry SA and National Parks might continue to be the main implementers, I think the NRM Boards will have a fair say in helping to guide policy and perhaps even legislation that might relate to prescribed burning.

And informing the community?

SL: And, good point, very much so, informing the community about just how prescribed burning, in this instance, can contribute to good land management in particular circumstances.

Brian, did you have any views on community education? ..?

BG: Having conducted a few community group walks through some areas where Forestry have and had prescribed burning, I think that's enlightened them quite a bit. But once again it appears that sometimes you're only talking to the converted anyway. One of the things that links back to being able to take this walk and stand on a corner and look at four different compartments and say 'This was burnt such-and-such, look at the plants and whatever', leads me back to the comment about access and fuel breaks or fire breaks, because the big drama in actually conducting a prescribed burn is either doing it from the air which we don't and haven't done in South Australia or having access from the ground, and there has been an extremely strong 'anti-' feeling from, I believe, a lot of the protectionist conservation groups and some of the plant lovers about putting in fire breaks, because fire breaks will attract horses and then they will attract motorbikes and four-wheel-drives, *et cetera, et cetera, et cetera*, and may in fact increase not only the weeds but some of the potential for the *Phytophthora* to be dispersed. But this is where there's a big philosophical discussion, and that is: is it better to actually accept an amount of disturbance and manage it as best you can than to lose large chunks, or small chunks, of habitat in one hit because you do not have the ability to get in there to actually do some on-ground either prescribed burning or, as you've suggested at some stage in the past, Simon, about a hundred-metre-wide scrub rolling or something like that in very big park areas? So really it's a facility to mix up the fuel loads. And I think that as an issue has to be really looked at hard, because what it's really doing is saying that

people are only thinking about the short-term impact rather than the risk of actually losing a particular large area of habitat. And there are possibly some interesting legal issues in that because, if you are not doing something to assist the management or protection of a species or a habitat, then are you in fact under the *Environmental Protection and Biodiversity Conservation Act* liable? Because that's really turning the Act right around on its head. And that hasn't been tested, either, of actually looking at the reverse approach.

And with the fire requirements of many species it raises an interesting question.

SL: Bearing in mind, too, just to give the other side of the coin we've recently had the fires up in the Riverland and an example there, I can't recall the species offhand, but a species of bird –

BG: Black-eared mynah?

SL: – black-eared mynah, in the vicinity of the Gluepot Reserve, that is basically an endangered species, that's its habitat, it's nowhere else, and it relies upon long-unburnt vegetation. So in that instance there was real concern that the fire might actually just wipe out the last remnant of usable habitat for the bird. That's probably a rare example, but there are some examples like that. So, as in life, it's a question of balance, isn't it? (laughter)

The priorities.

SL: Yes.

BG: That leads into really the role of the Native Vegetation Council in trying to come to some sort of balanced decision –

SL: Yes.

BG: – having its members from conservation groups, CFS – CFS, are they there or not? –

SL: No, no.

BG: – but members of both conservation groups, the land management community; and hopefully, and I think it's true to say that, over time they have begun to understand the role of fire more, also responded to community education and

pressure. But the membership of the Council changes and I can't remember the time frame, I think it's three –

SL: I think it's every two years.

BG: – every two years, and so it's almost a re-education of the Council people. And therefore, if I can be self-critical, I think one of the key issues that hindered my acceptance of the data that I had was twofold, and I've just given this advice to a young person involved in prescribed burning and presenting prescribed burning: that is, if you have the data it's a marketing exercise to lead the people to where you want them to get, not shove – colloquially – the data up their nose and say, 'These are the facts, you just accept it.' They have to be led to the point of view where they don't have any other point of view, rather than being told. And I think a lot of researchers are not particularly good at that marketing approach; they're very good at saying, 'Well, these are the facts. If you don't like them, tell me why you don't like them', rather than, 'Let me help you to understand this information in order to bring you to the point of view that I want you to have.'

SL: So I think in general, Noel, we've got cause to feel mildly confident about the way things are going with prescribed burning in South Australia. We've seen, as we've said, National Parks adopted prescribed burning regimes in a number of reserves; I think we've seen, to some extent, the Native Vegetation Council start to appreciate the benefits, although there is still some work to be done there, it would seem. But it is a fairly sensitive little journey, I suppose. In a sense, who knows, it might just take one or two prescribed burns that get out of control, for example, as has happened in the past, that can turn the tide back a certain amount in terms of public opinion and therefore political motivation and so on. But for the moment I think we've achieved a fair bit in the last twenty-odd years and I think probably through the work the National Parks are starting to do that in effect are emulating what Forestry has been doing for a long time, I think there are some good signs there that prescribed burning is being accepted as almost a mainstream management tool – at least with certain important land managers, maybe not right across the full spectrum.

BG: I've just started two small projects which have led prescribed burning into a brand new area, which is looking at revegetation – replanted, either direct-seeded

or replanted areas of cleared farmland – and the role of prescribed burning. We've looked at two particular areas, and the grant was actually funded by the Native Vegetation Council. One was an area which was planted by the State Woods and Forests Nursery in the mid-'80s and was burnt in a wildfire over at Little Para Reservoir near One Tree Hill, so that we particularly chose endemic species and here is an area where the trees only had grown and suddenly a wildfire came in. And what happened, and that was February two years ago, there was seedling recruitment of the overstorey species, which was a great thing because it removed all the grassy understorey, and I need to go back and check that. But the other interesting twist in that is, if you have an area of revegetation where there was a strong habit, particularly of putting in a very high density of wattles, which produce an enormous amount of seed – now, I'm not necessarily debating on putting wattles in; it's the amount of wattles, because if you get a single fire in there you will actually have a wheatfield of wattles. And so, once again, using prescribed burning for management of regeneration of revegetation is another issue which I don't think has yet really – it's starting to be explored, but it's another decision that the Council will have to make or that the Native Vegetation Secretariat will have to make about policies about using prescribed fire in revegetated areas.

Much for us to reflect on there. We only have a minute or two left: are there any concluding remarks that each of you want to make?

BG: I would like to make one from a researcher's point of view is that, as Malcolm Gill has said – Malcolm Gill, the CSIRO plant ecologist who has been looking at fire for many years and retired recently – 'Try something and evaluate it and modify your management. Don't be afraid to try something yourself so long as it fits in with that cycle.' Scientists and sometimes policymakers are very poor about saying, 'We need to know everything before we can do anything', and in the relationship to fire where there is a need for long-term results, 'Try and co-ordinate and focus research, rather than starting little bits hither and thither', because that links back to my soapbox or my sermon previously on monitoring. Over to you, Simon.

SL: Right. Okeydoke, Brian. I guess my concluding comment would be, yes, fire has got a very legitimate role in land management. In many instances, though, the managers need to be prepared to allocate a fair amount of resources to the follow-up work. It's one situation perhaps in a native forest reserve where there are not great weed issues, for example; it's another situation where the follow-up is needed to control weeds that might come in after a fire. So use of fire does quite often require a lot of follow-up, a lot of resource, and I think that needs to be clearly recognised and accommodated by the people who are able to provide those resources, be it government, local government, whoever.

BG: If I could just add reinforcement to Simon's comment, the issue is very much a resource issue, so that if you are to be prescribed burning you virtually need everybody to be able to drop tools and go and do that particular job, because of its priority, just as much as if there's a wildfire when people drop their tools and go and fight the wildfire.

SL: The other quick comment I'd make is: keep an eye on the results of your prescribed burning and be prepared to – it's the old phrase, adaptive management – be prepared to adapt the way that you manage, according to how things respond from prescribed fire. I think adaptive management, it's becoming a bit of a hackneyed term now, but I think it's an important one: to learn from what you've done and to apply those lessons in what you do further down the track.

Very good. Thank you very much, gentlemen.

BG: Pleasure.

SL: Thank you.

BG: I don't think we've missed too much.

SL: I think we've covered the field.

END OF INTERVIEW.