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## SESSIONAL COMMITTEE ON THE ENVIRONMENT

### PUBLIC HEARINGS ON *MIMOSA PIGRA*

#### DAY 2

Ormiston Room, 3rd Level, Parliament House  
Wednesday 5 February 1997 commencing 0930 hrs

PRESENT: See Day 1.

WITNESSES: **Dr Wayne Mollah and Mr Grant Flanagan,**  
Department of Primary Industry and Fisheries;  
**Mr Jim Ford,** Interim Mimosa Planning Group.

**Dr Colin Wilson,** Parks and Wildlife Commission.

**Mr Andy Kenyon,** Northern Land Council;  
**Mr Dean Yibarbuk,** chairman, Bawinanga Aboriginal Corp, Maningrida.

**Dr Michael Storrs and Dr Rick Van Dam,**  
Environmental Research Institute of the Supervising Scientist.

**Mr John Hicks,** chairman, Mimosa Steering Committee;  
**Mr Andrew McNee,** acting assistant secretary, Wildlife Australia.

**Mr Donald Millford,** general manager, Paspaley Pearl Properties;  
**Mr Tony Searle,** manager, Melaleuca Station.

**Mr Ian Baker,** NT Buffalo Industry Council.

**Ms Clair O'Brien and Mr Kelvin Bugg,** Lower Mary River Landcare Group.

**Dr Naomi Rea,** plant ecologist.

This is a tape-checked and lightly edited transcript. **Note:** Evidence heard *in camera* is not included.

Issued Tuesday 17 February 1997

**Dr LIM** I call to order this hearing of the Sessional Committee on the Environment and welcome Dr Wayne Mollah, Mr Jim Ford and Mr Grant Flanagan from the Department of Primary Industry and Fisheries who are appearing to give evidence. Other than in exceptional circumstances, witnesses appearing before this committee are not required to take an oath or make an affirmation. However, I remind you that information you give to this committee must be truthful. Witnesses have the right to request that their evidence be taken in camera and/or remain confidential. Should this be the case, the committee would need to be apprised of the reasons before it could make any decision accordingly. Please indicate now if that will be the case for part or all of your submission.

**Dr MOLLAH:** Not to our knowledge.

**Dr LIM:** Please state your full name and the capacity in which you appear today.

**Dr MOLLAH:** I am Dr Wayne Mollah, director of policy coordination. Up until Friday of last week, I was director of land resource management which is the area in charge of weeds. So it is in that capacity that I appear today.

**Mr FLANAGAN:** Grant Flanagan. I am the senior weed scientist as of early November last year. My responsibilities are the day-to-day running of the biological control operation and the chemical and mechanical control of mimosa and other Territory weeds.

**Mr FORD** My name is James Ford. I am a private rural consultant. I am here today as a member of the Interim Mimosa Planning Group committee.

**Dr LIM:** I propose to let the 3 of you present what you have to say and then the committee will interact with you and ask you questions.

**Dr MOLLAH:** We have put in a submission jointly from the Interim Mimosa Planning Group (IMPG) and the department. We would be happy to walk through that and explain various parts to you. I have here documents which include a draft of the *Weeds Management Bill* which we're looking to put to the Assembly later this year. I think discussing that initially would be useful in clarifying the role of the IMPG. The draft bill makes provision for the drawing-up of weed management plans. They can be drawn up by the minister or by a committee that the minister appoints, under a provision for what is called weed management committees. They can be set up on the basis of particular river catchments or particular regions - it might be the Victoria River district or the Roper or whatever. In addition to that, there is a provision that a weed management committee could be set up for a specific purpose.

Given the prominence of *Mimosa pigra* in the Territory and given its recognition in the National Weeds Strategy as a weed of national importance, it seems a probable case for the minister to set up a weed management committee for *Mimosa pigra* rather than simply on a river catchment basis for a particular region. In anticipation of that approach, the IMPG was set up as a precursor to any such committee that might be set up should the bill be enacted. The idea was to have a group overseeing operations against mimosa from the Territory government's point of view. The IMPG works with the department on the department's operations. It is on that basis that the submission has come forward from the IMPG and the department. It is written in accordance with the terms of reference given to the IMPG by the minister when he set it up last year. It may be worthwhile for us to return to the arrangements between the IMPG and what is called the Mimosa Steering Committee (MSC) at some stage later this morning.

**Dr LIM:** Are all these committees doing the same sort of job?

**Dr MOLLAH:** The answer is no. Weed management in the Northern Territory rests with the Northern Territory government, and the government has allocated that responsibility to the Department of Primary Industry and Fisheries. The IMPG deals with the work of the department as the lead agency in the Territory for weed management against mimosa. The MSC was set up to administer and oversight Commonwealth funds that were allocated, initially against mimosa on Aboriginal land and additionally for investigations into the potential for biological control agents. The MSC consists of people from various Territory and Commonwealth government agencies. It is currently chaired by a representative of Environment Australia. It used to be the Australian Nature Conservation Agency. I understand the chairman of that committee is appearing before you later today.

The IMPG incorporates that and goes more broadly than Aboriginal land and biological control. It deals with all aspects relating to mimosa that the department is interested in. We anticipate - we in the department and the members of the MSC - that at some stage in the future there will be one committee. We are at an interim stage of arrangements which will be further clarified with the passage of the Northern Territory bill and with the sorting-out of arrangements for funding coming through the Natural Heritage Trust, which is the Commonwealth funding component now coming through the partial sale of Telstra. Those funds coming through the Natural Heritage Trust include funds allocated for weeds. Those funds will require some agreed management arrangements between the Territory and Commonwealth governments. While we have the 2 committees at the moment, both groups agree that there should be one group at some stage in the future when both those sets of arrangements are sorted out.

Our submission starts off by dealing with the impact of mimosa and what it is - a woody weed, an acacia species and so forth.

**Mr BAILEY:** Stuff that I read before said it was largely in Thailand and the Territory. Then yesterday we heard that there were huge infestations in Vietnam, Cambodia, Irian Jaya. Are they ones we just haven't known about?

**Dr MOLLAH:** We have known about them. I can't give specifics but yes, there are certainly infestations throughout South-East Asia, partially in Africa and in its native range in Central America, between the 2 tropics.

**Mr BAILEY:** All the literature that we went through initially seemed to say that in South America it wasn't really a problem. It was just a native. You're saying that they've actually tried to control it as if it were a weed. And we found out yesterday that there are other huge infestation areas. That left questions in my mind as to how they got in. We know where ours came from. We know where the Thai stuff came from. You wonder how it got to New Guinea.

**Dr MOLLAH:** I can't answer your question, and I don't know that it would be fruitful to speculate. In terms of Thailand, the link there was a joint project between here and Thailand leading towards control. Before my time, the department did have involvement in control work in Thailand. That has ceased now.

**Mr BAILEY:** It just seemed to come out of the blue. All of a sudden there's much more going on than we were told even 2 months ago.

**Dr LIM:** Following up on that question, with the widespread infestation in South-East Asia is there any United Nations program to deal with that? If so, can we tap into that as well?

**Dr MOLLAH:** Not that I'm aware of. There's no specific United Nations funding that we can tap into.

**Mr FLANAGAN:** We were involved in the 1980s in an ASEAR[?] project on mimosa, which was the work that was done in Thailand. That went for 5 years, then funding ran out. As far as I'm aware, no United Nations or other international organisations have taken it up. The infestations in New Guinea were discovered relatively recently. Given the internal turmoil of some South-East Asian countries during the 1980s, weed control was probably pretty low on the agenda of aid that was required. That's probably why in a lot of those countries the mimosa infestations haven't been widely recognised.

**Dr MOLLAH:** Turning your question about United Nations funding around, should that or any other funding become available, the progress that has been made against mimosa here has put us in a sound position to offer our experience and expertise for use in other countries in joint projects, subject to resource availability and all those sorts of things. The experience here with biological control agents - in fact, all methods of control - positions the Territory well to tap into that sort of work.

**Mr BAILEY:** And the other issue is that they're actually trying to control it in Central America.

**Dr MOLLAH:** That's in its native range

**Mr BAILEY:** That's what I'm curious about - why try to control a native?

**Mr FLANAGAN:** In general it's not a problem in its native range, but in areas that are subject to overgrazing and those sorts of pressures its weedy characteristics allow it to take over and become a problem like anywhere else. In those circumstances they would need to have some sort of control program.

**Mr BAILEY:** This became a slightly sensitive issue yesterday. Does that indicate that it may not be performing differently here than in its native range? In those areas in its native range that were used as rangelands or grazing areas, does it behave as it does here in the Territory?

**Mr FLANAGAN:** I don't think we have the knowledge to be able to say what level of grazing pressure will convert it from being just part of the normal environment to becoming a weed. A huge number of issues relating to habitat management will impact on at what stage it will become a weed. That's part of the knowledge base that we don't have. What are those pressures? What are the different combinations?

**Mr BAILEY:** Where control has been tried in Mexico, after it has changed from being like a native to a weed, did it grow into monocultural stands just of mimosa, tall and thick and impenetrable, or was it, say, 50%?

**Mr FLANAGAN:** To what level did it become a problem? I don't know what the exact levels were.

**Dr LIM:** We'll come back to your submission.

**Dr MOLLAH:** The first 1½ pages introduce the biological information and the nature of the problem. The next part deals with the first term of reference to the IMPG about the current distribution, rate of spread and impacts of mimosa. The known eastern extremity of distribution is the Arafura Swamp and the south-western is the Fitzmaurice. It infests sensitive areas of various floodplains which appear in table 1 on page 3. Its potential distribution throughout Australia, on the basis of climatic conditions and suitable soil conditions and so forth, could range from about Derby or Broome in Western Australia through to perhaps even as far as northern New South Wales. Its current distribution is confined to the Northern Territory. Therefore, it's not only in the interests of the Territory but in the national interest that we should confine it.

The rate of spread appears at the bottom of page 3. It talks about the methods of seed being spread, by water and so forth. As Grant has said in response to your question, how the land is managed is a major component in whether mimosa becomes a serious threat or not. Sound land management can lead to mimosa not becoming a problem - that is, preventing it and also perhaps, after it's been controlled, rehabilitating the country.

Its adverse impacts are obvious. You've been in the field, you've seen it how thick it is. It's impenetrable to man and beast - or most beasts, anyway. Therefore it totally degrades any country, be that country for pastoral or environmental or traditional Aboriginal use or whatever. On the benefit side, it has been used internationally as a source of wood and as a legume it does fix nitrogen into the soil. Later today Grant and I are meeting with a group from South Australia who are interested in exploring commercial development.

**Mr BAILEY:** I was going to ask if you had had a detailed briefing yet.

**Dr MOLLAH:** No. I was present when the group met briefly with the minister on Monday. They're meeting with us this afternoon to explain their proposal in greater detail and discuss what assistance they might seek from us as a department.

**Mr BAILEY:** I expect that at some future time we will be looking for some feedback on that.

**Dr LIM:** They saw us yesterday and gave us a presentation. We would like to have the department's opinion on the feasibility or otherwise of their proposal.

**Dr MOLLAH:** I can make this general observation at this stage. We would welcome any use that could be made of mimosa, with the proviso that it doesn't contravene its status as a serious weed.

**Dr LIM:** Would it jeopardise any Commonwealth position on mimosa if it became a harvestable crop?

**Dr MOLLAH:** I wouldn't like to speculate on that at this stage. I think much would depend upon the nature of the proposal and the specifics of where it was to be operated and how it was to be operated. We would need to set it in that context before we could make any case to the Commonwealth.

**Dr LIM:** In your briefing today with them, perhaps you can look at that and then advise this committee as to how it could be incorporated in an overall plan to manage it.

**Dr MOLLAH:** I've made a note. We'll come back to you.

Term of reference 1.2 talks about the effectiveness of past and current control methods ...

**Mr BAILEY:** You mentioned in your note here that it actually increases the fertility of soils. Is there any way perceived so far that it can be used beneficially as a soil conditioner? Or does the increase in soil fertility just mean mimosa grows better?

**Dr MOLLAH:** Mimosa is a legume, and as such it fixes nitrogen into the soil. That's basically the benefit that it provides. That nitrogen in the soil carries over to subsequent use for grass or something.

**Mr BAILEY:** Is there any way that it could do it in areas where other plants couldn't? Is it good soil there already or is it fairly low in ...

**Mr FLANAGAN:** Generally, the areas where mimosa grows are not particularly suitable for other than grazing. Although it does put nitrogen back into the soil, your problem is getting rid of the mimosa to make use of that nitrogen. That to date has proved to be an extremely expensive business.



**Dr LIM:** I thought the delta region was fertile for just about anything, as long as you keep native animals from eating whatever you plant. Delta regions are internationally the most fertile land you can find.

**Mr BAILEY:** They don't have much nutrients because they get washed out every year.

**Dr LIM:** No, the nutrients are washed down to the deltas.

**Mr FLANAGAN:** Yes, washed down to them. But our soils on the floodplain, I think, are quite different from the silting[?] soils that you get in South-East Asia on their deltas. Soils are way out of my field of expertise but I would say that generally the soils on the floodplains are not going to be suitable for much other than grazing pasture.

**Dr MOLLAH:** Do you want to go on about control measures?

**Mr FLANAGAN:** We've used a 2-pronged approach. One looks at containing infestations to the best of our ability with chemical and mechanical means, and the other is the introduction of bio-control agents to provide a long-term, cost-effective solution. Since 1965, the chemicals and techniques that we use have changed dramatically. Chemicals are now much more specific. The equipment that we have is much more suitable to working on floodplains. The bulldozers that enable us to do the chaining are specifically designed to work in wet areas. We didn't have those 5 years ago. Even equipment like [inaudible], air boats, all those kind of things which enable us to get out on the floodplains much earlier, we didn't have 7 or 8 years ago. They enable us to treat the mimosa pretty much year-round, so we're able to be that much more effective. Your big problem with mimosa is stopping it seeding. If you can stop it seeding, then your chances of success are greatly increased.

**Dr LIM:** Are you suggesting that even with all of these rains and all the flooding that is occurring in the wetlands now, as long as the mimosa is above the water level you can treat it?

**Mr FLANAGAN:** Depending how much is above the water level, yes. Now it's just starting to produce massive amounts of seed. The treatment really needs to be done now. The longer you leave it, the more seed it's going to produce. It will seed almost continually now right through till May.

**Dr LIM:** Are there any chemicals that you could use that cause mutation of the seed? In medicine, you treat cancer by using chemotherapeutic agents that are attracted to rapidly multiplying cells. If mimosa is now producing seed at its most rapid rate, is there any sort of chemical control that will be attracted to the rapidly growing cells, either stunting or killing them?

**Mr FLANAGAN:** There was a presentation a couple of weeks ago at Berrimah Farm, looking at genetically altering plants and using the transgenic cotton that they've developed as an example. It would seem that there are possibilities through that technology to be able to influence the way that the plants develop and produce their seeds and those kinds of things. But that's still very much in an embryonic stage. It's the only technology that I know of that is specifically looking at chemicals that will deform seed or abort seeding. Some of the chemicals that we use are effective in killing the seed almost up to the point where it goes hard and brown.

**Mr BAILEY:** You've said that you need to have sprayed by now. We heard some comment by one of the pastoralists yesterday that there were delays in funding approvals. Has the level of spraying that has occurred in the past occurred this year, or were there delays?

**Mr FLANAGAN:** Yes, there were definitely delays with the mimosa control assistance scheme. The funding was delayed for I think at least 5 weeks from when we put the submission up to Cabinet, for a variety of reasons. That essentially set us back 5 weeks. One of our operators' helicopters was down for a month. That also set the program back. Part of that time was during the period when Cyclone Rachel was around, so it probably cost us a couple of weeks rather than a whole month. But the main problem, I would say, was that we didn't get to start early enough because that funding was delayed by 5 weeks.

**Mr BAILEY:** Was this federal funding or Territory funding?

**Mr FLANAGAN:** Territory funding.

**Mr BAILEY:** If 5 weeks makes such a difference, why don't the submissions go in earlier? It seems to be pretty late in the piece. Is it the same every year?

**Dr MOLLAH:** The mimosa control assistance scheme has been operating in its various forms for 10 or 11 years or so. What we have tried to do over the last few years is tighten up the administration. Previously, landholders were invited to put in their receipts and so forth for the amount of money that they had spent, and there may not have been sufficient allocation to cover that, which would require an application to Cabinet late in the financial year to subsidise the

landholders to the 50% extent. More recently, we've been surveying the landholders before the season, asking them to indicate their plans and how much they propose to spend, so that we know before the event how much subsidy money is required. We will come to this later on in table 6 or 7 in the submission.

This year, we were allocated funds that still came below what landholders had said they wanted to do. So there was a process of going back to the landholders to ask them to reconsider their bids, as it were, so that we did have enough money to cover what they were actually going to do. Then we wrote back to the landholders, notifying them that the maximum of amount of subsidy that they could expect this year was \$10 000 or \$500 or whatever it happens to be. So there was that interaction of going back to the landholders and asking them to reassess what they wanted to do this season, given the funding that had been made available to us through our application to the government.

**Dr LIM:** So this is a one-off this year? Did it happen last year or the year before?

**Dr MOLLAH:** That's the first time we have been in that situation. For the last 2 or 3 years we have gone to landholders before the event, so that we know what the level of expenditure is likely to be early in the financial year and we can cover it one way or the other, whereas in previous years we had to go towards the end of the financial year and find money from elsewhere in the department or seek assistance further from Cabinet to meet the subsidy levels. Expenditure on mimosa by landholders over the last 2 years has gone up quite markedly over what it was previously. There are 2 factors to that. We changed the terms for the mimosa control assistance scheme to provide more support to landholders for things that they did, including ground control as opposed to simply aerial control before. Also, the live cattle trade has had a couple of impacts. It has boosted the market potential for livestock coming out of the Territory, giving landholders more money for managing their properties, and of course it has created a greater demand for country on which to put cattle. Country that's under mimosa has to be recovered back to pasture so it can be used for holding stock.

**Mr BAILEY:** Was that what caused the 5-week delay, or was that why your submission to Cabinet was late, after which there was a delay of a further 5 weeks which led to the problem?

**Dr MOLLAH:** My recollection is that the 5 weeks encompasses all of that - going to Cabinet, being told that we could get so much, then going back out to the landholders to get them to revise their bids.

**Dr LIM:** Then you get Cyclone Rachel and the helicopter not being operational.

**Mr BAILEY:** But in the time frame you had prior to that, you would have known, wouldn't you, what the allocation was for the mimosa program?

**Dr MOLLAH:** We were given an allocation in the budget. We went out to the landholders and asked them how much they were prepared to do, and that came in. I have forgotten the figures - I can provide them later if you require them.

**Dr LIM:** Table 7, page 17.

**Dr MOLLAH:** That's not quite the detail that I'm talking about. The landholders came in with bids above what we had available. We had to go back to Cabinet and ask for more. Cabinet was able to provide us with some, but not all, of the difference between what we had previously and what landholders were bidding for. So we had to go through the process of going back to the landholders and asking them to reassess their operations for this year so that we could support every landholder at 50%. Otherwise we would have been in the position of making judgments ourselves about continuing to support landholder A at 50% and giving landholder B 35%, or else across the board cutting them down to an average figure.

**Mr BAILEY:** I had people at the end of the last year telling me they didn't know whether they were going to get any money at all and weren't prepared to commit their own funds. They were saying it was almost too late to efficiently carry out the exercise. I guess the dilemma was that a lot of money can be wasted because of that loss of efficiency. In future there would need to be something in place earlier. I gather from landowners that none of them got any assurances about any amount that they would get until the end, and therefore weren't in a position to hire helicopters or whatever.

**Dr MOLLAH:** Another factor last year was that we were back into an August budget, as a result of the Commonwealth situation, whereas the previous year we had a May budget. That is far more suitable for mimosa management. Obviously, you've got 3 months additional notice of what's going to happen. As for landholders not knowing whether they were going to get any money, there was always money allocated towards the mimosa control assistance scheme. What was unknown was how much the total bids were. The point from you that I'll take on board is that we need to reassure landholders that the subsidy scheme is going to operate. You're saying that they didn't know that they were going to get anything. We need to be able to say that the scheme is going to continue, but it's still going to depend upon the arrangements.

The operation of the subsidy scheme is one of the things that the IMPG is looking at. All along, over the last few years, we have been trying to improve the administration of that scheme, both from the point of view of the government and the point of view of the landholders. Obviously, we haven't satisfied the landholders who are talking to you, and we need to do that. I suggest that the deliberations of the IMPG are going to take us a considerable way to improving the operations of the subsidy scheme.

**Dr LIM:** Yesterday somebody said that it's fine to get subsidy for chemical control. But is it possible to get subsidy for other forms of control?

**Dr MOLLAH:** The short answer is yes. That's the sort of thing that's being looked at in the investigations. It's ultimately a government decision as to how the scheme operates. But we have had economists in the department looking at partial budgets for replacing country with pasture after mimosa on it has been sprayed. Those figures are very early but it does raise the question about the direction of the mimosa control assistance scheme solely being for herbicides and their application. I suggest that other methods such as bulldozing, chaining, fire, introducing biological control agents etc all will be considered in order to get the best benefit for the landholder and for the Territory in terms of managing mimosa. The scheme is continuing to evolve and develop. It's in a major phase at the moment through the deliberations of the IMPG.

**Mr BAILEY:** The focus seems to be on individual action by landholders. Has a strategy been considered to look at the best places to deal with it? You may get one landholder with an infestation that's controllable but he doesn't have the money to do anything about it and then it spreads to others. Another with lots of money is getting the subsidy and doing a reasonably good job but it may not be such a high priority, other than to help that individual make more money. You talked about the specialised equipment that you had developed. Is that made available on a needs basis for identified priorities, or is it just used on government land?

**Dr MOLLAH:** The table on page 17 identifies the properties that have received assistance over the last 9 years or so. We've discussed analysing the location of those properties in relation to what we would regard as best management for particular catchments or regions. Obviously, we have been responding to landholders who see mimosa control as a priority for their individual properties. They are the managers and operators of those properties, so it is their right to do so. But in terms of what I was talking about before, in terms of the bill proposing weed management plans for particular regions or catchments, we need to consider the operation of the subsidy scheme as it has been up until now and how government might provide assistance through these plans once the committees have developed them and the minister has signed off on them.

**Mr BAILEY:** Looking at this table here, would it be, in your opinion, that about 50% of the treatable mimosa problem in the Northern Territory is on Tipperary Station? They appear to have got about half of the funds for the last few years. If you were deciding where you'd treat mimosa, would you spend half the money on Tipperary?

**Dr MOLLAH:** That's an enormously value-laden question. What we have here is properties with agricultural interests. We are an agency that's responsible for weed management across all land in the Northern Territory. So the question you are asking me now is different from the question that the owner of Tipperary addresses. I would have to consider Aboriginal land, national parks, distribution in catchments etc. It's easier to talk about the economics of control on pastoral lands because you have a tighter economic framework in which you can ...

**Mr BAILEY:** All right, I'll restrict it to that. You're the weeds control person for pastoral properties. You're given a bucket of money to control, as much as you can, weeds that reduce the viability of those properties from spreading to others, for the global benefit of the pastoral industry. Would you spend half of it on Tipperary?

**Dr MOLLAH:** Tipperary certainly has had a substantial problem and is definitely dealing with it. Part of the issue is that we do not want to discourage in any way landholders who see it as a problem and want to deal with it.

**Dr LIM:** You're saying that the landowner needs to assess the priority with regard to his control of mimosa on his property. If the landowner says, 'Mimosa is causing me a lot of problems. I'm prepared to put my money into it and then I'll seek a subsidy from government', that's entirely up to the landowner. It's not up to the department to decide whether X number of dollars should be spent on that property. What Mr Bailey is saying is that if the owner has a lot of money, then he can squeeze a lot more out of the government than if he only has a little money. Looking at some properties, you see they're only getting a few hundred dollars ...

**Dr MOLLAH:** Which may be commensurate with the size of their problem.

**Dr LIM:** That's right, we don't know that. And your figures can't tell us that either, whether it's commensurate with the importance of the problem to the landowner or commensurate with the amount of money he has free to spend on mimosa. I don't know whether you can tell us whether these figures are commensurate with the financial resources of the owner, the need, or the significance of the infestation. Can you tell us?

**Dr MOLLAH:** No, I can't, because I don't know the financial status of any landholder in the Northern Territory. That's their business, not mine.

**Dr LIM:** That's why I was trying to say. I think Mr Bailey's question to you was almost unanswerable because of that.

**Mr BAILEY:** This year, for the first time ever, I gather that you have assessed the claims based on effectiveness, because you said you got in too many claims.

**Dr MOLLAH:** We didn't get in too many claims, we got in claims that were seeking too much. I have forgotten the figures, but say for the sake of the exercise they were seeking \$0.5m and we had \$0.3m available. We had to go to Cabinet to seek some money and they came back with another \$0.1m, so we were left with \$0.4m. Then we had to deal with the landholders and ask them to cut back on their bids so that we could accommodate them with \$0.4m. Now, the landholders were happy to do that in the context of the resources available. Your question to me, as I understand it, is would we prefer to deal with Tipperary rather than some other landholder.

**Mr BAILEY:** Let's say it went from \$0.3m to \$0.4m but they still wanted \$0.5m as their starting point. Did you analyse the cost-benefit or make some sort of assessment of their weed problem?

**Dr MOLLAH:** No.

**Mr BAILEY:** Just looking at those ballpark figures, you could have taken \$0.1m off Tipperary - they still would have got the most - and you could have then given everyone else what they wanted. It just seems to me to be a huge amount. Are they doing so much because their problem is so great, or are they saying: 'We have a great property that's making lots of money and now we're taking a taxpayers' subsidy to make our property even greater'? Is it in fact not really a weed catastrophe management program for a lot of properties that are barely surviving? Like the days of ...

**Dr LIM:** Before you answer that question, from my political perspective I think Mr Bailey is putting you into the Tipperary owner's position to try to respond. I don't think that's appropriate. You went back to all the landowners and said: 'You wanted \$0.5m. We have only \$0.4m. Come back with an adjusted figure that we can meet'. It's up to the landowner then to give you that figure. You didn't say, 'No, property A can have only 1%, property B can have 50%', did you?

**Dr MOLLAH:** The aim of the exercise was to keep an even-handed approach across all landholders according to their bids. In answer to the question, at Tipperary they have had a substantial problem of mimosa on their country. They have invested large sums, as those figures show, in the management of mimosa on that country and Tipperary is now starting to show the benefits of those control measures.

**Mr BAILEY:** But out of 20-odd stations, they've received close to 50% of the funding for the last 8 or 9 years.

**Dr MOLLAH:** Yes, the figures are there. That is in accordance, I would say, with the problem that they had and their preparedness to deal with it. You can have other properties also with substantial problems who may not have the economic resources themselves to put in the other 50% or whatever.

**Mr BAILEY:** I thought what we're trying to do is control a weed. There's a limited taxpayers' resource to control that weed. I thought you implied, in relation to last year's exercise, that when the bids were too high you did try to assess what it was that different landowners were trying to do, so that they changed their bids in relation to practical weed control issues. It appears, though, from what you're saying that if they all asked for 80% instead of 100% of whatever their claim was, you'd give it to everybody.

**Dr MOLLAH:** The criterion at the time was the resources available to us, and getting the bids back down to that level of resources available. Our weeds officer most experienced with mimosa went out and negotiated with the landholders to get the bids back down to the level that we could service, and we got their agreement to do so. Implicit in your question, as I hear it, is that we look at how this operates henceforth. I'm saying that that process is under way. If we embrace things like herbicide control and whatever else, as well as ... Now, I'm not a member of the IMPG, but I suggest the group would be looking at how we might administer it to deal with the questions that you've raised with me this morning.

**Mr FLANAGAN:** Over the time we've been working on mimosa we've developed a variety of techniques which are useful in a variety of situations. They include herbicide application, use of fire, bulldozing, chaining, and a chopper-roller that has been developed, combined with flooding and other natural habitat management things. Recently there has been work done on revegetation, combining that with these types of application techniques. A number of pastures,



particularly introduced species, have been found to be quite competitive with mimosa seedlings, so you are reducing your regrowth and seedling problems by bringing in pasture as early as you can.

In conjunction with that, we have had a biological control program running since about 1979. That's seen 8 insects and 2 fungal pathogens introduced into the Territory. We are now able to go out in the field in a number of places and physically see the damage that the insects are causing. Five years ago, we couldn't really do that to any great extent. So the progress that the program is making is quite good. We are now at the stage where I think it is realistic for us to start considering how we are going to integrate biological control with the other methods that we have available to us. The advantage of biological control is that once you have the insects out there, established and working, that's it - your costs are finished. They'll find the plants for you, they'll do the damage, they'll keep on ....

**Dr LIM:** Do you think that you will see a day, 10, 15, 20, 30 years from now, when mimosa will come into a sort of controlled balance with your biological controls?

**Mr FLANAGAN:** It'll come into a balance. Where that balance is will depend on the suite of insects that we eventually introduce and how effective they are. Intuitively, it makes sense that if an insect is attacking a plant it's not doing it for the plant's benefit. At the moment, we don't have a lot of data on what the insects are doing. We have data on a couple, but not on the most recent: the bud-feeding weevil and the stem-boring moth *Carmenta*?. Those are 2 which are spreading quite rapidly. We've just found the bud-feeding weevil on the other side of the Daly River, 80 km from the nearest release site. We were out in the field yesterday, looking at areas where it's been established for a long time, and the buds were quite badly chewed and damaged. They're obviously affecting the plant. The major impact that they'll be having now is reducing seed production. If you have a 6 m-high mimosa plant that's 4 or 5 years old, there is not a lot that huge numbers of insects are going to do to kill that plant. If you have a 1m-high seedling, on the other hand, with the same insect population around, those insects are going to have quite an impact on the longevity of the plant, the number of seeds that it produces and how big it gets. If you just leave it to the insects, you have to wait for mimosa to go through its generations. If we can speed up the rate at which mimosa goes through its generations, and get the insects working more and more on younger and younger plants, then the impact that those insects are going to have is going to be much greater. I think the challenge for us now is to develop those integrated techniques that are going to do that.

Stem-boring and bud-feeding insects have controlled a plant, *Cesbania*, some species of which we have here on the floodplains, in South Africa in wetland situations. It took them about 20 years to get from a situation where it covered their wetlands to a point where it is no longer a problem. They rely solely on the insects to maintain control. They found that in areas where the insects have been abundant, and there's either a fire or the area is cleared, there is very little seedling regrowth. And you know your species are able to come back and recolonise.

**Dr LIM:** Yesterday we heard that aerial spraying of Roundup is not supported. Someone suggested that at times like this, when everything's flooded, aerial spraying is probably the most effective way of getting the agent out onto the mimosa, but the policies don't allow that.

**Mr FLANAGAN:** Run that by me again - aerial spraying with Roundup? Or Glyphosate?

**Dr LIM:** Well, whatever it is it's not allowed. But some people have suggested that that is probably the most effective way, especially when there is so much water around. You can aerial spray rather than ground spray the agent. Is there a problem with aerial spraying?

**Mr FLANAGAN:** Why Glyphosate, and why are we talking about on the agent?

**Dr LIM:** A property owner said yesterday that if he could use aerial spraying of Glyphosate or whatever, then he would have much better control, especially in times like this when everything is flooded, when you cannot get any ground vehicle out to spray the mimosa.

**Mr MITCHELL:** Not only that. He was also indicating that if he did spray while flood levels are high, it's not going to go down and kill the grasses. It's just going to get onto the plant.

**Mr FLANAGAN:** Well, that would be the advantage of using Glyphosate now, that it's not going to effect your grasses. But why Glyphosate in particular?

**Mr ADAMSON:** He just felt that it was the one that would be of maximum benefit to him.

**Mr FLANAGAN:** Glyphosate is quite a bit cheaper than the 2 main herbicides that we recommend. But my understanding is that it has been shown as being not as effective in killing mimosa as Starane and Graslan. There is now a formulation of Glyphosate that you can use near water, a bio-active ...

**Dr LIM:** Graslan is supposed to be something that's got to be in the dirt ...

**Mr FLANAGAN:** Yes, it's a pellet formulation.

**Dr LIM:** ... which means it's not going to be effective at this time of the year.

**Mr FLANAGAN:** No, that's right.

**Dr LIM:** So at this time of the year, to be effective you want to have something ...

**Mr FLANAGAN:** To cover foliage.

**Dr LIM:** ... which is aerial spraying or aerosol application.

**Mr FLANAGAN:** Yes, that's quite true. But I'm just surprised at the choice of Glyphosate.

**Mr BAILEY:** We were told yesterday that it's restricted for use under the *Weedicides Act* or whatever it is. It's only approved for ground spraying. It's not approved for aerial use, and that's the dilemma. You legally cannot do it like that. If it is seen as part of an overall battery of things you could use, is it worth the department looking at lobbying or putting in submissions to allow for its use in mimosa control in that way, in certain circumstances?

**Mr FLANAGAN:** You'd need to have, I would think, pretty compelling evidence that it was effective against mimosa when put out in those situations, and that it wouldn't have any detrimental effects that you didn't want. But yes, you can apply for variations in the registration of chemicals for specific purposes.

**Dr LIM:** Maybe the department should look into that - especially now when you're running behind time. This is one method that appears to be effective for someone but they're not allowed to use it, which we thought a pity.

**Mr FLANAGAN:** I've made a note to that effect.

**Dr MOLLAH:** Okay, we were talking about biological control. The program has been running now since about 1979. In exploration in South America we are now focusing on sucking insects and insects which are root-feeders. They are the 2 aspects of the suite of insects that we don't have in the country. So the search for new bio-control agents is targeting those kinds of agents. We have in quarantine at the moment 4 species of leaf-feeding moths and we're looking at a couple of other insects as potential bio-controls. They will be host-tested. Their specificity will be tested. Their life cycle will be elucidated. If they prove to be specific, they'll be released here in the field.

We feel we are developing a useful armoury of insects that can be used to manage and treat and control mimosa. To what level they are going to be able to do it on their own, we don't know. But we believe that in conjunction with the other control measures that we have, we can speed things up and make it more cost-effective, particularly in the long-term. Once you've got rid of your main stands of mimosa, your ongoing costs for control are still quite high.

**Dr LIM:** Jim, I invite you to address us. Do you have anything to add?

**Mr FORD:** I think these 2 gentlemen have covered the ground pretty well. If you read the terms of reference for the IMPG ... And it's early on in the deliberations. We have virtually until the new act comes in, and it hasn't been even to the first reading yet, so the time is still there. We are asked to make recommendations, and there is certainly a wide range of ways to handle this thing. If you take it to an extreme - I say this personally, it's nothing to do with the group - if you take, for example, the BTEC program and you draw a line around the mimosa areas and play it that way, it leaves infestations in the middle which may have to wait a few years. It's a hodgepodge at the moment. These are some of the things that I believe the planning group has to address in due course - in conjunction with the MSC, too, because it is piecemeal. There are major things to address which I hope will eventually clear up many of the types of problems I think you were alluding to, because it is going to take some management to contain it. The worst thing would be to see it get across the Fitzmaurice and head towards the Ord River or further, or establish itself in Arnhem Land or even go further out into Queensland which would be disastrous, as you've seen in the field.

The Northern Territory set-up of committees is approaching these problems from a logical angle. This hearing is probably a bit soon for us as a committee. I stress that my remarks in the last couple of minutes are personal statements and they haven't been well thought-out. But there is major problem in the administration of the controls for this weed.

**Dr LIM:** Yes, I understand your meeting is going to be at the end of March.

**Dr MOLLAH:** Yes, that is when the next meeting is scheduled. I'm not sure that I made clear the membership of the IMPG. The CEO of our department, who used to be Mr Peter Blake, is now Roger Smith. Dr Jo Baker is Chairman

of the National Landcare Advisory Council, so he has a broad national interest in it. Jim Ford has considerable experience as a local landholder. They are the 3 members of the IMPG, and we in the department support them in their deliberations.

**Mr ADAMSON:** Can I get a little background on the proposed legislation, highlighting how it beefs up the system we have now?

**Dr MOLLAH:** The major change is what I referred to before, the preparation of weed management plans on regional catchment bases or for a particular thing like mimosa. They would be drawn up by committees appointed by the minister. For a particular catchment, it would be selected people with interests in the operation and management of that catchment. They consider matters pertaining to weed problems in their area, or potential weed problems, and draw up a weed management plan which is then discussed with the minister and some arrangement is come to as to how that is implemented, with support - whether it's simply advice or whatever else - coming from the government. There are provisions for landholders who aren't implementing the plan, consistent with the *Pastoral Land Act* which has provisions for remedial plans to be required. There is the same sort of provision here.

I suggest that the main direction is this overall planning on [inaudible] basis which I think comes back to your question why we are dealing with it landholder-by-landholder now. This seeks to change the whole direction of weed management, not only for mimosa in the Territory, but for all weeds across the Territory. Plus, at the back of the bill, the penalties for failing to comply or for deliberately spreading weeds or introducing weeds are much more severe than they are under the current legislation. We are at the stage now of seeking to release this as a discussion draft bill so that everybody has an opportunity of knowing what's in there and commenting on it before it is formally introduced into the Assembly for the first and second reading stages. I have copies here to leave with you.

**Mr BAILEY:** You talk about things like ecological control using other species and follow-up and all of that. Up until now, control has been left up to landholders and we've only had a spraying support. There seems to have been little experimental work, according to your report, on a holistic management of mimosa. I'm glad to see that seems to be the direction you're going in, both in management and control. The funding seemed to be just based on how much landholders were prepared to spend, regardless of outcomes. We kept being told that the reason for that was that you really couldn't give landholders money and trust them to do something because they may not. It was easy for them to give you a receipt from a chemical company so you could pay half of it. We were basically told that you couldn't easily quantify effort, cost and other things for people on the ground and equipment and other resources of a property. But you could if they paid to have things sprayed. So I'm glad to see that it's moving towards what appears a sort of task-orientated, planned exercise. I hope that that does come off, because I think it's the only way you'll ever really deal with it.

Getting back to the funding arrangements, the subsidy, you can claim the cost of the chemical. Is it the cost of application as well?

**Dr MOLLAH:** The herbicide and other chemical agents like wetting agents and so forth, plus the aerial or ground application and ferrying[?] fees for the aircraft. That's under the mimosa control assistance scheme to the level of 50%.

**Mr BAILEY:** What accounting checks are put on that? And can landowners accurately state their costs? Say they have their own equipment, can they then claim some sort of ...

**Dr MOLLAH:** We pay on receipts.

**Mr BAILEY:** So if a property owner had their own helicopter they wouldn't get paid anything for using it?

**Dr MOLLAH:** Well, if they can receipt the fuel etc for the operation, then I believe we'd be paying that.

**Mr FLANAGAN:** Helicopters generally charter at a set rate an hour. I imagine they would be eligible to cost in that in their claim.

**Dr LIM:** If they own their own helicopter they can still work it out on that basis?

**Mr FLANAGAN:** Yes. Whether you own a helicopter or you hire it, it still costs you so much an hour.

**Mr BAILEY:** I really do have a concern about Tipperary and the amount of taxpayers' dollars that have gone there. As a member of the Public Accounts Committee, when I see that level of government subsidy going into something, I ask what level of auditing is done. Where you pay, say, \$0.25m because the other person supposedly put in \$0.25m, do you prove that in fact they did that, and they weren't able, because of the size and scope of the whole operation, to do a \$0.25m exercise without putting any of their own?

**Dr MOLLAH:** I'm not quite sure by what you mean by 'level of auditing'.

**Mr BAILEY:** Who checks all the books? I can understand that if you only give a \$430 subsidy it isn't worth the effort of getting an auditor to go and check that the landowner spent \$430 himself. But if someone claims \$0.25m because they say that altogether they've spent \$0.50m, my concern is what level of audit is done to make sure that it really is dollar-for-dollar.

**Dr MOLLAH:** The account is processed through our finance department, not by us. And could I say, I find difficulty in getting money out of our finance manager that I can't prove I've spent. That's not meant to be a flippant answer to your question. He is a person who is extremely diligent in making sure that all those sorts of things are in order. If he has any doubts he would be questioning, for sure: 'Is this legitimate expenditure or is it not?'

**Mr BAILEY:** Has Tipperary got close to solving its mimosa problem, or are they likely to need the level of support that they've had indefinitely? I wonder whether we're reaching a stage of saying they can't be very good at what they're doing if they're spending half the mimosa subsidy funding on their property and have been doing so for 10 years. Why haven't they beaten it yet or got it down to the \$2 a hectare that we heard that Kakadu in its wetland areas can maintain? It seems a lot of money to spend for a long time and still be spending it.

**Dr MOLLAH:** As I said before, they had a substantial problem and they've made real progress. I can't answer specifically how much longer we're going to need to support them under the current arrangements of the scheme. My understanding is that they are making substantial progress in recovering the country and bringing it back into productive pastoral use. We talk about the immense progress that was made at Oenpelli under the Commonwealth-funded project. That required more than one year of herbicide application because of nature of the plant that we are dealing with, the resilience of its seed banks etc. So it's not a one-off operation. A fundamental principle of weed control is that it requires continuing commitment to control and management. That is one of the things that Tipperary are demonstrating in their approach. If you're asking me can we look forward to supporting Tipperary for 2 years and no more, I can't answer your question.

**Mr BAILEY:** My dilemma is that there are a lot more properties than Tipperary

**Dr LIM:** I think you have to look at it in the perspective of what was spent at Oenpelli alone, with federal funding, versus what Tipperary is doing with their own contribution. If you think Tipperary is being treated exceptionally well against every other property owner, then look at what's been put into Oenpelli. Then you might see the perspective a bit more clearly.

You're planning to have the review at the end of March. Do you have a draft plan of review that we can look at, or something like that?

**Dr MOLLAH:** In our submission to you we have gone through the terms of reference of the IMPG. In some cases, like the biology and that, it's the final version. In other places we make note that further work needs to be done - it's being considered and so forth. So what we're conveying to you is the approach that the IMPG is taking in accordance with what it was asked to do by the minister, and the progress that has been made so far. To clarify, I don't believe that the IMPG will have its final report by the end of March. Its next meeting is scheduled for the end of March. Those things are largely influenced by the availability of Dr Baker, who is a busy man. We're all busy, but he's busy on a world scale as opposed to us in the Territory.

**Mr MITCHELL:** Jim, I want to go back to that sensitive issue that John mentioned before. I'd like to get your feelings on it because I know you've been in the Territory a long time and you're very well experienced in the grazing and pastoral industry. I'll read to you a statement in the submission yesterday: 'The increase in live cattle exports from Darwin may increase grazing pressure on the floodplains from agistment and breeding operations, while the possible development of a disease-free buffalo industry could increase the rate of expansion of mimosa'. To me it just doesn't jell. There's no scientific basis for that. It's just a personal observation. From your experience, have you anything you want to say about it?

**Mr FORD:** I haven't thought it through, obviously, but the export thing's there because the floodplain country can support stock and feed them properly at times of the year when the range country has dried off. As far as buffalo are concerned, any buffalo herds developed these days will be behind wire and subject to grazing management. They would never be allowed to do what big herds have done in the past, I believe, which was stay on country and do things to it. I know they eat slightly different types of feed but the females still have to have enough tucker to ovulate and they have to be able to ... If you're running a breeding herd, you want to breed calves. So it doesn't seem logical to me.

**Mr MITCHELL:** I agree totally with what you're saying. It seems a bit silly putting a statement like that in it.

**Mr FLANAGAN:** I'd like to bring up an issue that John alluded to a couple of times during the strategy debate, about the work that is done and the assistance given to landowners. He asked at one stage, do we let landowners use our equipment and stuff?. That's exactly what we do. Our staff spend quite a bit of their time working on mimosa control on

properties, either with landowners and their staff or independently of them. A large amount of the ground control work, which is so important to follow up the aerial control work, is done by our staff on properties.

**Mr BAILEY:** Is that based on your perceived priority of where you should be doing it, or on effectiveness?

**Mr FLANAGAN:** In essence, it tends to follow the aerial subsidy because that's what gets rid of the mimosa so you can get in and do the ground control. But we do have areas in the tops of catchments that we've been working on strategically for a number of years. They are high priorities and are treated regularly every year.

**Mr BAILEY:** You shouldn't have said that! Does that mean that your people spend half their time and resources on Tipperary?

**Mr FLANAGAN:** No.

**Mr BAILEY:** So it doesn't work the same as the subsidy does?

**Mr FLANAGAN:** No, but because the subsidy knocks down the mimosa to enable ground control, we tend to move in after that aerial spraying.

**Mr BAILEY:** How much time would your equipment have spent on Tipperary last year?

**Mr FLANAGAN:** None. They have their own equipment.

**Mr MITCHELL:** Would it be fair comment to say that because they do put so much of their own resources into their own block - money, equipment, whatever - that frees you up to concentrate on other areas?

**Mr FLANAGAN:** That would be a fair comment, yes. Tipperary has just got a new manager. He's much more interested in biological control than previous managers. I think they're going to have a good, hard look at what they're doing there.

**Dr LIM:** I'm going to have a last word on all this. Tipperary has received about \$0.75m in 10 years. Oenpelli has had nearly \$6m in 5 years. That's the perspective you need.

Thank you very much. I close the session.

[Witnesses withdrew.]



**Dr LIM:** I call to order this hearing of the Sessional Committee on the Environment and welcome Dr Colin Wilson who is appearing to give evidence. Other than in exceptional circumstances, witnesses appearing before this committee are not required to take an oath or make an affirmation. However, I remind you that the information you give to this committee should be truthful. Witnesses have the right to request that their evidence be taken in camera and/or remain confidential. Should this be the case, the committee would need to be apprised of the reasons before we could make any decision accordingly. Please indicate now if that will be the case for part or all of your submission.

**Dr WILSON:** No.

**Dr LIM:** For the record, please state your full name and the capacity in which you appear today.

**Dr WILSON:** My name is Colin Glenn Wilson and I'm here as a representative of Parks And Wildlife Commission. I am the senior weed management officer.

**Dr LIM:** I propose that you speak to your submission as you see fit, then we will interact with you and ask questions. We have received your written submission, which we very much appreciate.

**Dr WILSON:** First of all, I'll state basically where I'm coming from. I spent 12 years as the leader of the Department of Primary Industry and Fisheries biological control unit. During those 12 years, I acted as principal weeds agronomist for a total of about 12 months. I have recently joined the Parks and Wildlife Commission as its senior weed management officer. So most of the evidence I am giving is based on my experience of the previous 12 years. I haven't a lot to say about the situation of mimosa control in parks because I don't have a lot of experience of that. But if you have any questions I'll endeavour to answer them.

I'll summarise the main points of my submission. I probably don't need to say much about the national significance of mimosa; I guess a lot of other people have already given submissions in that regard. Probably the most important thing is that, under the draft National Weeds Strategy, it meets the requirements of a weed of national significance, from a national viewpoint. At this stage only 3 weeds are listed as weeds of national significance, the other 2 being rubber vine and prickly acacia, *Acacia nilotica*. So it is considered nationally to be one of the 3 major weeds in Australia.

My main comment on the management of mimosa in the past is that I feel there has been an undue emphasis on what I would call tactical rather than strategic control. I think there has been an emphasis on very large, spectacular and quite expensive herbicide operations on what I call core mimosa infestations, to the exclusion of integration of any other control methods. It may be possible to justify this sort of activity on social or political or environmental grounds, but it is very hard to justify in terms of economics. And it really has almost no strategic value.

A landmark paper by Moody and Mack came out in 1988 in the *Journal of Applied Ecology*. This paper is widely quoted by weed scientists. It basically points out that the most strategic way of controlling weed infestations - rather than concentrating, as has been done widely around the world, on the big, spectacularly visible infestations - the greatest value for money is in fact from leaving the main infestations, holding their edge and spending a lot of time searching on what is effectively uninfested land to control individual plants and very small satellite infestations. In the Northern Territory, while there has been some effort to control satellite infestations, I feel a rather inordinate amount of money and effort has been put into attacking the large infestations.

One example is the Oenpelli operation. I think DPIF would claim that that is a satellite infestation in its own right. However, over 6 years about \$6.5m has been spent controlling roughly 7000 ha of mimosa. That's around \$1000 a hectare. It's fairly hard to justify that in terms of economics. You might say it's cleared that land fairly largely of mimosa and it can now be used for other purposes. But \$6.5m could buy a lot of other research and other work. For \$6.5m the edge could have been held. There could have been a lot of search-and-destroy operations for outlying satellite infestations. There could have been a vastly accelerated biological control program and a lot of research on integration of mechanical, chemical, fire, ecological methods and bio-control, for the same money. I would contend that that sort of operation is really not very good value for money. In terms of an economic benefit or a strategic benefit, it doesn't really have either.

I think the mimosa control assistance scheme has entrenched this attack by large chemical operations with no integration of other control methods. Basically there is no mechanism in the assistance scheme for ensuring any sort of coordination with surrounding properties and within catchments or even within regions. There is no incentive for any sort of integration of other control methods. As an example, last year a strip of mimosa was sprayed parallel to the Arnhem Highway. It was surrounded on all 4 sides by other mimosa. Spraying was subsidised under the mimosa control assistance scheme. When I asked why that particular patch was sprayed, I was told it was part of the long-term management of mimosa on that property. I flew over the same property 2 days ago. The mimosa has all grown back and is seeding. It would have only cost \$100 or \$200 to the taxpayer, but that is the sort of thing that I think the mimosa control assistance scheme allows as it is structured now, and I think it shouldn't allow. I think there needs to be some change made to the assistance scheme whereby control can be far more strategic, within catchments and within whole regions.

Probably the only other point I really need to make is about data collection. I think there has been a fairly poor level of data collected over the years in terms of where mimosa is, its changes over time, and even on control operations. A report to the Mimosa Steering Committee by Kate Sanford-Readhead in 1995 highlighted all the deficiencies in available data. She found a great deal of difficulty finding out what had been done when and where, and where mimosa was.

Rather than being entirely negative - and I know my submission was largely negative - I think that in terms of the future things are really looking rather good. The Northern Territory weed management strategy, which I'm sure you have seen, is a very fine document. It has a lot of very fine principles expounded in it. At the very start, there are the principles of weed management supporting the strategy. There are 8 different principles there. I think if these principles are followed rather than just talked about, things are looking rather good. There has been a recent change in the management of the chemical and biological control operation at DPIF and I think it's a good thing. The new manager is a highly competent person who is willing to cooperate with land managers and other stakeholders in the whole situation. He is also willing to fully integrate different control methods. I think he's also quite keen to think strategically.

I think if the Northern Territory weed management strategy is followed diligently - if it is funded so that it can be followed diligently - in the long term we will have a more strategic approach. I think the mimosa control assistance scheme may be changed to make it a more strategic scheme. I think there will be a lot more integration of biological control and chemical control and ecological control, which is probably one of the keys. One of the problems with the Oenpelli program is that biological control wasn't integrated at any stage and it is now too late, really. After \$6.5m has been spent, 10% to 20% of the area still has to be treated with herbicides every year into the foreseeable future. Even though biological control is not yet proven, it will never be given a chance in that area.

If biological control is integrated with other control methods when these large operations are begun, then we are in a much better position in the future. With the Oenpelli infestation, for instance, we might within a few years have got to a stage where we could walk away from it, largely. There will always be mimosa there - biological control doesn't lead to eradication - but we may have got to the stage at some point in the future where we could walk away from it and concentrate on other problems. Whereas now, we're virtually locked into herbicide control forever. I don't think anybody has ever said they're going to eradicate it from that area. It's just an expense, a chronic problem now that goes on forever.

**Dr LIM:** If the control has not been well coordinated, I find it fascinating that mimosa has not spread outside the Northern Territory. So are programs that are in place currently keeping mimosa in check within the Territory?

**Dr WILSON:** To a certain degree. One of the things that has always confused me is that about 10 years ago there was an estimation that there were 80 000 ha of mimosa in the Northern Territory. At Oenpelli, 7000 ha were controlled. Yet people are still saying there's 80 000 ha. As far as I can see, that means that with \$6.5m we've managed to control 7000 ha while 7000 ha are expanding somewhere else. I don't think anybody really knows how much there is. But I find it interesting that after a series of very large herbicide control operations, nobody has claimed there's any less mimosa.

Mimosa is spreading. It's out into the middle of Arnhem Land now. There has been, I think, quite a lot of effort on controlling outliers, but I feel that a lot of these very large herbicide operations in core mimosa areas have used up a lot of staff resources and a lot of money that could probably have been better spent making sure that the outlying satellite populations don't expand. For instance, down on the Daly River Reserve and Wagait Reserve there's mimosa expanding rapidly in all directions. There is a proposal in place to do something about that, but it's happening right now as we speak.

**Dr LIM:** CSIRO is fairly optimistic about its biological control. It's done a fair bit of research into the number of natural mimosa predators that are available. They seem to think otherwise. They say that over the last 12 months they have seen actual evidence, although it's only in the short term ...

**Dr WILSON:** I agree entirely with that. Most of the biological control effort has been concentrated down the Finnis River, mainly because most of the other catchments have had such a reliance on herbicidal control. The biological control group has seen it as dangerous to put too many resources into areas that have been and may be sprayed. A large amount of the effort has been for the bio-control of the Finnis River. And down the Finnis River now you can start to see impacts. I think it is at a very, very promising stage.

**Dr LIM:** Do you have any problem with aerial spraying of herbicides?

**Dr WILSON:** Not in the least. In a lot of areas, especially because of access problems, aerial spraying is the only way of dealing with mimosa. What I do have a problem with is very large aerial herbicide spraying operations on core areas of mimosa. As I said at the very start, they may have some sort of political or social justification but not an economic one. It's very hard to justify spending \$1000 a hectare. There wouldn't be too much land in the Northern Territory that's worth spending that sort of money on to keep mimosa off.

**Dr LIM:** You said something about the verge of the Arnhem Highway being sprayed last year.

**Dr WILSON:** That was just one example of a herbicide operation that was subsidised by the mimosa control assistance scheme. It was just a strip that was surrounded on all 4 sides with other mimosa. I queried it because it was very close to one of my biological control sites and I was told it was part of the long-term management plan for mimosa on that property. Now, if it was part of a long-term plan, it hasn't been followed up. I think that's one of the problems with the mimosa control assistance scheme, that if for any reason the landholder doesn't want to continue the following year or if he leaves - I think at the moment that particular landholder is on holidays somewhere - there's no incentive. I guess there's an incentive for individual landholders to manage their properties efficiently, but there's nothing in the assistance scheme to force people to see it in any long-term or strategic sense.

**Dr LIM:** You are aware that the IMPG is looking at reviewing its whole approach?

**Dr WILSON:** Sure, that's why I'm saying I feel quite confident about the future. A lot of things have happened in the past that I disagree with, but I'm fairly confident that a lot of them have been looked at. I feel quite optimistic about the future.

**Dr LIM:** Are there any concerns that aerial spraying may affect biological control, in the sense that the herbicides may affect the insects?

**Dr WILSON:** There really hasn't been any research on it. This is also one of my criticisms, that there's been virtually no research into integration of control measures. My feeling is that herbicides and biological control are quite compatible, in that the biological control agents will be more effective on smaller, scattered, individual plants, and the regrowth and seedlings, because that's what they deal with in their native range. Mimosa in its native range is a small, scattered plant. It doesn't form the huge, woody, 6 m-high monocultures that it does here. I think there's a great deal of scope for research into integrating biological control with herbicides, with fire, with mechanical control. Realistically, with large core infestations such as on the Adelaide River, it will probably take a long time for biological control to make any inroads. It's population dynamics. It may take decades for biological control to have any impact, even when it is working very well everywhere else. But we may be able to use a range of different methods that make the biological control more effective sooner.

**Mr BAILEY:** Say you're trying to introduce something that attacks the growing leaves as a way of getting stuck into the mimosa. If you hit it with a defoliant at about that stage, then the bugs that were about to grow and reproduce and explode into the mimosa all die because there's nothing for them to eat.

**Dr WILSON:** I think that's only a problem in the short term when a colony of insects has just been established. The reality is, there are 80 000 ha of mimosa out there. Nobody is going to spray 80 000 ha in any one year. I don't know how much is sprayed - maybe 10 000 ha a year. An awful lot isn't sprayed each year. A herbicide operation might knock back the agents in a particular place. But the idea of long-term biological control is that the agents are mobile and self-sustaining. They spread by their own mobility and get there on their own. And what herbicide spraying may do in those situations is create regrowth of seedlings which are far more palatable and much more likely to be held in check by the bio-control agents.

**Dr LIM:** I thought CSIRO and the Territory government were working hand-in-hand with biological controls and in effective management of mimosa. You seem to say that there was no integrated management.

**Dr WILSON:** On biological control, CSIRO and DPIF are working very, very closely together. But there has been virtually no integration of chemical control with biological control. There has been basically no research and really no attempt to integrate the 2. Not until now.

**Dr LIM:** The Oenpelli project started well before biological means were available, I suppose.

**Dr WILSON:** No, that's not true. Biological control started about 1984-85. On the Oenpelli project, I think the first herbicide operation was about 1988 or 1989. And the Mimosa Steering Committee (MSC) operation came into being, I think, in 1991. So the biological control program was in its infancy, but it was there. In fact, the original public environment report in April 1991 by the Northern Land Council, on the proposal for control of *Mimosa pigra* on Aboriginal land, said in the introduction: 'Biological control offers the best long-term option'. It was known about and it was part of the option. My criticism is that it was never acted upon. If biological control had been integrated from the start, instead of ... What happened was the entire area was sprayed with herbicides 3 times, if you look at the total quantity of herbicide put out. The strategy that I would have put in place would have been to hold the edge. There was an 8000 ha pocket on the edge of the floodplain. My strategy would be to hold the edge, to vastly increase the biological control research and to spend a lot more money on research into integration of different control methods and on searching for and destroying outliers and satellites. That's with hindsight, I might say.

**Mr BAILEY:** That \$6.5m on Oenpelli would have been as much as all the other mimosa-spraying programs combined over the period of time?

**Dr WILSON:** Quite possibly. You'd have to ask the DPIF people to give you the figures. But it would be a fairly large proportion of the total spraying operation, I imagine.

**Mr BAILEY:** People have expressed surprise at what they have said is the slow spread of mimosa across the Territory. We have cane toads coming in from the other end, moving on their own at 50 km a year or something like that. Do you have any guesstimate of the rate at which mimosa has moved? How does it compare with the dispersion of other plants when you have outbreaks? My gut feeling is it's moving quite quickly. I mean, plants don't get up and walk.

**Dr WILSON:** I won't attempt to give you an estimate of the kilometres per year. But I think what happens with mimosa is that once it reaches suitable habitat, a floodplain or wetland of some sort, it rapidly expands. The Oenpelli infestation, for instance, doubled about every 1½ years. That's a fairly rapid exponential increase. In terms of getting to new areas, the mimosa seed being basically water-dispersed, I think it's probably reasonably difficult for it to get between river systems unaided. I think the reason that it hasn't spread a great deal further from where it is now is that there are 2 natural barriers: Arnhem Land on one side and the Fitzmaurice River and some fairly inaccessible country on the other side. There's not a lot of traffic across that country. We're finding, just over the last year or 2, quite a few little outbreaks have turned up across Arnhem Land. That, I guess, is the result of human traffic across that country.

It's a bit different from the cane toad. The cane toad, like you said, moves by itself. The mimosa seed needs to be transported. There is very little evidence, I think, that it's spread by birds, although I have heard people say that you find it first in new areas in swampy areas where birds roost. It may be possible, I suppose, for birds occasionally to carry a seed in mud on their feet. Magpie geese stick their head into the mud and root around for corms and things. They may ingest mimosa seeds. But I think it must be relatively rare, given that mimosa doesn't turn up all over the place in roosting areas. Infestations are found relatively rarely in new areas, and I think humans are basically responsible for the transport.

**Dr LIM:** The committee had an opportunity to visit Oenpelli last year. The land looked reasonably good from the air. You said it was scoured. I wonder what you meant. Maybe we missed a spot.

**Dr WILSON:** For this wet season there was a request to the MSC to fund aerial application on I think about 10% of the area. So there is still regrowth there. But sure, it looks good. It's been an effective program in terms of clearing mimosa off that floodplain. But at what cost? What could that money have bought in terms of greater knowledge and greater strategic control of mimosa? It was large, spectacular, impressive. But I really question whether it was worth doing in that way, given the cost and given the basic value of the land.

**Mr BAILEY:** So at least on the program side, you need to be looking at cost-benefit analysis of what you're doing?

**Dr WILSON:** Quite possibly, yes.

**Mr BAILEY:** And if there isn't going to be enough money to get rid of it all, you have to prioritise.

**Dr WILSON:** Yes, I think that's right. In the best of all possible worlds, if you had unlimited resources you'd seek to eradicate the stuff. But we are never going to have anything like those resources. Given that resources are reasonably hard to come by, we have to think strategically. The highest priority is to protect areas that don't have mimosa now or may have just 1 or 2 plants. One week spent searching a bare floodplain to find 1 plant and pulling it out is worth \$1m worth of spraying in the middle of the Adelaide River floodplain, for instance, because you have effectively saved your whole floodplain. It's not very glamorous and it's a hard operation to do a lot of searching when there's not much to find. But, ultimately, it's a lot more effective. \$6.5m could have been saved at Oenpelli if, back in the early 1980s, somebody had gone along and pulled out the first plant that was there. It's far more effective, when resources are scarce, to prevent invasion into clean areas rather than try to clean up what are already overrun areas.

**Mr BAILEY:** How do you say to pastoralists that you want to make sure that their property remains free and get them to deal with small outbreaks? How do you know that people are doing that? It's much easier to say: 'Here you've got a big area. We'll give you money to go and spray it'. How do you resolve that problem?

**Dr WILSON:** I think what you're saying is basically correct, that it's a lot easier just to give people a bucket of money to go and spray the mimosa they've got. But it's in people's interests to keep mimosa off their property. I guess it comes down to a lot of education and making people aware. It also may be considered to be a government responsibility to keep clear areas clear. And on properties that already have large areas of mimosa, there may be values other than straight economics. You may consider there are various social or political benefits from clearing pastoral properties, to keep pastoralism in that area. But I believe that DPIF have done an economic analysis recently which showed that clearing

mimosa off a pastoral property takes somewhere between 14 and 19 years to return a profit. That's pretty marginal in terms of economic benefit, as far as I can see.

**Dr LIM:** Thank you very much for your submission. I hope you'll be available to us if we need you to clarify other things at a later date.

**Dr WILSON:** Sure.

[Witness withdrew.]



**Dr LIM:** I now invite representatives of the Northern Land Council to address the committee. Do you wish to do it separately or jointly? You provided us with a joint written submission.

**Mr KENYON:** I think it's best if we talk to you separately. What I'd like to do is give you a broad outline of the Northern Land Council's involvement in mimosa control, then hand over to Dean Yibarbuk from Maningrida who will hopefully give you some insight into the impact that mimosa has potentially on Aboriginal land.

**Dr LIM:** All right. Thank you for coming to meet with us. Other than in exceptional circumstances, witnesses before the committee are not required to take an oath or make an affirmation. However, I remind you that information given to the committee should be truthful. Witnesses have the right to request that their evidence be taken in camera and/or remain confidential. Should this be the case, you need to apprise the committee of the reason so that we can make the decision accordingly. Please indicate whether this will be the case for part or all of your submission.

**Mr KENYON:** No, I'm quite happy for it to be public.

**Dr LIM:** For the record, please state your full name and the capacity in which you appear.

**Mr KENYON:** My name is Andy Kenyon. I work at the Northern Land Council in the Caring for Country unit. I've been a member of the Mimosa Steering Committee (MSC) for approximately 6 months and have had some involvement in mimosa control on the ground.

**Dr LIM:** I propose to let you make your presentation, then we will interact with you and go from there.

**Mr KENYON:** The wetlands in the Northern Territory are extremely important to Aboriginal people, both culturally and economically. For this reason, in 1991 the NLC produced a public environment report that resulted in the Commonwealth funding a mimosa control program on Aboriginal land. Since then, the NLC has had an ongoing involvement in the coordination of that program. I think that, as the previous person said, the program has improved as we've learnt more about mimosa. I think the committee and everybody who has been involved in mimosa control has been on a steep learning curve. Again, I would like to say that I think the future is very positive.

The NLC continues to be involved in the MSC. We are also involved at a management level with DPIF, with CSIRO, with Parks Australia and also the Environmental Research Institute of the Supervising Scientist (ERISS). The unit that I work in in the land council, the Caring for Country unit, is working with Aboriginal communities to produce regional land management plans. Certainly, for the wetlands, we see that successful control of mimosa is one of the keys to keeping people's land management options open in the future.

One of the areas that we've been working on a lot in the last 6 months has been community training. We have been cooperating with DEET and DEETYA, using their labour market programs. Unfortunately, some of the recent changes in DEETYA have meant that the labour market programs are no longer available to the rural and remote communities in a practical sense because of the way that the support money has been cut. So people's options for training through DEET have been severely restricted. That has been the subject of a submission to DEET from us. We hold out some hope for ongoing support from the National Heritage Trust and also from the new Aboriginal land management body, the Indigenous Land Corporation.

We see the future of mimosa control as an increase in community education, an increase in the amount of on-ground control that community members themselves are doing, and a reduction in outside agency involvement to one of coordination and support and maintaining a strategic overview. We certainly see that community members will become far more involved in mimosa control than they have been to date.

**Dr LIM:** Have you felt that the Oenpelli project was worthwhile?

**Mr KENYON:** Certainly, the people at Oenpelli would tell you that it has been worthwhile. The floodplains are once more a resource to the community. They are able to hunt there. Magpie geese are returning, native plants are returning. So from the community's point of view, the control program has been a success. There is still mimosa there. Community members are still involved in its control. But the size of the mimosa plants and the plant density have been reduced to the extent that they are able to start to use the floodplains again as they did before. I think one of the other major contributing factors to the recovery of the floodplains - and possibly also a factor in the initial mimosa invasion - was the presence of a large number of buffalo. Now that those buffalo have been removed, mimosa is having a harder job competing with native vegetation.

**Mr BAILEY:** An issue which has been raised a couple of times is the amount of money spent. Did you see it as a research exercise as much as an eradication exercise? In trying to analyse its cost-benefit, was some of the benefit a better knowledge of how to deal with mimosa? If so, you can't just say that treating 7000 ha cost \$6.5m, so it's \$1000 an acre.

On the other hand, was too much money spent there compared with the much more limited amount spent in other areas?. Perhaps there should be a lot more money spent on mimosa generally.

**Mr KENYON:** As I said earlier, everybody who's been involved in mimosa control has been on a very steep learning curve. Certainly, in hindsight, I think that the way that the stand of mimosa at Oenpelli was dealt with was less than ideal. I guess the goal at Oenpelli has always been to eradicate mimosa from Oenpelli. Really, the only way to do that is the way that has been attempted, with large volumes of chemicals.

**Mr BAILEY:** What was the basis of the goal to eradicate it - scientific, economic, political, cultural? We have heard that it's not financially viable to try to eradicate large stands. Everyone would like to eradicate mimosa but we're told that that's economically not a reasonable goal at this point in time. What was the basis of seeking to eradicate it?

**Mr KENYON:** I can only surmise. I wasn't around at the time and the reasons are only partially documented. One of the reasons that were given at the time was the threat to the World Heritage area of Kakadu, the threat to Arnhem Land. I can imagine people seeing mimosa spreading at the rate it was, doubling every 1½ years, and nobody understanding why, seeing a potential for it to spread to other parts of Arnhem Land and increase there at the same rate. So I imagine that it was seen at the time that the only way to protect the World Heritage area and Arnhem Land was to eradicate that stand.

**Mr BAILEY:** If we now discovered in a similar sort of area a similar-sized stand, what should we do with it?

**Mr KENYON:** I think we are faced with that situation in the Daly and the Wagait. The approach that is taken now - and I think is fairly widely recognised as being the right approach - is to hold the main stand where it is, using a combination of mechanical, chemical and biological control, and to eradicate the outliers. One of the things that hasn't been researched is the level of mimosa infestation that is acceptable. Is it 10 plants per square kilometre or 1 plant per square kilometre? Nobody knows. That's an issue that is not only reliant on the biology of the weed, it is also reliant on social and political issues.

**Mr BAILEY:** Do we know whether outbreaks of satellites relate to the size of a stand?

**Mr KENYON:** Is there a critical size?

**Mr BAILEY:** Does there appear to be?

**Mr KENYON:** Not as far as I know.

**Mr BAILEY:** Does that mean that a small outbreak spreads as quickly as a big outbreak?

**Mr KENYON:** I don't know. I imagine that the smaller outliers expand rapidly to join each other, so I imagine that the more edge you've got the more rapidly the mimosa would expand. That would imply that a larger stand would be more easily contained. Other people would, I am sure, be able to give you a better answer.

**Mr BAILEY:** Are Aboriginal groups able to access subsidies for spraying? We had a list earlier on of all the pastoral properties that had received funds on a 50/50 basis. We know that Oenpelli got their funds by a specific grant because of the federal government's responsibility for Aboriginal land. On other Aboriginal land, like the Wagait Reserve, where do they get their funds to carry out eradication or control?

**Mr KENYON:** At the moment the majority of the mimosa control that's happening on the Daly-Wagait on Aboriginal land is funded through the MSC and through ATSIC. From this financial year, ATSIC's role in land management will be taken over by the Indigenous Land Corporation.

I think that the fundamental issue to examine is the land-use system. The primary land use on Aboriginal land is one that's non-economic, I suppose, in the narrow sense of the word. The land use doesn't generate income that can then be ploughed back into the land to manage it. Hence the imported land-management issues that Aboriginal people now face on Aboriginal land. The contemporary indigenous land management systems don't generate the finance to be able to participate in those 50/50 mimosa control arrangements, which is why the Commonwealth has come to the party with funding mimosa.

**Mr BAILEY:** How does that funding compare with the money that's provided for spraying programs?

**Mr KENYON:** I'm afraid my experience is limited to mimosa control on Aboriginal lands, and specifically the MSC's input into that.

**Mr BAILEY:** But do you blokes know what sort of funds are currently spent? We've heard of the \$6.5m spent on Oenpelli. People say that was a huge amount compared to what's been spent in other areas - as much as on everything else. This financial year, how much money are we looking at?

**Mr KENYON:** The money that's been channelled through the MSC for biological control and some chemical control at Oenpelli and on the Daly and Wagait is around \$0.9m. And there is some additional money coming from ATSIC, that communities have applied for directly to ATSIC. This year we are attempting to integrate in a strategic sense with the rest of the mimosa control that occurring. I think the total amount of money that ATSIC has put in this year is about \$150 000.

**Mr BAILEY:** That's the joint CSIRO and department research that's going the biological control, or is it just the implementation on Aboriginal land?

**Mr KENYON:** No, CSIRO and DPIF biological control is funded through the MSC.

**Mr BAILEY:** How much money is being spent on spraying on Aboriginal land?

**Mr KENYON:** I can't remember the exact figure. You'd have to ask DPIF. All the spraying that occurs on Aboriginal land is contracted to DPIF.

**Mr BAILEY:** Approximately \$1m?

**Mr KENYON:** Approximately \$0.2m.

**Dr LIM:** I'll call a stop at that now and invite this gentleman to come up and talk to us about Maningrida. You heard earlier what I said about giving evidence. You don't have to take an oath or make an affirmation, but whatever information you provide to us should be given truthfully. You have the right to ask that the evidence be taken in camera and/or remain confidential. If you want to do that, you should let us know now. Do you want to have any part of your submission in camera or confidential?

**Mr YIBARBUK:** No.

**Dr LIM:** For the record, please state your full name and the capacity in which you appear today.

**Mr YIBARBUK:** My full name is Dean Yibarbuk. I'm chairman of the Bawinanga Aboriginal Corporation, also a project manager with the committee that arranged the program. I am involved in land management issues.

**Dr LIM:** Tell us what you wish, and then we can ask you some questions.

**Mr YIBARBUK:** My people are very concerned about this *Mimosa pigra* which is growing right across the Top End. In our experience the plant is very thick and also the infestation is growing pretty fast year by year. It's just devastating our wetlands throughout the Territory. About half-way between Kakadu and here, there are some infestations growing pretty rapidly. On the other side of Kakadu on the East Alligator, on the other side of Oenpelli, there is very little happening.

Our people are very concerned about the values of our land, especially in wetland areas, because we depend for survival on our food resources. Also, preparing our land for all the ceremonies and stuff like that. That's why we want to prepare, to get ready for this sort of weed entering our community. Already a few plants are growing nearby, so already we are working on it. We don't have a big problem like elsewhere, like the Darwin region, also Marrakai and the Daly River region, but it's something that we wish to be prepared for, so that anything like that sort of weed coming into our community, we've got this resource, we've got this experience and we can go in and start doing it ourselves.

A lot of people are concerned about cultural values and who we should be talking to, what training people should be getting training - all sorts of questions. How to get a combination of skills and how to get people working together, to get rid of these weeds.

**Dr LIM:** Do you know how much infestation there is on the other side of Oenpelli?

**Mr YIBARBUK:** There's very little surveys in that area. The other side of the Murganella area, I believe there is a very small area there. Also I believe in Arafura Swamp there's a bit of weeds in there. And we're caught in the middle. Maningrida, central Arnhem, is right in the middle. We know it's been there, specially around the Cobourg area, it's been there for a long time. But it's slowly moving across east. In the middle of those areas there are very few surveys done. We would like to get in there and look around a bit. We want to make sure that there are no other infestations getting deeper into Arnhem Land.

**Mr BAILEY:** The maps that we've been given show Maningrida with infestations first noted in 1994. From your experience and knowledge, is that about the first time that any of your people were aware that mimosa was in the Maningrida area?

**Mr YIBARBUK:** That's true. That's the very first time people ran into these bushes of this plant. Because we had experience before. We got these pamphlets from DPIF or the Power and Water Authority on what we had to look out for.

**Mr BAILEY:** About how much was discovered that first time - just 1 or 2 plants, or did people come into an area and find quite a few hectares already infested before anyone realised it was even there?

**Mr YIBARBUK:** I think buffalo had been wallowing in there. When it was first identified, it was more or less very small, about 30m X 30m in one group or community.

**Mr BAILEY:** And now? How much is around?

**Mr YIBARBUK:** At least we got in early and started to do a bit of eradicating. At the moment, the area looks the same. Of course, we have been spraying and we have been close monitoring that area.

**Mr BAILEY:** Are you finding other outbreaks around that area? Are people finding new ones that they have never seen before? Or is it still basically in the same area?

**Mr YIBARBUK:** We walk around about 150m X 150m each time when we go to the same place, in case of any outbreaks. But we've always finding what is there.

**Dr LIM:** Are you getting money to spray, and hope you get rid of all that stuff?

**Mr YIBARBUK:** Yes, the money is coming from ATSIC and also through this [inaudible] funding.

**Mr MITCHELL:** Is the infestation near the main access roads, or off in the bush and isolated?

**Mr YIBARBUK:** No, it's off the tracks. It's more or less towards the floodplains. It's in an isolated area.

**Mr MITCHELL:** I'm wondering how it may have got there. Normally it's vehicular travel.

**Mr KENYON:** There's a feeling it was spread by helicopter, with buffalo shooters.

**Mr YIBARBUK:** We had a TB eradication program out in that Arafura area on Murwangi[?]. That's why I think we got our infestation establishing here.

**Mr BAILEY:** In relation to management of mimosa and weeds in general on your land, do you feel you are getting enough information and resources to help you? Do you have the resources yourselves out there? Is it likely to occur in other areas without your knowing? For future planning, where are you at now?

**Mr YIBARBUK:** We got a very good resource from [inaudible] working group with DPIF. Also in the community itself, like Ramingining. I don't know about the islands. Nothing is happening in the islands especially at Goulburn and across [inaudible].

**Mr KENYON:** Bawinanga has 2 weeds control officers funded by Environment Australia. That funding program will come to an end this year, but we will try to use the Natural Heritage Trust to keep those positions going.

**Dr LIM:** Do those officers go out on patrols and do a search-and-destroy, or just keep an eye on what's happening?

**Mr YIBARBUK:** Just keep an eye on what's happening.

**Mr KENYON:** They're DEET staff members.

**Mr BAILEY:** Where people are moving through reasonably frequently, are Aboriginal people aware of the problems of introduced weeds. If the current system remains in place, with some funding for weeds officers and things like that, should we be able to restrain the spread into Arnhem Land? Or is it seen that more is needed in that area?

**Mr KENYON:** I think there's need for more work on quarantine - infrastructural requirements such as washing-down stations for vehicles and earthmoving equipment, things like that - and a greater understanding among

community members of potential problems from moving mimosa seeds from west Arnhem Land further east. One of the things that the MSC has funded this financial year is a survey of all the wetlands in Arnhem Land to get some sort of idea of whether there are any other outbreaks of mimosa further east that haven't yet been identified.

**Mr BAILEY:** Can remote sensing be used to detect mimosa? If you're going to survey the wetlands, are you talking about people wandering around out there, or would it be done from a remote sensor. How big do infestations have to be before it picks them up?

**Mr KENYON:** The survey this year will be aerial, done by helicopter. ERISS, NT University and CSIRO are all trying to develop remote sensing techniques that will pinpoint mimosa, but at the moment they're having trouble standardising their results from year to year and differentiating between mimosa and other sorts of vegetation.

**Dr LIM:** I think in small patches it is still very difficult to detect by remote sensing anyway.

**Mr KENYON:** Especially if it's under paperbark or something like that.

**Mr BAILEY:** On the quarantining, are you talking about setting up specific stations? Are you just talking about developing a culture of washing down equipment on location? Before moving it from one place to another, you wash it down on location. Or are you saying there should be barriers to it entering certain land without going through a dip or whatever?

**Mr KENYON:** I think there are 3 things. One will be ensuring that any contract work includes clauses on quarantine for weed control. There needs to be a greater community awareness of the way mimosa is spread, and the equipment needs to be made available so that there aren't staff maintaining quarantine stations but there are washing stations available that people can use to wash their own vehicles down.

One other point that I forgot to mention is the potential impact on economic development. I think that for the commercial use of wildlife, for example, the wetlands have the potential to be a really important resource for communities. Bawinanga is looking at a number of options for wildlife utilisation. Of course, those options will go if mimosa invades the wetlands.

**Dr LIM:** Thank you very much.

[Witnesses withdrew.]



**Dr LIM:** I now invite members of ERISS to come to the table. You heard earlier what I said about giving evidence and being truthful. Do you have anything that you wish to be heard in camera or to remain confidential? That not being the case, I ask for the record that you please state your full name and the capacity in which you appear today.

**Mr STORRS:** My name is Michael Storrs. I was working with the Environmental Research Institute until last week. I am between jobs. I start with the NLC next week as their wetland officer. I'll be the new member on the Mimosa Steering Committee for the NLC.

**Dr VAN DAM:** My name is Rick Van Dam. I am a research scientist in the wetland protection and management section at ERISS.

**Dr LIM:** I would like you to present your submission, after which we will interact with you.

**Mr STORRS:** The Environmental Research Institute of the Supervising Scientist is part of the environmental protection group of Environment Australia. It is based in Jabiru. Through research, ERISS provides advice to government and other management agencies on environmental management issues of national significance. A large part of ERISS's research effort is into the protection and management of wetlands. That program is directed by Dr Max Finlayson. I think, Dr Lim, you have met Max. Unfortunately he is ill today and sends his apologies. ERISS is currently providing quite a significant input into technical advice for the NLC on their Top End Indigenous Peoples Wetland Project. It is giving 2 full-time staff positions. Over time, they have been providing information on weeds etc. Rick will expand on that.

Aboriginal people have nearly 85% of the Top End coastline at the moment, and most of the major wetlands. These wetlands are probably the most susceptible environments to weed invasion. Aboriginal people, as we have heard, are aware of the problem. The NLC has emphasised a need for better planning and prioritisation of weed management. Last year, I was involved in consultations with the NLC as a member of ERISS to develop an overview paper on weed management on Aboriginal lands, with the idea of developing a strategy. It's to that that I want to talk in the next few minutes.

Given the huge area of Aboriginal lands and the small population, there is a necessity to undertake a strategic approach to weed management. This overview paper is aimed at developing a strategy for the Aboriginal lands that integrates with the Northern Territory Weed Management Strategy and the National Weeds Strategy. This work would be undertaken in close consultation with Aboriginal traditional owners and also with Territory and Commonwealth agencies.

[Overhead projector in operation]

The idea is that we will have a research phase reviewing the literature on environmental weed management in Australia and overseas. That's following up from work I did for Kakadu. I worked for ANCA prior to ERISS, developing a weed management strategy for Kakadu National Park. So, a literature review, identification of the objectives, and then we go out and consult with the stakeholders - traditional owners, Aboriginal associations, people involved in weed control, different government agencies - to determine the main issues, the needs and priorities rather as Dean was saying before. (Dean's area, I think, is somewhat ahead of other areas in terms of land management.) So it's a needs analysis we'll be undertaking. Then an overview paper will be prepared with this conceptual framework for weed management on Aboriginal lands. We'll circulate that overview widely and do quite a bit of consultation, especially with the Aboriginal landowners. Finally, we'll draft a strategy.

Our contention is that we should really be looking at mimosa as one of a whole suite of weeds requiring early intervention and prevention, and we should be looking at it in a strategic manner. There are these basic principles in strategic weed management. One is prevention. We need to look to the education of the people, we need to look to quarantining of areas, we need to provide wash-downs, possibly. We need to get far better at surveillance and early intervention against weeds. For that, we need to identify areas that are prone to invasion so that we're getting on to things quickly. We also need to get a lot better at habitat management in the way of decreasing an area's susceptibility to invasion - looking at the usage of the land, looking at the stocking rates, undertaking feral animal control etc.

Given all that, we still need to manage existing infestations of weeds - in particular, of aggressive weeds. Mimosa probably stands out among those that we have to give special treatment. Notwithstanding a strategic approach, certain weeds do need particular treatment. Mimosa is one of those. ERISS is looking into that problem and advising the NLC.

**Dr VAN DAM:** An amendment of the act under which ERISS operates, in 1994, has allowed ERISS to broaden its role and provide advice on issues other than those related to the Alligator Rivers region and mining in that region. As Michael has said, ERISS provides technical advice through research. That is where ERISS sees its contribution in the management of the control of mimosa and weeds in general. There are 2 major areas in which ERISS feels that it can contribute: ecological risk assessment, and the development of effective monitoring programs.

Ecological risk assessment is a relatively new concept. It's in a phase of rapid development at the moment. I think its major benefit is in its structured and formalised approach. This allows a clear definition of every stage in the process. In addition, it allows a clear definition of the actual problem or hazard that needs to be addressed. Ecological risk assessment considers first the nature and behaviour of the hazard. It considers the effects that the hazard potentially has on the environment, and its economic and cultural effects also. It then considers and quantifies the relative risks of these effects occurring. This results in management to effectively minimise the risks. The process can be applied to existing or potential problems, so it can have either predictive or retrospective value.

Currently at ERISS we are in the process of developing a framework for risk assessment of tropical wetlands, primarily but not solely in northern Australia. We are using the weed issue, specifically the impact of chemical control of mimosa, to try to achieve this. ERISS's expertise in areas such as ecotoxicology, ecology, bio-monitoring, environmental chemistry and wetland management will hopefully ensure that we are capable of successfully achieving this.

ERISS has identified 3 areas of the management of control of mimosa which could be addressed in terms of ecological risk assessment. The first of these is preventing weed introductions before they occur, undertaking ecological risk assessment to identify which are potential weed species. Secondly, the impacts their establishment has on ecosystems and, thirdly, the control. The control phase is what we have focussed on at ERISS. Currently we are undertaking an extensive study on the effects of Tebuthiuron, the active ingredient of Graslan, which is a mimosa herbicide, on non-target or aquatic organisms. The results will be integrated with information which we gather on the behavioural nature of Tebuthiuron in the environment, along with other factors, to eventually form relevant conclusions on the risk associated with the chemical control of mimosa. These can then be compared with the mimosa problem specifically.

**Dr LIM:** Are you saying that the ERA project is generic, and you are trying to apply some of the principles of that to mimosa control?

**Dr VAN DAM:** Yes, certainly. It's a process that can be applied to perhaps any environmental issue.

The second field where ERISS feels able to contribute is in the development of an effective monitoring program. Recently, the Ramsar Convention has developed a framework for the design of effective monitoring programs, and ERISS suggests that perhaps this framework could be utilised in the management of the control of mimosa. Several factors are important in developing effective monitoring programs, and they need to be stressed. The first is communication. The development and implementation of a monitoring program should be an open process. All interested parties should be able to comment and contribute. Secondly, it requires appropriate methods and design, and these should be based on the monitoring framework. Importantly, they should be based on effective interaction between managers and scientists. Thirdly, data acquisition: it is extremely important that meaningful results are gathered, and just as important that those results are then transferred over to the management process. Fourthly, independent audit: encouragement of independent assessment of both new and existing programs will ultimately result in cost savings through the promotion of more sound research.

With regard to monitoring and the mimosa issue, there are 3 areas where ERISS feels that this framework could be utilised. The first of these is in the distribution and rate of spread of mimosa. This would involve the utilisation of both new and existing data to assess past and future spread and potential full spread. Secondly, the effectiveness of control measures: this basically would involve monitoring the cost-effectiveness of techniques. Ongoing monitoring programs are particularly expensive. An interesting aspect of this would be defining ecological values and assigning a cost as well. Thirdly, post-control rehabilitation: this involves analysis of factors affecting vegetation succession and the monitoring of change over time.

Finally, I think it is important to emphasise that the role ERISS sees here is to provide additional expertise to that which is already being utilised towards research into the management of control of mimosa.

**Dr LIM:** With regard to strategic weed management, once you've done all the research and you have all the information, are you going to be able to get the funding to implement ...

**Mr STORRS:** That's yet to be seen. Funding is always going to be the issue on Aboriginal lands, I think. The proposal is that this should take 3 months or so. It is with Environment Australia. We haven't heard back as yet. It looks promising. So, 3 months to write the overview paper and then get that strategy working. It's hard to predict what the needs would be. I imagine one would be looking to support the community ranger program very much, getting education and training for them, getting the DPIF very much involved and that stuff.

**Dr LIM:** There is general acceptance or recognition that mimosa is a very major problem, of national significance.

**Mr STORRS:** Undoubtedly.

**Dr LIM:** And currently you have funding available to complete the project that you are undertaking now?

**Mr STORRS:** No, we haven't got that funding for the overview as yet. But the position I'm going to, as wetlands officer, is Environment Australia-funded for the Top End Indigenous Peoples Wetland Program, and that has another 2 years of funding. The idea is to develop management plans on the wetlands, at the invitation of the Aboriginal people, and ERISS is heavily involved with that, as I said. So, 2 years' seeding money to see how things are going.

The initial work has been done at Maningrida. We are a long way down the track there. Very soon we'll be moving towards the Arafura, where a board of management has been set up, and then we'll be getting researchers in touch with them. My job is to act as a facilitator between the researchers and the people. So I will go and consult with them initially about what they would like for their land - wildlife utilisation etc - and then get the appropriate researchers on board. But the weed issue is probably one of the major ones we'd be addressing.

**Dr LIM:** With the ERA project, are you looking to the commercial value of weeds - whether they could be harvested or whatever?

**Dr VAN DAM:** In the overall concept of risk assessment, it's probably something that needs to be considered. Alternatives need to be considered.

**Dr LIM:** I noticed that in your overheads, commercial value never came into it.

**Dr VAN DAM:** I'm relatively new to this project. I've only been in this position since November. Andy spoke of a steep learning curve. Mine's been nearly vertical, I think. Yes, I think all issues in the problem need to be looked at.

**Mr BAILEY:** You are doing this in relation to Aboriginal land. Do you see the process as universal? Would the outcomes be similar on Aboriginal land, on pastoral land and in national parks?

**Mr STORRS:** There are differences between Aboriginal land and national parks and pastoral properties. But I think that, in general terms, ecological risk assessment should at least show us gaps in our knowledge and start to show us some ways that we might go. So it would be generic in those terms.

**Mr BAILEY:** Once you've done the risk assessment and come up with programs and priorities to deal with weed infestations or risks on Aboriginal land, would they be any different from the priorities on other land? In the case of Oenpelli, one argument is that you shouldn't try to eradicate a solid 7000 ha stand - you should only try to control it. Do you think that in the future there will be perceivable differences in goals?

**Mr STORRS:** Each land use will have different outcomes. If, indeed, biological control works effectively, it probably won't be effective enough for, say, Kakadu National Park. They will continue their search-and-destroy missions because biological control will not get it down to the level they desire. That may be so for some Aboriginal lands, it may be so for some pastoral lands. It really would depend on the usage. Tolerance levels have to be worked out for whatever use.

**Mr BAILEY:** Do you see management strategies for Aboriginal land being separated from those for pastoral properties, or do you see that there should be one coordinating management group where everything feeds in and decisions are made? To take the Oenpelli example, some people would say that on a limited budget and looking at the overall picture, you wouldn't have spent \$6.5m on one area. Do you think that it should be more amalgamated?

**Mr STORRS:** Yes, I think very strongly that it should be more amalgamated - a concerted effort, with a primary body looking at these things. I have some concerns about the Mimosa Steering Committee evolving into possibly a bigger overall body, and not just looking at Aboriginal lands. That might give Aboriginal lands a bit of a problem, because they do have special needs in terms of funding. That body might lose sight of them. But, certainly, they need to be involved in a bigger overall look. I don't think control should be all that different, especially in terms of mimosa, between Aboriginal and pastoral land. The aims are very much the same. We know now, as time goes on, that we do need to be more strategic. We need to look to prevention first. We need to look to surveillance and early intervention and get away from large-scale chemical usage because of the problems to the environment.

**Mr BAILEY:** But if it was funded \$1-for-\$1 as the chemicals are, there is not necessarily the economic base on a lot of communities on Aboriginal land that we see with pastoral properties: Those that may have the money may get access to more, whereas those that don't ...

**Mr STORRS:** The methods, though, would be the same. But somehow we have to look to those special needs in terms of funding for Aboriginal land.

**Dr LIM:** I think what you're doing is very exciting. It's breaking new ground for us. I look forward to reading your future reports. If you can make yourselves available at a future time, if we have any questions we want to clarify, we will write to you or ring you.

**Mr STORRS:** Yes. And I am sure Dr Finlayson would appreciate that.

**Dr LIM:** Thank you very much for coming.

[Witnesses withdrew.]

**Dr LIM:** Thank you for coming. I apologise for Mr Peter Adamson. He is not going to be here for the next hour or 2. Other than in exceptional circumstances, witnesses appearing before this committee are not required to take an oath or make an affirmation. However, I remind you that information you give to the committee must be truthful. Witnesses have the right to request that their evidence be taken in camera and/or remain confidential. Should this be the case, the committee would need to be apprised of the reasons before it can make a decision accordingly. Please indicate now if that is the case for all or part of your submission.

**Mr HICKS:** No, I have no reason to seek any evidence to be taken in camera.

**Dr LIM:** For the record, please state your full name and the capacity in which you appear today.

**Mr HICKS:** I am John Williams Hicks. I'm the assistant secretary for Parks Australia North, part of Environment Australia. I'm here today as chairman of the Mimosa Steering Committee (MSC).

**Dr LIM:** I propose to allow you to give us your presentation as you see fit, after which the panel will interact with you and we will go from there.

**Mr HICKS:** I thought that I might give you a brief rundown on the background to the establishment of the MSC, its current terms of reference and its membership. I will describe the current projects which the MSC is funding this year. Then I'll look at the strategy work which the MSC is involved with at the moment. Lastly, I thought I might mention - and this is not wearing my MSC hat - some of the work that has been done in Kakadu on mimosa control.

The MSC was established in 1991. It arose out of a request from the Northern Land Council seeking Commonwealth funds for a 5-year program to control mimosa on 3 key areas of Aboriginal land. There was consideration of the environmental aspects of that proposal and as a result it was decided that there needed to be a steering committee comprising Territory and Commonwealth authorities involved in the program to take overall responsibility for the program. Recently the steering committee has broadened its ambit to include the biological control work which is being done by CSIRO and was formerly funded outside that program.

The first goal of the steering committee, under its current terms of reference, is to coordinate activities to facilitate the prevention of spread of mimosa, and also the control of existing infestations of mimosa in the Northern Territory, by the development of integrated control measures. The second goal is to successfully introduce biological control agents into the Northern Territory for the control of mimosa. The last one is to push the envelope in the development and implementation of cost-effective integrated strategies for the control of mimosa.

The membership consists of: a representative of Environment Australia - that's the Commonwealth, that's myself; a human ecologist - that's Terry Knight, he's an independent person; an officer of the CSIRO - the current representative is Dr Wendy Forno, who I think has given evidence to this committee; an officer of the NLC - that's currently Andy Kenyon but he's going to be replaced shortly by Michael Storrs; an officer of DPIF - currently Wayne Mollah but I think he is moving on; and an officer of Parks and Wildlife - that's Colin Wilson.

Broadly, the committee recommends priorities for expenditure of those Commonwealth funds, coordinates research that results, and manages the resulting projects in accordance with what it hopes are best-practice management principles with appropriate strategic planning and reporting and linking payments to performance. Lastly, it looks to harmonise the control efforts that have been funded by the committee with those on adjoining land. I'll table these terms of reference and the membership before I go.

In terms of current projects, this financial year the budget is around \$1m. About 60% of that is going toward biological control aspects and the bulk of the remainder is going on chemical control. The strategy on chemical control is, firstly, to look at satellite outbreaks on the fringes of infestations and to try to control them to reduce the spread and, secondly, to try to maintain the effect of the investment at Oenpelli by doing the mop-up work that is necessary. There is also a limited amount of money being spent in some projects that look at control of larger infestations at Wagait. There's some work going on there.

**Dr LIM:** Please repeat the percentages. What percentage for biological control?

**Mr HICKS:** Biological control is about 60% of current expenditure.

There is also a monitoring program that looks at and reports on the effectiveness of past efforts at chemical control. And we have a small amount of money for secretarial support of the committee.

**Dr LIM:** Do you anticipate that the mop-up operations at Oenpelli will be ongoing for several years?



**Mr HICKS:** The experience at Kakadu has been that to keep on top of an area that has been controlled, you need to do regular surveillance. The Kakadu work has been ongoing for a number of years now and we are still getting seedlings cropping up.

Of the projects that are currently being funded, the biological control work is joint work by DPIF staff and CSIRO. The progress has been very good, really, in getting their biological control agents identified, going through the screening measures and introducing them. The rate of release has been relatively high for such a program. But biological control is always a long-term measure. In chemical control work, certainly there have been plaudits earned for the Oenpelli work in attacking a large infestation and showing that you can get natural regeneration of native vegetation. So there has been success there, although it's still dependent on ongoing application of chemicals to quite a high extent.

The big gap that we have is in exactly how you integrate all the current tools that we have into a coherent strategy to control mimosa. The MSC is looking at putting a first draft together that it will pass over to the Interim Mimosa Planning Group (IMPG) for its input. Together, the 2 committees will try to agree on the one strategy on how mimosa should be tackled across the Northern Territory.

I'm saying 'the Northern Territory' because that's its current geographical extent, but in reality mimosa poses a threat to northern Australia. It could have serious economic, environmental and cultural consequences across the very large landscape of northern Australia. We see it very clearly as a weed of national significance, something that is most appropriate for funding under the National Weeds Strategy. We also see aspects of the control work perhaps being very suitable for funding under other Commonwealth programs that will emerge under the Natural Heritage Trust in a partnership relationship with state and territory governments. Andrew McNee is appearing shortly. He can perhaps elaborate on some of that.

Going back to the strategy, the MSC held a workshop yesterday looking at the broad context of the National Weeds Strategy, which is to reduce the impact of existing weed problems of national significance through integrating cost-effective weed management, and bearing in mind the Territory's weed management strategy, which is really to protect the Northern Territory economy, community, industry and environment from the adverse impacts of weeds. We thought an appropriate goal for that mimosa strategy was to protect Australia - that's bringing in the national significance - from the adverse impacts of mimosa through integrated and cost-effective weed management.

We saw the strategy as having 3 threads. The first objective is the prevention of spread. We know from the work that has been done that it's most cost-effective if you get in when the infestations are very small. The second objective is to further develop the tools, the effective management measures, which enable you to combat it. The third is to then look at the programs that target the areas of persistence. A large element of that will be tenure-specific, so there may be some programs that are associated with Aboriginal lands, there may be programs that are associated with production lands, and Parks agencies will have a responsibility to manage and control mimosa in places such as Kakadu.

We see it as probably being necessary to try to get some agreement on that broader strategy and feed that into the National Weed Strategy Committee process within a couple of months, so that we are well placed for funding for the coming year. At the moment we are operating on interim funding. Pending the passage of the *Natural Heritage Trust Bill*, the Commonwealth government put aside \$1.9m for weeds. Of that \$1.9m, \$0.8m was allocated this financial year to mimosa. We've topped that up with some carry-over money from last year and that gives us our budget. Next year, the bucket will be a bit bigger but there will be a lot more people clamouring for part of it.

**Dr LIM:** You say that mimosa poses a national threat. This morning, we heard somebody say that some 10 years ago there were 80 000 ha affected. Today, people are still quoting the same figure. I hear that mimosa will double its size every 1½ years. Somewhere the mathematics doesn't add up. Are the control measures in the Northern Territory working, and is that why we are still restricted to the 80 000 ha and no more? If you multiply 80 000 by 2 every 1½ years over the last 10 years, we should have a whole lot more. So from a mathematical point of view we must be doing something right to maintain it within the Northern Territory.

**Mr HICKS:** I think the control measures that are being funded through this work are obviously having an impact in some areas. That's one point. The second one is that I don't think that we have a very good handle on the geographical extent of mimosa and the current changes.

**Dr LIM:** Are you saying that there are more than 80 000 ha?

**Mr HICKS:** I'm saying that we don't really have good data. The third point - we discussed this yesterday in the MSC - is that a body of opinion says that disturbance by buffalo facilitated the spread, and that with the reduction in buffalo numbers that influence has gone. That may have made it harder for mimosa to spread because mimosa, like other plants, is susceptible to competition from adjoining vegetation.

**Mr BAILEY:** You had the role of managing the Oenpelli project. There have been comments made on the amount of money spent on that one project. In hindsight, would you now use that amount of money on something like Oenpelli on a biological, ecological weed control program? Or was it basically a political decision that the money would be spent on eradication although it may not have been the most cost-effective way?

**Mr HICKS:** You always have terrific vision with hindsight. I think that Oenpelli work has certainly provided a steep learning curve for the people who have been involved. The monitoring of that work has established some of the principles that we think we need to go forward with - that is, the emphasis on controlling satellites first rather than the bulk infestations. It has refined our thinking for the future. There certainly were aspects such as the timing of spraying. The Oenpelli work reinforces that you need to make sure that you spray at the right time, before seeds set. Those sorts of things were refined as a result of the Oenpelli work.

With hindsight, yes, we could have targeted the expenditure better. On the other hand, the Oenpelli work demonstrated that you can control very large infestations and you can get regeneration of the native vegetation and you do get the native wildlife coming back in when you've done that. It also showed that there was a willingness on the part of the owners of the land to get involved in that. As a demonstration, for the mobilising of public opinion and for educational effect, it was very important.

**Mr BAILEY:** You've got the Mimosa Steering Committee. We've heard about the Interim Mimosa Planning Group. Where do the 2 of you fit in relation to each other? Is there an argument that there should be only one decision-making group that goes to government to get funding, with other subgroups below? Or is there a role for a horizontal set of groups?

**Mr HICKS:** I think you need one agreed strategy that has all the players involved. People have to agree on the one strategy, and that strategy has to carefully target the funding mechanisms that are available to the various players. There may be some groups that are able to get money through community grant programs that mightn't be available if it was a straight government-to-government program. It may be that some of those community-generated initiatives are more effective because the action is taking place closer to the ground. You have to have a strategy that is agreed by all the players. There have to be hooks in that strategy so that the key participants can get appropriate funding. When you talk about the 2 committees, I think it makes sense really, if you're going to have a guiding committee in the Northern Territory, then there should be only the one. I don't think the MSC or the IMPG think that 2 committees continuing on is a good idea.

**Mr BAILEY:** I have never been confident of getting 2 or 3 groups to develop a strategy unless the groups come together and are called something different - in other words, you create a peak body that has responsibility for developing the strategy. Do you have any thoughts on how a peak body should be formed?

**Mr HICKS:** At the moment, the most inclusive of the 2 groups is the MSC because it's got fairly wide representation on it. It pulls in the CSIRO, which is the key for biological control development. Long-term, cost-effective measures for control of mimosa are probably going to depend on the success of bio-control. It pulls in Aboriginal land interests through the NLC. Without effective participation of those 2 groups as stakeholders in the process, you are really not going to get a strategy that ...

**Dr LIM:** You don't include any pastoral landholders - cattle breeders or cattle agistment properties.

**Mr HICKS:** Not in the MSC, that's right. That's because the focus of the steering committee was Aboriginal land with Commonwealth dollars. Then biological control was added a bit later. That's the historical way it moved. We have entered a new phase now because we have the National Weeds Strategy, we have a national body that has - Andrew will talk about that a bit later on - a national outlook on weeds, and we have got these national funding programs. So there's a very strong driver now to have one strategy, one broader group that pulls it all together. But I still think that with the process we have at the moment, of development of a draft strategy through the MSC - and we are talking about a very broad framework - then putting that across the IMPG and then perhaps having a joint meeting of the 2, we'll get a strategy out the other end. I'll be very surprised if we don't because DPIF is already on the MSC, represented at a high level, and they're active participants.

**Dr LIM:** Once the 2 groups meet and you come up with an integrated strategy, who then takes over the implementation of the strategy? Is the MSC the one that controls that?

**Mr HICKS:** I see a committee with representatives of all stakeholders. It might have some representatives from the current MSC, it might have representatives from the current IMPG, but it needs to have broad stakeholder representation if it's going to be effective.

**Dr LIM:** Do you see any need for punitive measures against landowners who are not prepared to participate in the integrated plan?

**Mr HICKS:** You are really moving outside of my ambit as the chair of the MSC. You are onto the ground of pastoral industry and managing people within the Northern Territory. I have no comment to make on that. However, I have a personal view that encouragement and incentives work better than punitive measures.

**Mr BAILEY:** I want to go back to the structure of decision-making area. The terms of reference of the MSC lie basically with Aboriginal land and working out strategies for that, even though it has generalised the biological controls which will help everybody. You have said that, in some ways, your committee is more representative than the interim planning group. Would it be seen then that, in some ways, it might be better that the interim planning group be given wider representation to enable it then to become what might be termed the main coordinating strategic development body? It is my understanding that it should be seen to be looking at the overall plan possibly more than being seen to have, as its main interest, Aboriginal land. Something that has annoyed me a little is the fact that there appears to have been a separation and that the strategy has appeared almost to be two-pronged - one prong for Aboriginal land and one for non-Aboriginal land.

**Mr HICKS:** I agree completely that they need to be brought together. In terms of this more strategic planning, I think the MSC was ahead of the field. It needed to look at funding opportunities for the following year and therefore it was keen to adopt a strategic approach. We were conscious also of the work that was being done under the National Weeds Strategy and that the timing of decisions would be critical for to that. As a consequence, the MSC thought that it should focus on its particular aspects of the strategy, and the IMPG should focus on its parts, but really these need to be brought together. As soon as a move is made to do that, it becomes apparent that it was a bit silly. It has to come together.

The bodies have common membership to some extent. While Wayne Mollah is not a member of the IMPG, he is present at all its meetings, and I have attended each meeting of the IMPG and I have given it a brief. There has been that interchange. At the last meeting, we agreed on this process of bringing the 2 bodies together to have the one strategy. That was really simply a matter of giving us (MSC) the first cut and giving that group (IMPG) the second, and then holding a joint meeting to try and agree on any points of difference.

**Dr LIM:** Looking at it from a very parochial point of view, I suppose that it would be good for the IMPG to be the leading body, using the MSC as a conduit to Commonwealth programs and funding in order to implement a program that is essentially still within the Northern Territory. Although it has national impact, it is still within the Northern Territory and that will allow the Northern Territory to control the programs, using your expertise and facilities and funding sources as well.

**Mr HICKS:** I am saying that a committee does need to coordinate that. Again, when I was talking to Wayne Mollah at the meeting yesterday, he stressed that the IMPG was an interim group. The weeds legislation does allow for the establishment of committees that have an issue focus, and a mimosa issues committee would probably be a sensible body to have and that would have broader stakeholder representation. He recognised the interim nature of the current one. I saying simply that, if it is to be done ...

**Mr BAILEY:** I see the interim group as a body that is still going through structural organisation. I guess that it will eventually lose its title of interim and will become a group. However, I am trying to determine is whether there should be an indication from the committee as to whether or not there should be a body that is seen as the main strategic and recommendatory body or whatever from our committee areas. I am not sure that it should be either of these 2 groups. It might be best to have a coordinating committee that has membership from both. Then yours could focus largely on Aboriginal land and his could focus more on pastoral land and the Northern Territory.

You told us that there is some joint membership between the 2. You may need a smaller group that would meet occasionally to draw up the strategic plans and then possibly put the recommendations in for funding or whatever to both the Commonwealth and Territory governments. I guess what I am trying to determine is how we might end up with a body that is the body responsible actually for giving us the direction we will take on mimosa in the future. At the moment, I have the feeling that there is criticism of the way that both sides have gone about it. At Oenpelli, a considerable amount has been spent on a small area. Some people say that the work is not being done very efficiently and that chemicals are being wasted etc. Is there any one group that is able to give us a direction that everyone is happy to accept?

**Mr HICKS:** I think it may be necessary to bring them together as one group. That is my personal opinion and it is an opinion that I have aired at meetings of both committees. Given that the broad partnership under the Natural Heritage Trust is to be between the state or territory government and the Commonwealth, it would seem appropriate that that should be a Territory body for the Northern Territory. However, having said that, I think that representation needs to be broad to include all stakeholders.

**Mr BAILEY:** Are you aware of any approaches that have been made to Queensland and Western Australia, as they are seen to be potentially at risk? The Territory is putting up some of its own money. The Commonwealth is

providing funding at the national level. Have Queensland and Western Australia been approached to see whether they would prefer to commence a defence on our turf or wait until the threat crosses their borders?

**Mr HICKS:** You are moving into ...

**Mr MITCHELL:** They might sue us for letting it spread!

**Mr HICKS:** They are undertaking a containment exercise with rubber vine as well. Probably, an argument can be mounted on a number of fronts that some states are doing better than others in combating some of these weeds. In some cases, there is only infestation in one state and not in others. The national weeds coordination group that Andrew will speak about handles these national aspects. I guess the cooperation needed there is that people understand that the Commonwealth dollars going into weed control work that is confined to one state have actually a national significance. They will not argue about that because they are able to see the benefits, even as the Territory might recognise some of the work being done in those other areas as being actually of benefit to the Territory.

All that means that the answer is no. There are no dollars yet, but there is mutual benefit from the work we are doing and it is probable that the Territory benefits mutually from some of the other weed control measures.

**Mr BAILEY:** Do we derive any intellectual benefit from either of those states? Do we call on them for help and advice that you are aware of?

**Mr HICKS:** Again, this is something that Andrew can talk about. The national weeds committee looks at the implementation aspects of the National Weeds Strategy and the Territory is represented on that committee. It is actually representing ANZECC interests. Colin Wilson is the representative there. I would say that the Territory would benefit from the networking that he will be able to do on that committee.

**Dr LIM:** At this juncture, I think that I should invite Andrew McNee up and take the next submission. Andrew, I do not know whether you heard what I said earlier about making a submission without being required to make an oath or affirmation, and whether you want to have any part or all of your submission heard in camera or held in confidence?

**Mr McNEE:** No, not at all.

**Dr LIM:** For the record, please state your full name and the capacity in which you appear today.

**Mr McNEE:** My name is Andrew McNee. I am the acting assistant secretary of Wildlife Australia which is part of Environment Australia, based in Canberra. At the moment I have responsibility for implementing the Commonwealth component along with the Department of Primary Industry and Energy section of the National Weeds Strategy.

I am not sure what material the committee has been given, but I thought it might be useful if I were to run fairly quickly through the background to the National Weeds Strategy and then talk about the implementation aspects of the strategy and particularly how that is related to the Natural Heritage Trust which is a fairly critical juncture I think. Necessarily, the outline will be broad but I will try to deal specifically with mimosa and where I see that standing in the implementation arrangements.

Along with a number of other issues related to natural resource management, weeds have always been considered a major issue. For a long time, no attempt was made nationally to bring these issues together in a strategic way to enable all of the jurisdictions and the Commonwealth to work together on dealing with them. In about 1991, the ministerial councils for agriculture and resource management and environment, conservation and forestry got together and decided that it was an appropriate time to start looking to develop a national weed strategy. It has taken 5 years of work from all of those jurisdictions to bring together a document, which was agreed to finally by all 3 ministerial councils in December of last year, with the result that we consider now that we have a weed strategy. The view is that it will be looking basically to implement that strategy early in this calendar year.

The strategy attempts to take a fairly broad view and deal in a strategic way with issues to do with weeds. It looks at those weeds that threaten the profitability of Australian agriculture. It looks at those weeds that threaten the natural environment and issues with them. It looks at weeds that pose a potential threat to cultural values. It focuses very clearly on trying to bring together all of the parties that might be involved in dealing with any particular weed to address those particular issues. The goals for the strategy are broad because it is a national strategy. The first goal is to prevent the development of new weed problems. Plants come into Australia every year. They are brought in for various reasons. One key aspect of the strategy is to look at what the impact of that importation may be and to assess whether any of those plants are likely to become weeds in the future. Goal 2, which is particularly relevant to mimosa, is that the strategy aims to reduce the impact of existing weed problems that are of national significance. In that context, national significance refers to weeds that have the potential to have a major impact, across a number of jurisdictions or land areas, on any of the values be they of conservation or production. The third goal is to provide cost effective and generally effective means of

harnessing national action on weeds. That is very much a mix of communication and coordination along with research and development to develop better techniques. That is the strategy. As I said, it is to be implemented fairly soon, and that has the agreement of all the ministers involved on those particular ministerial councils that this is the way to go.

I will look now at the more specific aspects of the way that implementation will proceed and the relationship of that with the Natural Heritage Trust. There has been a recognition, through the development of the strategy, that the role of the landowner and the responsibility for natural resource management is something that lies with the states and territories and respective landowners in the area. The Commonwealth has recognised that there is a role for it to play in the coordination of dealing particularly with weeds of national significance. The Commonwealth has looked closely at the strategy and it will be pursuing 2 key areas in terms of implementation. One is basically a quarantine assessment of weeds, which is basically a Commonwealth responsibility anyway. The Commonwealth will take a very active role in developing a new system of assessment of new plant imports with the objective of trying to detect whether any of them might become weeds in the future. The second area, which is relevant for weeds like mimosa, is that the Commonwealth will be involved in looking at the identification, assessment and effective management of weeds of national significance, aiming to reduce their impact nationally on agricultural productivity and the environment. That is the weeds of national significance component.

In terms of what the Commonwealth is bringing to support the implementation of the strategy, the committee would be aware that the Commonwealth government has introduced the Natural Heritage Trust legislation and it seems that that will pass through the parliament. That trust represents a \$100 000m investment across a whole series of natural resource management activities and it is managed jointly by the Minister for Primary Industries and Energy and the Minister for the Environment. One component of that, which was announced at the time of the election, is that the government will be making \$19m available from the Commonwealth to implement the National Weeds Strategy. That means that \$19m will be available to pursue the 2 aspects that I mentioned before, that is basically pest plant introduction risk and looking at weeds of national significance.

In terms of action in that area, *Mimosa pigra* has been identified in documents that accompanied the National Weeds Strategy as being clearly a pest plant of national significance, and it has been prioritised, along with rubber vine, prickly acacia and alligator weed in the southern states, in terms of areas activity. The National Weeds Strategy allows for the formation of a group called the National Weeds Strategy Coordinating Committee. That is a committee of 7, made up of 2 representatives from each of the ministerial councils that are involved. It is chaired by Don Hamon from the New South Wales Department of Agriculture. In terms of addressing national significance and things like that, that committee will have a prime role in developing criteria to assess weeds of national significance. A list of weeds of national significance will be prepared and, through that process, the committee will provide advice to all of the parties, but particularly the Commonwealth because the Commonwealth is looking for guidance from this group in terms of prioritisation of spending.

That process is being kicked off at this time. At its first meeting, which was held last week, the committee recognised that certain weeds had been identified in these accompanying documents that did require ongoing action and, in that context, rubber vine and mimosa, prickly acacia and alligator weed are being acted on already, before even that process kicks off. Eventually, they will be brought into the prioritisation exercise being introduced in terms of guidance on where that stuff is going.

From an administrative point of view, obviously the group will advise the Commonwealth on what it sees to be its priorities. However, as John mentioned, a large proportion of the Natural Heritage Trust will be delivered in essence through a state/Commonwealth and territory/Commonwealth partnership. I can only speak here in indicative terms because this process is in train at the moment. However, the Commonwealth has been talking with the territories and the states about the delivery mechanisms for the Natural Heritage Trust, and it is clear that the bulk of the money under the trust will be delivered probably through partnership agreements - for example, between the Commonwealth and the Northern Territory. That will be an agreement that addresses a whole series of particular programs.

It is likely that, in addition to the partnership arrangements for delivery, there will be a Commonwealth component where there are Commonwealth or national priorities to be addressed or Commonwealth responsibilities, such as quarantine, which will be delivered by the Commonwealth. It is probable that regional and community components as well will pick up the types of programs that have existed historically, such as Landcare and the like. I think that, as John said, any successful approach to dealing with something that is fairly widely distributed does affect different areas of land. The solution there will be a package of activities that are made up from the National Weeds Strategy, Landcare and Territory and various other sources. That is the fairly big challenge to all the parties involved in these negotiations about the development delivery mechanisms. At the moment, the Natural Heritage Trust is trying to facilitate that in the most effective way. As I said, the intention is to look at delivering money under the National Weeds Strategy through the trust in the coming financial year. That is where we are actually at this stage.

**Dr LIM:** Yesterday, we heard a commercial proposition to harvest mimosa. If that were to become a viable commercial proposition, would mimosa be removed from the National Weeds Strategy? That might cause a real problem

for us, if it were being harvested on a commercial basis in one area, whilst the infestation continued in other areas and was multiplying and spreading. In that circumstance, would funding continue to be made available for its control as a weed?

**Mr McNEE:** I think the Commonwealth would seek guidance from both the committees that exist. In addition, in terms of the government, if the Northern Territory did not wish to be a party to dealing with weeds of national significance, then the Commonwealth would not go off on its own anyway. I do not think that the Commonwealth sees itself becoming involved at every level, right down to the operational on-the-ground stuff. Clearly, it is in our interest to reinforce the arrangements that exist basically in Australia, where the responsibility for those lies. I do not think there would be any cause for doubt about the response of jurisdictions that are potentially at risk from the spread of mimosa, such as Western Australia and Queensland where it would have the ability to be very damaging. Clearly, it is having a very damaging effect here.

**Mr BAILEY:** Were you present when we were talking earlier with John Hicks about trying to identify a relevant coordinating or strategic group that could make decisions about how things should be done, setting priorities and what people need to provide to justify the introduction of programs or something like that? I gained the clear impression from John that he was suggesting that you might have some ideas on that area. However, the only option you seem to have mentioned is this group that has a couple of references from each of the ministerial advisory groups. When you spoke about that, I did not gain the feeling that it was the body that I was thinking of.

**Mr McNEE:** No, I do not think I was thinking of that aspect. I believe that the importance of the ministerial council group is that it will provide guidance, in terms of the National Weeds Strategy as a whole, on national priorities that will be quite important obviously from the Commonwealth's point of view. Once a weed is identified as being of high priority and of national significance, it becomes a matter for the jurisdictions that are involved. In the case of mimosa, it becomes cause for bilateral interaction between the Commonwealth and the Territory, trying to bring in other stakeholders. There is a long history of weeds control throughout Australia and of people not being able to determine whether control measures have been effective or not and whether the best use has been made of available funds. Certainly, the Commonwealth is interested to have the most strategic arrangement in place to deal with this particular issue. However, in that context, I do not think that it would look at dictating that there should be only 1 or 2 committees or similar bodies. It strikes me that the issue is such that, if one strategy is implemented, which becomes the strategy supported by the Commonwealth, the Territory and the other stakeholders, that places everyone in a much better position to access resources that are available. For example, the \$19m available under the National Weeds Strategy indicates clearly that it is all about strategy development. It must be said that \$19m will not go very far towards dealing with weeds nationally. There are numerous other programs which a single, coordinated strategy could access.

**Mr BAILEY:** At the moment, with the Mimosa Steering Committee and the Interim Mimosa Planning Group that may become something else, are you aware of any group, either existing at the moment or planned for in the future, that would have actually, to your mind, that strategic coordination planning role?

**Mr McNEE:** I attended the meeting held yesterday of the Mimosa Steering Committee and the personal opinion that I formed was that it appears that the legislation in the Territory has the capacity to establish a group that has that kind of broad responsibility in that jurisdiction. Obviously, there will be some interaction between the Commonwealth and the Territory, and the thrust of the weeds strategy is about involving those people who are affected by weeds in delivering the solutions.

**Mr BAILEY:** You mentioned today that the legislation would enable the establishment of a body of that kind. Would the Commonwealth be involved in that group? Would you envisage that it would be a body of the kind that would liaise with others and end up with an overall strategic plan? It might be some kind of Territory advisory group and a national weeds strategy group, and they would need to cooperate and coordinate to see if they could agree on an outcome. I am concerned that one group may finish up concentrating on one set of programs whilst John's group runs its own agenda on Aboriginal land or something.

**Mr McNEE:** I cannot speak for John, but I do not think that that is the intention of the National Weeds Strategy. The National Weeds Strategy is looking for the best and most effective approach that can be developed. I think that the phase that we are in now is the point at which that needs to be developed. There is a very tight time frame in terms of the first year of delivery of what will happen. In essence, at the moment, only 4 weeds have been identified.

**Mr BAILEY:** What I feel I have been unable to obtain an answer on is that the new legislation is setting up the Territory Mimosa Planning Group and whether that is likely to be seen by the Commonwealth as the group that will make the decisions. It seemed almost that you said just then that the National Weeds Strategy will continue to reserve a right to do it differently. I am concerned that we will finish up with what will amount almost to 2 separate strategies, one the National Weeds Strategy and the other some sort of Territory weed strategy, without either side agreeing that they should come together and thrash the issues out and agree on what should be done, but rather that they will end up going their own separate ways. I do not feel confident yet that you have said to me that we will end up with a single strategic plan for

dealing with mimosa and that, even though the way that it may be dealt with in the Territory may vary, there will be agreement..

**Mr McNEE:** That is what we are looking for under the National Weeds Strategy.

**Mr BAILEY:** That is what you are looking for?

**Mr McNEE:** That is what the national strategy is looking for.

**Mr BAILEY:** That is what the national strategy is looking for. The Territory is looking for the same outcome, with everyone agreeing. However, I am asking whether anything is in place at the moment to ensure that they will come together or that, at the end of the day, we will continue to be in a position where each is reserving the right to go their own way if they do not like it?

**Mr McNEE:** No. I think the idea is that the Territory and the existing groups have the responsibility to develop a plan for how the Territory wants to deal with mimosa. That will then become the basis for an approach to the Commonwealth, in terms of funds. The Commonwealth will take advice then from the National Weeds Strategy Coordinating Committee on prioritisation of expenditure nationally. That means that the strategy is derived from the Territory.

**Mr BAILEY:** If we follow that model, it is basically the Mimosa Planning Group that will become largely the coordinating body. If that is the case, will the Mimosa Steering Committee try to input to the Mimosa Planning Group, or will it come directly back to the Commonwealth, indicating what it wants to do on Aboriginal land?

**Mr McNEE:** I think it would be the Commonwealth's expectation that one strategy would be put forward.

**Dr LIM:** I think we need to look at the bill before we can really determine that. We have to wait to do that.

Let me ask you about CSIRO's cooperation. Is the funding for the research that CSIRO is doing on biological control of mimosa reasonably secure? I ask because we heard from Dr Forno that she needs at least 4 or 5 years further research, plus probably another 5 to 10 years implementation of the results of the research before we can be assured that biological control will become widespread throughout the areas of mimosa infestation. Is the funding guaranteed funding or at least reasonably secure to ensure that that research will continue?

**Mr McNEE:** At this point, that does not necessarily exist because the Commonwealth has not yet gone into the discussion of the strategy that comes forward. As was reiterated yesterday, that is obviously a critical component of the long-term success of programs like this and it needs to be a very prominent component of what comes forward.

One of the new things about the Natural Heritage Trust is that there is this recognition that natural resource management issues cannot be dealt with really effectively through a one-year budget. Under the strategy, there is the intention to lock in longer-term funding. However, in the context of a strategy, 5 or 10 years is a very long time. I think that is something that will be tackled as it comes forward. It needs to be a prominent issue.

**Dr LIM:** Even a 3-year rolling budget would be nice. It does not need to be for 5 or 10 years.

**Mr McNEE:** At this stage, the trust is working on a 5-year time frame.

**Mr MITCHELL:** John, I believe you have a group working out at Kakadu full-time on mimosa control. Is that funded through the department, from the weeds strategy money or from different sources?

**Mr HICKS:** No. That money comes from the direct appropriation that we receive for the management of Kakadu. It is seen as a management priority. It is expensive. We have 4 full-time people working on it with support and it is costing probably in the order of \$0.5m a year.

**Mr MITCHELL:** That is separate from ...?

**Mr HICKS:** That is separate. It has not been included in the Mimosa Steering Committee work at all. However, I think that some of the rationale for that Oenpelli work was that it would help to keep Kakadu free of mimosa.

**Mr MITCHELL:** Is that for weeds control generally or mimosa control?

**Mr HICKS:** No, that \$0.5m is for mimosa.

**Mr MITCHELL:** Just mimosa. Is that the only weed or is there salvinia and others?

**Mr HICKS:** Salvinia is certainly an issue and we are currently looking at para grass. We have some preliminary work on para grass because it is causing quite a problem in the Magela area. It has spread very quickly over the last 4 or 5 years.

**Mr BAILEY:** The para grass would not be seen as being of great importance, would it, compared to the others?

**Mr HICKS:** No. In terms of its ecological impact, it is not as obvious visually, of course. However, the magpie geese do not feed on it or nest near it. It has quite severe impact and it is spreading very thickly. Certainly, native plants do not grow where it is present. However, the big thing it has going for it in comparison with mimosa is that it does not seed. Thus, you are looking at vegetative propagation and, in the long run, containment will be a little easier. One of the other side-effects of para grass is that it carries fire better than the other native grasses and, therefore, there is a problem with the burning of the monsoon forests on the edge of the para grass infestations.

**Dr LIM:** Thank you very much to both of you for your presentation. I hope that, if we have any other questions in the future, we can write to you or give you a ring.

[Witnesses withdrew.]



**Dr LIM:** I welcome Mr Tony Searle from Melaleuca Station and also Mr Millford. Other than in exceptional circumstances, witnesses appearing before this committee are not required to take an oath or make an affirmation. However, I remind you that information you give to this committee must be truthful. Witnesses have the right to request that their evidence be taken in camera and/or remain confidential. Should this be the case, the committee would need to be apprised of the reasons before it can make any decision. Please indicate if that will be the case for any part of your submission.

**Mr MILLFORD:** That will be the case with all of our submission.

**Dr LIM:** Can you give some indication as to why it needs to be in camera?

**Mr MILLFORD:** We are a private company and I consider that our company's interests are not for public information.

**Dr LIM:** Will it contain sensitive financial information or is this about the techniques by which you operate?

**Mr MILLFORD:** It contains financial details.

**Mr BAILEY:** I am happy to hear it in camera. The standing orders provide that, if we decide that some or all of that can change, we can explain that to you.

[*Transcript CAMWEEDS.PT2 follows*]

**Dr LIM:** Welcome to this committee hearing. Other than in exceptional circumstances, witnesses appearing before this committee are not required to take an oath or make an affirmation. However, I remind you that any information you give to the committee must be truthful. Witnesses have the right to request that their evidence be taken in camera and/or remain confidential. Should this be the case, the committee will need to be apprised of the reasons before it can make any decision accordingly. Please indicate whether your presentation will be partly or fully confidential.

**Mr BAKER:** No problems.

**Dr LIM:** For the record, please state your full name and the capacity in which you appear today.

**Mr BAKER:** Ian Wesley Baker. I appear on behalf of the NT Buffalo Industry Council and a number of our producers. Quite a few of our producers obviously have to deal with issues relating to mimosa. I am aware of discussions that have been going on in relation to the impact of buffalo on mimosa. I'm not getting into that issue. I will stick really to the general issue of mimosa control. Basically, I take a very simplistic approach. I was here yesterday and heard what the scientists are telling us.

Our position is that the position confronting the government is quite simple: either get rid of the thing properly or take it off the noxious weeds list. Instead of pussy-footing around like we have been doing for the last 15 years, our producers would strongly push for a much increased effort to get rid of the problem. We proposed a strategy based on the Oenpelli experience that is truly an integrated approach. That approach is based on a chemical, fire and mechanical approach to knock down the existing problem, grazing, re-establishing native pasture species or introduced species along with bio-control to keep what you have knock down under control. We don't believe the government is at all serious in its effort. I don't think anyone has really got down to thinking about, and getting back to, the brass-tacks principles of what you are dealing with in respect of mimosa. Essentially, as I said at the start, it comes down to an issue of whether you are really serious about this problem. If you are serious about it, do something about it. The Oenpelli experience provides a good example of a truly integrated approach. There are lots of people talking about integrated approaches that really only involve one form of control. A truly integrated approach is what we propose: knock the problem down with chemicals, fire and mechanical means, use grazing and reintroduction of either native or introduced pastures and bio-control to continue to control the problem.

At the moment, the level of government funding is totally skewed. My understanding is that DPI spends some \$450 000 on subsidies to pastoralists or landholders, about \$600 000 on its own control teams and well over \$1m on bio-control research. My guesstimate is that CSIRO also spends well over \$1m on bio-control research. Thus, the scientists have hijacked this issue in favour - and the funding is 2:1 - of research and that is why you are not getting any control. I think you really have to get serious about it. Is this truly regarded as a noxious weed or as area for further research by scientists? I think the bio-control is obviously a key element in any strategy and requires further research. I am not trying to knock the bio people, but a truly integrated approach requires chemicals knocking down the initial problem and then following up with bio as one element in the fight. However, the total funding of government at the moment is totally skewed in favour of bio-control research. There is no serious input by government to control the problem.

If you put it in the context of other issues that face us in the Territory, the imbalance is even more ludicrous. This clearly is the most important environmental issue that faces us in the Territory. If you look at the funds that we put into environmental monitoring at Ranger uranium mine, we are not serious about mimosa at all. Unfortunately, it is not a sexy issue. It is disheartening to see that the Environment Centre has not even bothered to make a submission to this inquiry. The whole thrust of this is that it is not a sexy issue, it is not a public issue, but it is clearly the most serious environmental issue that faces the Territory and our total funding is skewed away from this issue. It has been hijacked by scientists in terms of bio-control. The government is not serious about putting money into the control strategies and other issues, which are not as serious environmentally, receive a large amount of funding. This matter is not sexy, is not interesting, is not on the public agenda and is not funded.

The other issue in terms of funding is that the government's input into its own control is abysmal. In the Mary River area, the government is by far and away the largest landholder. It has one person for controlling mimosa on what represents far and away the largest proportion of land in that area. If you added up all the funds and input that the landholders in that region put into mimosa control, it would absolutely and utterly dwarf any input the government puts into any form of control strategies in its own area. Most of the mimosa problem is on government land. The government is the largest landholder by far. I do not think that the government is serious about the level of control. It is simply not economic - and you have undoubtedly heard this argument before - for pastoralists to control mimosa at a cost of \$140 to \$150 per hectare, based on the Oenpelli experience, when the land is only worth \$30 or \$40 a hectare. It is simply not economic sense. It may not make economic sense if the economic rationalists in government got hold of this issue. It may not be economically rational. The government, and this committee I presume, really should go back to brass tacks and think about the philosophy, the principles, of what we are on about here. Is this really a serious environmental issue? Is it an issue that affects the whole of the community and that we as a community have to do something about? This is truly in the government's bailiwick. What the government has been doing is saying that it is in the pastoralists' bailiwick and, even in its own area, it is really not serious about control. In discussions, CSIRO and other people talk about levels of

tolerance. If we are talking about levels of tolerance, let us take it off the noxious weeds list and learn to live with it. Currently, it is on the noxious weeds list. If it is on a noxious weeds list, there is really only one option - to get serious about its control.

I think your role is really to go back and look at principles and the broad context of this issue. I have raised the matter of a dichotomy in government funding and gave the example of the Ranger uranium mine. Compare what is put into that and what is put into this exercise. It is clearly ludicrous. The government does not regard this, in terms of the way it allocates its funds, as a serious problem. What is a serious problem? We have just finished spending \$140m to control TB in cattle and buffalo in the Territory. The rate of infection was something like 3%. If we can commit \$140m to control a disease that affected, on average, only 3% of the cattle and buffalo population, surely we can be serious about an issue of far wider importance to the community in general. It does not affect just pastoralists. The level of commitment to this program is abysmal.

There have been discussions about the subsidy. I have presented to you figures that I got from Melaleuca as an example of what is effectively the subsidy. Effectively, the subsidy is something like 15% to 20% because it only applies to that proportion on helicopters and chemicals. There was discussion yesterday from Mr Bailey about subsidies on a basis of performance. Maybe that needs to be looked at. The current subsidy scheme is ludicrous. 85% of the responsibility for controlling this problem is put on to landholders when it is really a community issue. It is not a pastoral issue. It is a community issue, and that is clearly in the bailiwick of government.

We believe that truly integrated control is the key, and that is using all the elements of control strategies that we are aware of - using chemicals, fire and mechanical means to knock the problem down and grazing, pasture re-establishment, be it native or introduced, and bio-control to keep the problem under control. I think you people need to go back to brass tacks and to some very simple principles and policies. Don't become confused with all the ins and outs of science, but go back to some very simple principles and brass tacks about what you will do about mimosa.

**Dr LIM:** You based your argument on the Oenpelli experience where they were able to bring the dense stands to controllable patches at a cost of about \$6.5m. For 7000 ha, \$6.5m was spent. For 80 000 ha in the Northern Territory ...

**Mr BAKER:** You are looking at about \$100m. My point is that, if you can spend \$140m to control 3% TB infection in cattle and buffalo, surely you can spend \$100m on controlling mimosa which represents a far more serious problem, not only to the cattle industry but also to the community in general.

**Mr MITCHELL:** You are talking nationally?

**Mr BAKER:** I am asking the question of government: are you really serious about controlling mimosa? Do you really regard it as a serious threat? Once we start talking about tolerances, we do not regard it as a serious threat. I think everybody in the pastoral industry firmly believes that this is a serious threat, not necessarily for their own properties but they see the thing and what it does.

**Dr LIM:** Do you feel that the scientists are saying that we have to tolerate mimosa to some degree because it is now impossible to eradicate it - that you can bring it down to a controllable level and live with it and make the best of it?

**Mr BAKER:** The position is that, if you make a decision to live with it, take it off the noxious weeds list.

**Dr LIM:** Is it possible to take it off now when it is covering such a large area? If you bring it down to, say, 10% of what it is now, perhaps you can have it removed from the noxious weeds list. Remember that a noxious weed can be just one plant and potentially could have spread right across the Territory anyway.

**Mr BAKER:** Let's get real. Eradication in terms of a zero population of mimosa is probably not an attainable goal. You should not really be talking about that, I suppose, if you are talking about tolerances. The position we have is ludicrous. We have thousands and thousands of hectares that are impenetrable because of mimosa. We are not really serious. The government itself is not serious. It is the major landholder in the region and is clearly not putting the resources into controlling mimosa on its own bloody land. It is just a farce.

**Dr LIM:** Some of the scientists are saying that the large stands might look very impressive and worrisome, but they are not such a major problem as the individual, small satellite patches if you look at surface area. Multiple small patches would have a larger surface area or edge than a big patch.

**Mr BAKER:** If you wish to tolerate it, take the strategy of controlling satellite outbreaks. However, you would be controlling satellite outbreaks for years. As Rob Wesley-Smith said yesterday, what will happen in a flood like we have had this year? Do you really believe that controlling satellite outbreaks will prevent its spread for the next 150 years? That is the sort of time frame that you have really to start thinking about.

**Mr BAILEY** I guess I can sympathise with a number of the points you have raised. However, I do have some difficulty with what I see as leaps of logic. For instance, you are talking about the skewing of costing in terms of chemical subsidies versus biological control. One of the comments that was made yesterday in relation to the Oenpelli exercise was that it used a huge amount of money - about \$1m a year - to control a moderate infestation. It still is not working. They still require significant amounts of money to maintain it. In relation to the pastoral properties, you have figures here for Melaleuca - \$1000 a hectare to control it. Huge sums would have to be spent - and ongoing. It has been said that spraying, clearing, burning etc of major infestations really is not cost-effective. Some properties that have access to other funds may take a decision that they will clear it. However, on any sound financial assessment at that point ...

**Mr BAKER** This problem is uneconomic for anyone to control. If you want to use economics in the argument, let's walk away from it today. Control is uneconomic for anyone.

**Mr BAILEY** Some scientists seem to be suggesting that, if you have a solid mass of infestation, spraying it each year or doing anything is simply a waste of money. However, if you control what is on the outside and stop it from spreading, that is the most cost-effective strategy until you can find a way of getting rid of it. In other words, you stop it spreading.

[Note: There appears to be a break in the recording. Tape 30, which is supposed to have a few lines, is blank].

**Mr BAKER:** That may be what the CSIRO guy said yesterday and, to his credit, Mr Mitchell disputed it in defence of the buffalo industry. Maybe it is a factor that it is being limited by spread of buffalo. I cannot answer that question, but the reality is that, for the last 10 years, we have had 80 000 ha and we still have 80 000 ha. We are going nowhere with it.

**Mr MITCHELL:** When you talk about the bulk of it being with government, are you including Kakadu there?

**Mr BAKER:** Look at the distribution of mimosa and who owns the land where the mimosa is distributed. The farcical situation is on the Mary. The government is by far the largest landholder on the Mary. What resources does Parks and Wildlife commit to controlling mimosa on the Mary? What resources do producers commit to it?

**Mr MITCHELL:** Are you talking about the Wildman River, the other floodplain and Hardy's and the block on the coast?

**Mr BAKER:** Look at any part of that whole Mary River system and the people who are in that Mary River Landcare Group. Who is the biggest landholder in that Mary River catchment area?

**Mr MITCHELL:** I thought you were saying that most of the infestation in the Territory is on government-owned land?

**Mr BAKER:** I suspect that it is the most infested. It covers Kakadu and all the Aboriginal lands.

**Dr LIM:** Maybe the Mary River Landcare Group will answer that question for us later.

**Mr MITCHELL:** Don't get me wrong. I agree with quite a lot of what you are saying, but the \$140m on BTEC is not a real comparison. That was imposed by the powers-that-be coming in from the ...

**Mr BAKER:** Irrespective of producers, governments made a decision that they wanted to get rid of TB and brucellosis. Between them, they committed \$140m to do it.

**Dr LIM:** And the government in the Northern Territory is still being sued for it.

**Mr BAKER:** It is a question of what you want to do and how much money you want to spend.

**Mr BAILEY:** If you were told, rightly or wrongly, that the other 97% of your cattle or buffalo would not be accepted by markets because potentially 3% may have TB and brucellosis and the whole industry is affected - whether it is vaccinations or quarantining or whatever - you have to look at the potential total economic effect of even a very small outbreak.

**Mr BAKER:** There are plenty of arguments that go the other way. I do not want to get into an argument about BTEC. The question I am putting to you is: where do you allocate government resources? You can use the comparison of Ranger. OSS spends \$6m a year.

**Mr BAILEY:** You should ask ERA who puts up most of that money. I believe you will find that Ranger actually pays for it. It is imposed on it.

**Mr BAKER:** It is a tax imposed on its production.

**Mr BAILEY:** It has to do it as part of the conditions of going in there. I hope you are not suggesting that the government should say that, if you are a landowner with mimosa on your land, you will have to fund its removal. In a way, that is what it did when Ranger wanted to mine. The government said that, if Ranger wanted to mine there, it had to pay for the monitoring.

**Mr BAKER:** I am not too sure about what you are saying about Ranger. I get my evidence from the former minister and he ...

**Dr LIM:** This committee looks after ERA as well.

**Mr BAKER:** My understanding from the former federal minister was that the Commonwealth puts a big swag of funds in there. I understood that the NT government used to do so also through the Alligator Rivers monitoring group, but no longer does so.

Are we really serious about the environment? If it is not a serious environmental issue, let's walk away from it or just fiddle with it at the edges and leave it at that.

**Dr LIM:** We hear what you are saying. Thank you very much for that, Ian.

[Witness withdrew.]

**Dr LIM:** I now welcome spokespersons for the Lower Mary River Landcare Group. Other than in exceptional circumstances, witnesses appearing before this committee are not required to take an oath or make an affirmation. However, I remind you that information you give to the committee must be truthful. Witnesses have the right to request that their evidence be taken in camera and/or remain confidential. Should this be the case, you will need to apprise the committee of the reasons so that it can make a decision accordingly. Please indicate whether the information you will give us should be in camera or confidential?

**Mrs O'BRIEN:** No. My name is Catherine Clair O'Brien. I am president of the Lower Mary River Landcare Group.

**Mr BUGG:** My name is Kelvin Richard Bugg. I am from Annaburroo Station and a member of the Lower Mary River Landcare Group.

**Mr SEARLE [reappearing]:** My name is Tony Searle and I am vice-president of the Lower Mary River Landcare Group.

**Mrs O'BRIEN:** Our Landcare group represents landholders. These are owners of land, land managers, people who live and work on the land. They deal with mimosa in their day-to-day operations. We may be represented here today by 3 graziers from our group, but our group is not comprised solely of graziers. It is also not only graziers who are affected by mimosa. It affects everybody. We have members directly connected with tourism, defence, mining and horticulture. Every industry is affected by mimosa. Our group represents the grassroots people who are affected by this noxious weed of national significance. Some of our members have none, some have little and some have some. There are major infestations that everyone is dealing with, but they are all dealing with it. They are out there doing something all the time. They are all doing it in their own way, but they are all actively managing the problem. Some are winning, most are holding. However, they are all concerned that the local knowledge and experience does not carry the desired weight or receive the credit or hearing that the theoretical side receives. One has to be practical. It is the man on the land who knows this at first hand. He has to generate his income before he can put anything back into any form of management strategy. He needs total access to all his land in order to be productive. This is where mimosa often causes him to be caught in a catch-22 situation. It is often the best and most productive land that mimosa takes over first.

Some of our members have outside resources to fund their mimosa management but, as you have said - and how many times have we heard this? - can it be sustained? It is our environment that we are talking about - yours, mine, everybody's. It is our environment. Should we be ready to forsake it for something that we know can be controlled if it is hit hard and fast with the sort of big dollar input that BTEC and other programs have had. As you have said, it is a cancer. Who knows where it will stop if we give up now? Our members are not prepared to give up. Along with so many other little fellows, they just need a hand from big brother. However, we all need it now, not later. We have all heard about this big wet. We will probably see another explosion in areas where our members felt they were winning. This could be the straw that breaks the camel's back. There is too much to lose if we all walk away now. We just need to unite forces, coordinate and incorporate the grassroots people, who have the practical means and dedicated commitment, with the technical expertise, the research and development. That is simply a preamble. There are further points in the document that we have tabled. Those points address the terms of reference that the committee is looking at.

**Dr LIM:** Kevin or Tony, would you care to add anything?

**Mr BUGG:** We feel that, at the moment, all we have been doing is tickling the problem. We are really not being serious enough to knock it back. I do not think anybody is. Only one bloke is looking after the whole Mary River system. The Landcare group lobbied, worked hard and got him an offside. I do not know whether or not he still has his job. However, there is still only one man looking after that area, and the problem is spreading every year. He has done a fantastic job. We all appreciate what the government has done up to now with subsidies etc, but it could get a little more serious. I would like to see it supply all the chemicals and leave it to the landowners to do the actual work in terms of applying them. I think bio-control will be too slow, mainly because the problem will spread too quickly. We have been containing it up to now, but it is getting bigger. Whether or not people agree, I believe it is getting bigger. You have only to look at the Adelaide River floodplains. After this present flood, what will it do to the Marrakai area and all that country there? I think we all have to become serious about it and get stuck into it.

**Mr SEARLE:** I would like to make a point about the subsidy scheme. As you have probably noticed, it has worked quite well up to now. As you have mentioned, it started off at 80 000 ha 10 years ago and it is still 80 000 ha. What it all boils down to is that the 50% subsidy that is paid for chemicals and application is still only 50% of what a person who owns the land can afford to do. That is where the stop comes in. The government is only paying 50% of what the person can afford to do.

**Mr BAILEY:** The Oenpelli experience possibly suggests that, if you spend lots of money over a number of years, you can get it down to a reasonably controllable level in terms of eradication. In relation to other places, we have heard that, by spraying and doing a bit, after about 4 years, it is almost back to where it was at the start. If that is correct, should

your strategy be to target one area at a time and direct all your resources towards total eradication in that area? We are dealing with 2 things. In a way, it is cheap and effective to get rid of outlying, satellite infestations. If there are only 1 or 2 plants, you can deal with them. Where there are dense infestations, would it be better to start with 5% or 10% and direct all your resources there for a couple of years? You could fence that area, re-pasture it etc and move on to another area. On the other hand, should you keep spraying as much as you can, but really not get much further ahead?

**Mrs O'BRIEN:** I hear what you are saying, but it is not as simple as that. You cannot fence off an area. If you decide to concentrate on one area, what happens to the neighbour who lives on the other side? He has to keep fighting and doing his bit while all the resources are directed at that area. Or does he help that fellow clean his land while the mimosa takes over his own land? There is a family at the mouth of the Mary system who have the mimosa on their land under control. However, that is a result of their diligence and commitment. They are on to the problem all the time. It is coming down all the time. It will not take over their place because that commitment from ...

**Mr BAILEY:** I understand that, once you get it to that stage, the cost of maintaining that is significantly less than the cost of trying to deal with solid infestation. In some places, there is nothing but mimosa. There is no grazing land. Nothing is happening. I guess I am talking about those infestations. We are told that there are tens of thousands of hectares of that. Other areas have spots of it around. Ian Baker from the buffalo industry was saying earlier that we should wipe out all the dense infestations. The cost of doing that would be huge. In relation to the Oenpelli exercise, people might ask why \$6.5m was spent on that one area. That appears to be how much needs to be spent to get rid of it. Now they have gotten rid of it, it costs \$1.2m to control it. Is that the only way we can deal with it?

**Mrs O'BRIEN:** Yes. Monitoring the edges and concentrating on the satellites is what we are all doing. There is no point in wiping out a vast area if you do not have the resources to keep controlling it later. We have stated very strongly in our paper that there should be no clearing or wiping out of the big patches if it cannot be maintained. It will simply come back.

**Mr BAILEY:** At the moment, if a person applies for the chemical subsidy, they do not have to prove that, once they have sprayed, they will clear and maintain the ground they have sprayed.

**Mrs O'BRIEN:** We also heard that the subsidy scheme is being examined. I hope that things like that will be addressed. Certainly, there should be an integrated approach. There should be more emphasis on that sort of thing and a focus on the effectiveness of the dollars spent.

**Dr LIM:** Yesterday, a commercial operation suggested that it could harvest your mimosa, especially the broadacre type of mimosa. It could take it away for you. Would you be happy for someone to do that? Would you pay them to do it and therefore save you money clearing the land?

**Mrs O'BRIEN:** Personally, I cannot answer that because I do not have the sort of areas that they would be interested in. In total, we probably would not have a hectare of it on Carmor Plain. We are fortunate. However, we cannot sit back and relax because it is always those places that we don't know about that are the worry. It raises lots of questions. Are they interested only in the big areas? What happens to the rest? What happens about its being on the list of noxious weeds. If it is a commercial enterprise, will it be taken off the list? I have lots of questions about how it would work. If they are prepared to mop up the whole of the Territory's mimosa problem, I think it is probably brilliant. If they want to take the big stands, will they clean up the rest as they go? If a mining company is prepared to mine, it has to leave the area in a fit state.

**Dr LIM:** I assume that controls can be put into a licensing agreement for a commercial operator to harvest an area. If someone has 7000 ha of mimosa in a dense stand, they could harvest that and leave the ground reasonably bare of mimosa. Of course, young shoots will come up. The seeds will be there. However, once it is cleared, the landowner can come behind the harvester and deal with the land in any way he wishes.

**Mrs O'BRIEN:** It would be an individual's prerogative to make agreements. The money that you get out of it would have to last you 10 or 20 years to maintain that piece of land. There has to be ...

**Dr LIM:** But the mimosa was cleared at no cost to you. All you have to do is open the gate and let them on to your property. They will take the mimosa away from you for nothing. It does not cost you anything. Even if you paid them half of what it costs you to control your mimosa at present, you would still have the other half to deal with the cleared land.

**Mrs O'BRIEN:** Yes, but then you probably would not get any subsidies, any help, or anything else.

**Mr BUGG:** You would probably have to clear all the stumps that they left behind. You still ...

**Mrs O'BRIEN:** And where are they spreading that and what else are they doing? There are lots of question to be asked. It needs a lot of thought. Even if you were selling it to them as a crop, I still think it would be fraught with problems.

**Mr MITCHELL:** Even if they simply chopped it off at ground level, that would still be far more beneficial to the landowner who could remove the stumps with rakes or whatever.

**Mrs O'BRIEN:** You still must have the resources to do that.

**Mr MITCHELL:** I realise that, but it would still be a lot easier for the landowner.

**Mrs O'BRIEN:** Yes. However, there are the implications of its being a noxious weed to start with. If it is removed from the list, that will make it solely your responsibility ...

**Mr MITCHELL:** No. I would imagine that, if something like that did get off the ground, it would be by way of a special licence or something like that.

**Mr BUGG:** How long would we have to wait before you got it off the ground?

**Mr MITCHELL:** That is up to them. It is a commercial enterprise and they have to research it.

**Mr BUGG:** By the time you found that it was not viable, it would have spread another couple of thousand hectares and we would be back to square one again.

**Mr MITCHELL:** Well, at least it is an option swinging, isn't it?

**Dr LIM:** As I see it, the chemical subsidy would remain intact. You could continue with your current program. It is simply that some properties with broadacre mimosa could be opened for harvesting. Once it had been harvested, you would be left with stumpy ground whereas previously all you had was mimosa. What you did with that stumpy ground would be up to you. If you did nothing with it, eventually more mimosa would grow.

**Mr BUGG:** These big patches that you are planning on leaving ...

**Mr MITCHELL:** No one is planning to leave anything. This is a proposal. We are trying to get rid of it. This is simply an option.

**Mr BUGG:** Whose land will it be on and who will not be able to use their land?

**Mrs O'BRIEN:** And who is downstream from where it is being harvested?

**Dr LIM:** The idea is not to recrop a single piece of land. It is harvested. It is cleared. They will move on then to another patch somewhere else and what happens to that bare patch will be up to the landowner. The landowner will deal with it.

**Mrs O'BRIEN:** They said that they would handle only 10 000 ha a year. If you are downstream from someone in the 10th year and the outskirts of a large crop is not being maintained, you will have a problem.

**Mr BUGG:** Perhaps we had better support this industry. Maybe we should grow more mimosa

**Mr MITCHELL:** You would be run out of town.

**Dr LIM:** That is not what we are suggesting you should do. Do not grow any more mimosa than what you have already.

It is something that needs to be explored much more. Obviously, we are not the enterprise that would start that off. The proposal was made yesterday. Some of you would have heard it. We are simply curious as to how you people would approach it and whether you think it is a good idea or a bad idea.

**Mrs O'BRIEN:** We heard parts of it, Mr Chairman.

**Mr MITCHELL:** Fair enough, there are a lot of questions surrounding it. On the face of it, it sounds pretty exciting. However, there are questions that you have that will have to be answered. That is not for us to speculate about, but for you people to sort out.



**Mrs O'BRIEN:** And it is up to individuals and the Landcare group. I would be worried if I was a neighbour on either side. It is the environment that ...

**Mr MITCHELL:** DPIF and conservation people seem to have 2 different weed groups working in that area. Do you think it would be better for them to combine and pool their resources? Or do they do that already?

**Mrs O'BRIEN:** No, they are doing their own thing. The DPIF team operates in designated areas. There is a program set up for a designated area. If you are not within that area, you can still seek their advice but you cannot obtain much more than that. The parks and wildlife team works solely on their own land.

**Mr MITCHELL:** Do you think they should be working a little more closely together?

**Mrs O'BRIEN:** Individual landholders and everybody who is working on mimosa should be coordinated. That is what we are pushing for. We have said in our paper that there should be a person who coordinates that - from DPIF or a completely independent person. It must be a person who is acceptable locally because he would be moving on and off lands. People would have to be happy to work with and cooperate with that person. If you get someone who cannot communicate with the landholders, they will lock the gates and you will not have a united approach.

**Mr MITCHELL:** Do you think that, within the whole Mary River area, all the landowners are working in such a way as to ensure that their stock do not go spreading mimosa.

**Mrs O'BRIEN:** Stock?

**Mr MITCHELL:** Cattle, buffalo, whatever.

**Mr BUGG:** They do not come my way because I would eat them.

**Mr MITCHELL:** I am referring to a statement made yesterday by a person from the CSIRO.

**Mrs O'BRIEN:** The only stock that are a problem are pigs. Landholders have noticed mimosa sprouting where they have been gutting pigs. If you gut pigs across your property rather than in one particular place, you could be spreading it in that way. It is something that we as landholders are certainly aware of.

**Dr LIM:** Apart from a blank cheque, what level of funding would you consider to be fair?

**Mr BUGG:** I would like to see the government supply the chemicals or whatever it takes to control it. The landowner has not only to apply the chemicals but also rehabilitate the country after he has the weed under control. There are such enormous costs to the landowner in addition to paying half the cost of the chemicals. I would be happy to see the government pay the full cost of the chemicals.

**Dr LIM:** Some people would say, once you get rid of the mimosa, every dollar that you make from the land is yours, not the government's. Therefore, should the government give you a full amount to recover the land from mimosa?

**Mr BUGG:** It is really only giving you half towards the control of the problem anyhow. It is not giving you all. You are putting your labour in, and the labour would be much more costly than the chemicals. It is not putting 100% in.

**Dr LIM:** In relation to the Mary River area, can you give a ballpark figure of how much people are spending for every \$1 of the chemical subsidy they receive? For every \$1 of chemical subsidy, how much would they put in - chemical cost, labour etc?

**Mrs O'BRIEN:** They would all be different because of the circumstances and whether they can afford it. The problem at the moment is what you can get if you do not have outside resources. You have to generate it from the property in order to put it back in. It is what you can afford, and that is not a true indication of how big your problem is.

**Dr LIM:** Is it only what you can afford or is it also how high a priority you put on mimosa on your property? If you believe mimosa is going to rob you of your fertile land, you will have to work on it whether or not you have money. That is a priority and therefore ...

**Mrs O'BRIEN:** That is the definition of 'afford'. You cannot afford to do nothing because you will not have a property. You might as well sell out and go. If you do not keep on top of it, you will not have a property to do anything with. You can't get tourists in, you can't run fishing ventures, you can't get to your waterways, there is no bird life, there is nothing. If people start walking off those sorts of properties, they will all revert to the government. It is a massive problem. While there are people there - and most of them are lessees - they are doing their bit for control - as it is now, for that 50% subsidy of the chemicals they are putting in. They are putting in so much more. It is not only the graziers, but

also the little blockies. Our area of the Mary River is starting to be subdivided now - for example, the Corroboree area. There is subdivision into little 2 ha blocks etc. There is also the Adelaide River area - crown land. These individuals certainly are not generating anything off the land. They might have a horse or whatever - or nothing. They all have satellite mimosa infestations that will simply explode or are exploding whether or not the people are really aware of the problem they have.

**Dr LIM:** Do you have anything else to add at this time?

**Mrs O'BRIEN:** I don't think so.

**Dr LIM:** Thank you very much for your detailed submission as well. I have read it. I hope you will make yourselves available if we need to come back to you for further information or clarification. Thank you very much.

[Witnesses withdrew.]

**Dr LIM:** The committee welcomes Dr Naomi Rea. As you have been present for some time, you probably heard my comment that the evidence given by witnesses must be truthful. Do you wish any part of your submission to be in camera or confidential?

**Dr REA:** No.

**Dr LIM:** For the record, please state your full name and the capacity in which you appear today.

**Dr REA:** My name is Naomi Rea. I have been a plant ecologist for 10 years. I have done a variety of applied and theoretical research into vegetation change and invasions in wetlands. I am here as a citizen.

The contribution that, to my knowledge, has not been made is basically a botanical understanding of the problem. I believe my background in plant ecology can help you in your undertakings to improve the future management of mimosa in the Top End. I hope that some of the insight that, as a botanist, I can bring to your inquiry will be of help. One of the major observations is that the weed is being approached from an agricultural perspective and that is the case with most weeds throughout the world. Environmental weeds have only been funded or thought of as such in relatively recent times.

The first control methods for the problem often come from agricultural contexts and usually involve the use of chemicals that are often inappropriate for environmentally sensitive areas. Mimosa is a weed not only of conservation but also a weed of agriculture and primary production and a whole variety of things. It threatens the tourism industry, Aboriginal culture, pastoralism and fisheries. It has an impact on breeding recruitment on the floodplains. What really strikes me about the whole management of mimosa, in particular government programs, is that there is a lack of framework around the whole control programs. Scientists have been very slow to take up weed ecology as a discipline. It has usually been left to the practitioners and the people on the land to figure out how to do things best. Many of the programs that we have are based on trial and error and that sort of experience. This is a bit unfortunate, particularly in tropical areas. Many of the scientists whom we get our information from come from temperate areas.

More scientists are now starting to look at the ecology of invasions. They are pointing towards an understanding of the plant, where it comes from, why it is invading, the susceptibility of the wetland habitats to invasion and what is causing these habitats to be invaded. All this information and framework of the ecology of the problem is used for better control and management programs.

**Dr LIM:** Is this information available on mimosa?

**Dr REA:** No, it is not. There is very little information, and that is what I wanted to highlight today. Much of the government program is basically the application of chemicals which is a methodology and a recipe. There is very little research or documentation about those methods. With a co-author from the Territory, I have written a long paper on this for an international journal. We have had great difficulty in finding documented reference information about this methodology. There is also a biological control program which is basically in its research stage. It has not been applied as a methodology as yet.

Those 2 programs really sit in isolation from each other, and in isolation from a whole lot of other questions about the use of mechanical control, the use of fire and the use of prevention. By 'prevention', I mean not only a preventive strategy like using satellites in a search and destroy operation, but also washdown facilities, feral animals, vectors for dispersal and the possibility of quarantining areas. I know of a landowner who basically walked off his block and has left it and gone and driven trucks. That land has returned to some sort semblance of ecosystem balance in comparison with neighbouring properties where the need to do something has almost facilitated continuous and vigorous growth of mimosa. There is some ad hoc observational evidence to suggest that fiddling with the problem can actually make it worse. When a program does start, there really needs to be that commitment to the task - that long-term, low key continuous effort. One-off or 2-off attempts really are quite fruitless, and that has been clearly demonstrated.

**Dr LIM:** The people using the mechanical and biological control methods would say that they dovetail into each other. The mechanical methods will clear the land, allowing new shoots to occur which are quite rapidly colonised now by the biological controls. The biological controls can affect the younger shoots a lot more effectively than they could affect the more mature plants. Isn't that a coordinated way of looking at it?

**Dr REA:** Yes, that is a future strategy which people will investigate. Maybe I have not made it clear. The funding of this problem in the Northern Territory - and it is probably because of its small population and the lack of information and a framework - has really gone into dealing with the symptoms. There is a whole variety of information on which there has been no research. There is very little money spent on that. There is no documented research that I know about on the influence of mechanical control. There are a couple of papers on fire. Very few resources are put toward understanding the problem. While the present management continues like this, we are really just nibbling at the edges. We have really got to get stuck into the problem. I have some overheads here to demonstrate all sorts of questions that come up every day - the way its is spreading, what is causing it to spread etc. If we had a better understanding of the whole ecology of the problem,

that would feed in as information into our control and management programs. There are some gaps in those programs which I would like to talk a little about. I would also like to quote from the National Weed Strategy in 1996:

*Weeds are a symptom of the degraded state of the land or water resource rather than the cause of that degradation. This lack of understanding often leads to unsuccessful attempts at weed control rather than rehabilitation of the degraded resource.*

That is not necessarily always the case. Mimosa has been known to invade pristine areas. However, new infestations are strongly correlated with disturbance, whether that be anthropogenic or natural. I would just like to show you a few overheads.

Some of the information would be very useful and it is unbelievable that we do not have it. I think it is essential for any mimosa future management planning to be successful. I am talking about the strategy for Top End. We have not measured the actual area since 1985, and that was only an estimate. We have no idea whether it has spread or retreated. There are no long-term mapping exercises under way to give us that information. We do not really know. Is it really a problem? Is it as big a problem as we think or is it worse than we think? A mapping exercise would be useful in identifying areas susceptible or resilient to invasion. It is also useful benchmark information to monitor whether future control programs are having an impact. How is it dispersed? Is it by natural causes which we have no control over? In that case, we do have to treat the symptom. If it is the natural environment up here - the flooding and the wet seasons - then we have to go for symptom methods like chemicals and chemical control and biological control. Or is it from something we can do something about? Will vehicle washdown facilities etc have a real impact in reducing its spread? Until we know those modes of dispersal, we cannot develop a preventive control program.

Identifying the cause of mimosa's invasiveness - is it caused by natural or anthropogenic disturbance? When we know the cause, we will know what to deal with. Until we identify that cause, we are not really tackling the problem at the grassroots. We are really just chewing at the edges. Identifying the cause can also avoid costly ineffective control. If we have a cause to deal with, we may be able to avoid very expensive programs.

Understanding the ecology of a plant and its weed status - that is just general background information about what sort of plant we have. Its ecological economic impact - once we know its impact, we know what to do with it. There are very few studies. There about 3 papers that are read at the beginning of every article on mimosa. One deals with mammals and another deals with a very general subject. We do not really know the botanical impact or the impact on the water resources and the hydrology of the floodplain. When you have a control program, you can look at those impacts and determine whether the weed has been restored or is not experiencing any change at all. What is limiting its distribution? At the moment, we can say that it grows everywhere, but we do not know what those factors are. If we know that it is limited by water or soil types or temperature, we can gain an idea about how potentially bad the problem is. If, as a weed, it has a very wide tolerance to a wide range of climates and conditions, we can take this as potentially a very great problem which we must do something about. If it is restricted to areas where watertables are higher and flooding is deep, then we know we have only a particular wetlands habitat.

An integrated control strategy is, as everyone agrees these days, is how to use one method to predispose the plant to better controls by another method. No single method is likely to solve the mimosa problem. We are going to need horses for courses.

The ecological impacts of control treatments - to date, there is no research on the impacts of disturbing the environment with mechanical control. This is a great disturbance. We create a habitat which is suitable for the reinvasion.

Chemical control - there has been very little research on the toxicity of the herbicides used. I will not go into that in detail, apart from saying that some of the herbicides used are banned in other parts of the world and they are banned from use in aquatic situations. We have to be very careful about using these herbicides in the wetland environments. In comparison to wetland and herbicide projects that I have been involved with in southern Australia, there is very little legislation and policy here to provide a framework for herbicides used. I had about 20 government departments to obtain permission from before using herbicides in an aquatic situation. To my knowledge, a lot of the herbicide use on properties here is not subject to any environmental impact assessment.

Documenting how control methods compare with quarantining areas - to date, it has been considered irresponsible to do nothing. It may be a question of cost/benefit analysis. The Territory needs to investigate whether it can afford to deal with this problem or, as was the case with salvinia, should we quarantine certain areas to stop the spread and deal with the edges and satellite areas and prevent new country from being degraded? Many people believe priority should be given to dealing with new satellites in order to prevent further areas of country from being degraded. The weed management strategy - chemical control, mechanical control, biological control - is all in this ecological framework, if you like, of what the plant is. People no longer treat these issues as species issues - it is an ecosystem problem which has been caused by an ecosystem disturbance, whether that be a long time in the past or recent.

There has been very little discussion about what we should do after mimosa is controlled. What are we doing it for? Whom are we doing it for? Some of the agencies across the Top End are doing it for slightly different reasons than other people. There needs to be open discussion about post-control mimosa management. Mimosa will always be part of the landscape. It will not be eradicated. No weed has ever been eradicated. It will be present in the post-control landscape as, hopefully, a minor component.

Mechanical control is a fairly major disturbance. It is similar to a thousand pigs moving through a paddock. The whole project needs to include some discussion about a revegetation strategy. What are we doing this for? Whom are we doing this for? This is a list of thoughts about revegetation. What species do we want after mimosa? What are the desirable replacement vegetation types? Of those species, which plants have a competitive ability? Which are able to suppress mimosa seedlings from re-establishing? There is no point in having massive control programs or even minor control programs without thinking ahead about what can have some competitive ability over mimosa seedlings. In cases where intervention is needed, we need to understand the establishment types [indcipherable] and we may need to collect and determine distribution methods for the seeds of those plants. This may require a support system for the revegetation component. In many cases, intervention may not be necessary because the seed bank may still be intact and the vegetation may return. There needs to be some information or background of understanding which people can draw on when they need some help with restoration or rehabilitation of the country. A replacement vegetation policy would be good to have in a mimosa management program. This could take the form of extension and communication strategies so that the information is freely available to everybody.

I would like to finish with 2 points. I have been out to the floodplains several times. My first impression was that the revegetation has been quite slow. There are large bare areas of floodplain which were forecast to become revegetated naturally. The whole post-control revegetation component of the mimosa program at Oenpelli has been through natural revegetation. My first impression was that there are still large areas unrevegetated. Where there was vegetation, it consisted of hardy, stress-tolerant species from the *Cyperaceae* family. None of the grasses or softer species like *Areaceae* species had returned. A lot of what you would call the desirable vegetation in that habitat had not returned. The vegetation pattern of the vegetation that had returned was from primary colonisation. I took photos and have written this up. The patterns fit with post-volcano, scorched-earth occurrences. It has come back in from outside and we have small satellite areas of 2 sedges and these patches are slowly expanding and coalescing to cover the ground. On one visit, we showed an ABC crew around and they saw that there was perceivably good control. After they left, we shifted over to the next bay and the next bay and saw that there were still large areas of scattered individuals and regrowth.

There has been a lot of discussion about that program but, botanically - and I am not saying whether it is a good or a bad thing - it appeared that the seed bank had been destroyed and that the subsequent recolonisation of vegetation has been very slow, and it is not necessarily of the desirable replacement vegetation. Presumably that will alter. There is no formal documentation of the species composition and distribution patterns of the area of the Oenpelli project. That has not been part of the project at all.

**Dr LIM:** Would you like them to specially plant native vegetation in the cleared areas?

**Dr REA:** It is possible that that could be a good thing in some cases. At Oenpelli, I think it is probably not necessary because the area is remote from other weed sources. Apart for the particular zone, which is very subject to weed invasion - the higher, drier areas- there were no other weeds recolonising. If that same program had been undertaken on the Arnhem Highway, there probably would need to have been a concerted effort to have a revegetation component. At Oenpelli, even though there are some feral animals and some disturbance, it is remote from the [?] in the seeds.

**Dr LIM:** As a medical practitioner, I can empathise with what you have said, but can you also see the point that, with 80 000 ha of mimosa, with its potential to spread, the priority to control the infestation at this very moment is pretty high? That priority supersedes everything else, including research that has to be done. Let us get rid of cancer before we start looking for the reasons why the cancer was there in the first place. Once we get rid of most of the cancer, maybe we will then have time to do some research into why it is there.

**Dr REA:** I understand what you are saying. If you really want to capitalise on the investments that you make, you need some understanding of the problem. The control that appears to be undertaken is started but not continued. There are examples of people and agencies doing long-term, low key control. These are the best examples of mimosa control. I was made aware of the fact that, until last year, the 50% subsidy scheme was available only for ground control to a maximum of \$1000.

**Dr LIM:** That is not true. I have figures here. For the last 10 years, the subsidy has been quite significant.

**Dr REA:** The aerial control is funded separately from the ground control. The aerial control was a maximum of 50%, but the ground control was a maximum of \$1000 up until the last year or so when it was increased. The point I am trying to make is that aerial control will be successful only if it is followed up by long-term ground control. The subsidy scheme was not conducive to that because it was a maximum of \$1000 and people need as much funding as they can get for

that long-term, low key, follow-up control on the ground. Two or 3 aerial sprays will not be sufficient because the mimosa will return.

The last point that I want to make relates to the whole strategy. While mimosa is managed by different agencies with different commitments and different financial capabilities - largely dictated by different land tenure such as Aboriginal land, Territory reserves and Commonwealth reserves, crown land, leasehold and freehold - with different control methods, it will be a very difficult for future management of mimosa to be successful. The weeds know none of those boundaries. Mimosa transgresses all of those sectoral boundaries. We need an inclusive strategy with all control methods available to all people. In the past, various programs have operated in exclusion. Some agencies, some control methods and some land types have been left out of the picture. Weeds really need to be managed with that inclusive strategy if they are to work.

**Mr MITCHELL:** You said that there have been no surveys since 1985 and therefore you are not sure of the level of infestation. Do you mean that nothing has been happening in the last 12 years in terms of surveys on this?

**Dr REA:** There was an estimate in 1985 of the area that mimosa occupied in the Top End. To my knowledge, there has been no re-estimate of that area - various people documenting new infestations and putting together a picture of where it is. In lots of ways, it is a formidable task. Do we really want to do it?

**Dr LIM:** Are you aware of this map?

**Dr REA:** Yes.

**Dr Lim:** This is dated August 1995. Are you suggesting that this is not a good indication of the extent of mimosa in the Top End?

**Dr REA:** I think it is a good general indication. However, there is a lot of mimosa tucked away along tributaries and in isolated billabongs and swamps. It is beneath the canopy of monsoon forests and throughout melaleuca woodlands. It is across a whole lot of habitats. It would be a formidable task to map that and I do not really know whether that would be an effective use of resources. What I was trying to allude to is the extent of the problem. Is it getting significantly worse? If we contain the satellites and pour our energies into dealing with those areas, can we stop it from spreading and, so to speak, hold the problem?

**Dr LIM:** On one of the field trips that we made, we were assured by some people that mimosa is contained and is not spreading outside of the extremities of its current area of occupation. I am not sure if that is a correct statement. We were told that there were 80 000 ha 10 years ago and there are 80 000 ha now.

**Mr MITCHELL:** Have you been talking to any of the departmental people? What do you base that on?

**Dr REA:** Basically, what I was trying to say is that there was an estimate of the area of dispersion in 1985. We are saying that it is a large area. There is a whole lot of anecdotal information and that is why managing the problem becomes quite difficult. Every now and then, it would be useful to have some hard data to say that it is spreading at a certain rate or that it has spread throughout 6 river systems in the last 5 years. The range of anecdotal observations indicates that the return of the native vegetation is giving the floodplains quite a lot of resilience to invasion and it is not as bad as people have thought. However, there are areas where it is clearly invading and behaving as it did 20 years ago. It is difficult to overstate the problem. At the same time, although we do not want to overstate it, we do not want to be too cautious. It would be nice to have some information.

**Mr MITCHELL:** You mentioned herbicides that are banned. Which herbicides were you talking about specifically?

**Dr REA:** I did not say they are banned.

**Mr MITCHELL:** In other countries or interstate.

**Dr REA:** I think Starane is a chemical that is not recommended for use in aquatic situations.

**Mr MITCHELL:** Not recommended by ...

**Dr REA:** By the [?] authorities. I did not want to talk about specific chemicals but, from the literature that I have read on the chemicals used, I think there are some that need to be thoroughly investigated and reviewed, as is the case in southern Australia. I know that exemptions have been provided there frequently, but only through the correct channels. In the environmental sense, the ecological sense - and a few people have touched on this - there is a need to adopt a precautionary principle where we do not know what the impacts might be.

**Dr LIM:** You did not provide us with a written submission. Would it be possible for us to have a copy of your overheads?

**Dr REA:** Yes.

**Dr LIM:** Is this part of the paper that you are writing?

**Dr REA:** Yes.

**Dr LIM:** When do you anticipate that the paper will be available?

**Dr REA:** I can probably prepare a precis of it. It probably will not be published for several months.

**Dr LIM:** Could we have a copy? It would be treated in confidence.

**Dr REA:** Yes.

**Dr LIM:** Thank you for your time and your comments.

[Witness withdrew.]

**SESSIONAL COMMITTEE ON THE ENVIRONMENT**

**PUBLIC HEARINGS ON MIMOSA PIGRA**

**DAY 1**

Ormiston Room, 3rd Level, Parliament House  
Tuesday 4 February 1997 commencing 1100 hrs

**PRESENT:**

**Dr Richard Lim MLA, Chairman**  
**Mr Peter Adamson MLA**  
**Mr John Bailey MLA**  
**Mr Phil Mitchell MLA**  
**Mr Maurice Rioli MLA**

**Mr Ian Miller, consultant**

**Mr Graham Gadd, Secretary**

**WITNESSES:**

**Mr Bob Townsend, proprietor, Welltree Station**  
**Mr Graham Schultz, regional weeds officer,**  
Department of Primary Industry and Fisheries

**Dr John Fielke and Ms Corrine Turner,**  
Aplex Pty Ltd, Adelaide

**Dr Gary Cook and Dr Wendy Forno,**  
CSIRO, Darwin

**Mr Robert Wesley Smith,**  
agronomist, Howard Springs

This is a tape-checked and lightly edited transcript. Note: Evidence heard *in camera* is not included.

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**Dr LIM:** I call to order this hearing of the Sessional Committee on the Environment on 4 February 1997 and welcome Mr Bob Townsend who is appearing to give evidence. Other than in exceptional circumstances, witnesses appearing before this committee are not required to take an oath or make an affirmation. However, I remind you that information you give to this committee must be truthful. Witnesses have the right to request that their evidence be taken in camera and/or remain confidential. Should this be the case, the committee would need to be apprised of the reasons before we can make any decision. Please indicate now if that will be the case for what you are going to say to us this morning.

**Mr TOWNSEND:** No. What I have to say, anybody can listen to.

**Dr LIM:** For the *Hansard* record, please state your full name and the capacity in which you appear today.

**Mr TOWNSEND:** James Robert Townsend. I am on Welltree Station. I don't know what I'm doing here, really, other than I wanted to thank the government for the help that we've had. It has made a big difference and I would not like to see it discontinued any time soon, because we do need help with it. I feel that in the last year we're gaining on it for the first time. That's about all I have to say, really. I wanted to appear to let you know that we're interested in caring, and getting rid of mimosa.

The only real recommendation I can make is that we need the approval of any subsidy earlier than what we get, especially with early rainfall. We didn't get our approval till close to Christmas time - I don't remember the exact date. A lot of people held off doing anything until then. By then it had already rained and mimosa was growing and then the rain hit. So we got way behind schedule, of course. We have only just now been able to spray ours, in the last 3 or 4 days. It's going to seed, but luckily it hasn't planted yet, so I still think the spray will have an effect on it. But it would be a help, for most people anyway, to have that approval earlier. That's about all I have to say.

**Dr LIM:** So the subsidy has been of benefit to you. Is there any way it can be improved? Apart from a blank cheque, of course.

**Mr TOWNSEND:** No, I think we should take care of our own problems as far as possible. I think the government has been more than fair to come up with that as a subsidy. With that, we might as well leave it.

**Dr LIM:** Some submissions have made the criticism that the subsidy has been only for aerial spraying, not for any ground-control works. Have you any comment to make about that?

**Mr TOWNSEND:** Well, it's no good doing aerial spraying if you don't follow up with ground control. And, of course, the subsidy covers the poison but not the actual labour hours. There again, the more help we get, the better it would be. But I think the way it is now is perfectly sensible and reasonable in the circumstances.

**Mr MITCHELL:** Has the spraying that you've done over the last few days been all aerial spraying? What methods are you using at the moment?

**Mr TOWNSEND:** We've been hitting it all dry season from the ground.

**Mr MITCHELL:** I only ask because it is the wet season and you'd have trouble getting around.

**Mr TOWNSEND:** Whenever I have filled in applications for subsidy, it is mostly for ground work that I have to do on my place. But this year, due to the nature of the rainfall, I couldn't get out there to do it. It was too wet for vehicles and too dry for an air boat. I had to hit it with a helicopter. So my application is going to change pretty drastically as far as the money being spent

where I said it was going to be spent. Whether they will hold my feet to the fire on that or not, I don't know yet.

**Mr MITCHELL:** With your neighbouring properties out there - I'll mention the Wagait specifically at this stage - is there much control going on at that side to work in with what you're doing?

**Mr TOWNSEND:** None that I know of.

**Mr MITCHELL:** So basically you would have drawn a line and said that's it. You're controlling within your property.

**Mr TOWNSEND:** We're on a different watershed. So apart from all the other methods by which it is spread, besides water, it doesn't really concern the Wagait. Birds and pigs and animals of all descriptions might bring a few seed over. It's a worry.

**Mr MITCHELL:** All the other properties are working in together as one big family, aren't they?

**Mr TOWNSEND:** Yes. Tipperary is upstream for most of the course, and they've been hitting it there pretty good. They did find a spot, I understand, that flowed into the Reynolds River and would dump seed on us, but they have sprayed it now. I don't know whether they've contained it or not.

**Mr BAILEY:** When were you first aware of mimosa on your property?

**Mr TOWNSEND:** Back before anybody knew it was so bad - 20 years ago, I suppose. It was brought over, I'm sure, with the exploration rigs that came from [inaudible] up the Adelaide River. We even bulldozed the right-of-ways for them, and that's where we got our first mimosa. It was right along where those drilling rigs were.

**Mr BAILEY:** And how long was it before you felt that you had a problem? You said you weren't aware how great the problem was going to be.

**Mr TOWNSEND:** Long enough for a lot of it to have gone to seed. The seed had got scattered pretty well before we realised how much of a problem it was. And we didn't do a good job of spraying, though we thought we did. We were using Banvel back then. That was before the days of Starane. So we just didn't hit it on the head quick enough.

**Mr BAILEY:** It was 20 years ago when you first noticed it was there. How long was it before you actually felt that you had a major problem on your property?

**Mr TOWNSEND:** Graham Schultz might be able to answer that better. When did we first start spraying out there in earnest?

**Dr LIM:** Please identify yourself.

**Mr SCHULTZ:** I am Graham Charles Schultz, with Primary Industry and Fisheries for 15 years. I am regional weeds officer, Darwin.

Bob was probably one of the leaders into the aerial spraying program. I remember going out there 14 or 15 years ago and Bob telling me about mimosa down on the Reynolds Flat. We really didn't, as a department, know too much about mimosa in those days. Some of the earliest spraying I can recall was done for Bob on Welltree. There was a product called Grazon[?] we used then. He was one of the leaders in the field, and I think the benefits can be seen now. There is minimal mimosa on the Welltree block, whereas mimosa is pretty serious in some of the neighbouring areas. Bob's property stands as a testament to that effort.

**Mr BAILEY:** Bob said in his introduction that in recent years he felt he was starting to get on top of it. Does that mean that for 15 years it was barely controlled and/or expanding? I am trying to work out what has changed in recent years to make you believe that you are now getting on top of it. Are you getting close to wiping it out? Or have you got it down to just a couple of areas where, if you spray every year, you can contain it? I am trying to get a handle on the scope of the problem over the years - whether, when you talk about containment, you have just been reducing the spread or you have actually been reducing the infestation.

**Mr TOWNSEND:** Of course, money has always been a problem - time and money. We just didn't have the resources to spray it properly. It has got worse in some areas, and in some areas we've just about annihilated it. We started upstream and we're working down. Time and money have been the big hang-up.

**Mr ADAMSON:** What was the extent of it at its worst, as opposed to what it is like now?

**Mr TOWNSEND:** It's hard to say. We've got half the property nearly clear of it. On the other half we've lost a little ground while we were concentrating on this part. I think the only way we will ever contain it is to start at the headwaters and take a section at a time and get rid of it. That was one of our faults: We tried to cover the whole shebang and just couldn't do it. It was too big for us. Now we're battling it in a different way, starting at the headwaters and working down.

**Mr BAILEY:** How long have you had areas of the headwaters free from infestation or largely controlled? Or is it something you have to keep going back to?

**Mr TOWNSEND:** It's something you've got to keep going back to. If you miss a few trees and they go to seed, you're treading water, really. Some of our country is pretty rough up at the headwaters, too. It's very, very hard to get around with any kind of vehicle, and very, very hard to spray from the air because there's too much paperbark.

**Dr LIM:** You're talking about mechanical means of control rather than anything else. Is there any biological control occurring on your property?

**Mr TOWNSEND:** Natural biological? Yes, I've noticed a few bugs that are beginning to eat it. But they're in a minority.

**Mr BAILEY:** Are these from releases?

**Mr TOWNSEND:** No.

**Mr BAILEY:** These are actually native?

**Mr TOWNSEND:** They're native. They have a big white cross on their back. I don't know their name. They do attack the mimosa pretty good but they're just outnumbered, is all.

**Mr BAILEY:** This isn't one that's been introduced? This is a native insect?

**Mr SCHULTZ:** Yes, it is. One of the introduced ones, an insect called *Neorostrada*?, has spread very rapidly. It's on the Reynolds country.

**Mr BAILEY:** But that's not the one that Bob is referring to?

**Mr SCHULTZ:** No, that one's *Sphiralia*?. That's a native. The trouble is, it's a bit haphazard. It also eats paperbarks. Every now and then it takes on mimosa. It does a good job, actually, on the bits it gets on.

I remember aerial spraying there costing \$30 000 to \$40 000 a year, a combined program on Welltree. This year when I did the subsidy for Bob, he didn't expect to need the helicopter at all.

**Dr LIM:** So you're looking at more ground control now rather than aerial spraying?

**Mr SCHULTZ:** It's down to a level where with good management, and the wet season being the right sort of wet season, the helicopter isn't necessary.

**Dr LIM:** Are you happy with the effectiveness of the herbicides that you are using?

**Mr TOWNSEND:** Yes, if you put it on there properly, it does a good job. You get some regrowth.

**Mr BAILEY:** How hard is it to put on properly?

**Mr TOWNSEND:** It's not hard - you've just got to know what you're doing, really. You get the right mixture and the right amount to put out. There's another problem, of course, in getting experienced people to go hand-spraying. A little squirt just don't do it. You've got to circle the plant and get it on there from all angles. If you leave one stem sticking out with no poison on it, it'll live.

**Mr BAILEY:** For ground spraying, what sort of chemical are you using?

**Mr TOWNSEND:** The same as for aerial spraying. You just use a lighter grade because you're putting more on. We're using Glyphosate, Starane and BrushOff. That's something that's helped a whole lot - the chemicals are getting cheaper.

**Dr LIM:** I think John's question is, are you using aerosol stuff or pelletised herbicide?

**Mr BAILEY:** My understanding is that some chemicals have to land on growing plants, and defoliate them or kill them by absorption or something. And then there's one that we have heard a bit about, this pelletised one that goes in, Graslan.

**Mr TOWNSEND:** We used the pellets last year with disastrous results, really. It's good stuff, but the water rose too quickly and it didn't have time to do its job. I don't remember what it cost, but it was several thousand dollars we put out and it just didn't do the job because the water rose up too quick.

**Mr BAILEY:** So the procedure you're trying is to kill off what's alive, and then come again next year and kill off what has come up again?

**Mr TOWNSEND:** Yes, before it goes to seed.

**Mr BAILEY:** And before it is so thick that you've lost. You'll have to do that forever the way you're going, won't you? There's so much seed in the ground.

**Mr TOWNSEND:** I can't ever see a day when you won't have to be going back and checking it. The Graslan pellets are good. They've worked really well in places. But there again, it depends on how much mulch is on the ground, how thick it is as to what application you put there. The more plant matter there is, the more you have to put down for it to take up.

**Mr BAILEY:** You said that approval for funding was delayed this year. What was your understanding of why it was delayed? It's so crucial that you get in there before the Wet starts.

**Mr TOWNSEND:** I don't have any way of knowing why. We filled in the application. I presume it had something to do with the budget not coming down until a certain time. By the time our application and everything all went through and everything was approved ... It just takes times, is all. But I wouldn't know. You'd know more about that than me.

**Mr BAILEY:** Unless you get the stuff out on time, you're wasting a lot of time, effort and probably money. My feeling already is that we need somehow or other to make sure that these decisions are in place on a time-dependent basis. You don't know why it was delayed. All you know is that it is important to you, the timing of the decision-making.

**Mr TOWNSEND:** Yes, that's right. You're wasting money if you spray it after it's gone to seed. You've got to hit it before it goes to seed to do any good.

**Dr LIM:** What sort of time frame are you talking about? How many months before the onset of the Wet do you need to get your action into place?

**Mr TOWNSEND:** Well, nobody knows when the first rain is going to be. We could have sprayed before Christmas this year, and should have, but we were busy working cattle. It wasn't the money that held us up. But I understand from a lot of people that that is the reason they didn't get in earlier.

**Mr BAILEY:** The issue that is often referred to in these sorts of schemes is whether you have annual funding or whether there is some guarantee of rolling funding so that you know in your planning for each financial year what you're going to have. Would that be easier for you, if you knew now that there would be at least some money available for spraying in the next financial year?

**Mr TOWNSEND:** That could be a big help, to plan ahead as far as you can.

**Mr MITCHELL:** A few years ago, I think it was you who initiated the use of choppers on already-established mimosa plants and then the reclamation of the pasture. Have you found that to be a good thing over the years, that it's actually working, that the pasture is taking over when you've put the choppers through and replanted?

**Mr TOWNSEND:** Yes, if you can get a good grass cover it definitely helps. But that's hard to do when you've got cows eating on it too. Sometimes you almost think it's worth destocking and forgetting about it for a few years and letting the grass take over again.

**Mr MITCHELL:** I remember about 3 or 4 years ago we had that demo out at B facility and one of your choppers was going through there.

**Mr BAILEY:** Can you explain what a chopper is? I doubt that it's a helicopter.

**Mr MITCHELL:** This is a chopper in the true meaning of the word.

**Mr TOWNSEND:** It's not been used successfully, though I think it's a good thing. It's a roller-chopper that just crushes everything up underneath it. It gets rid of the big bush and then your spray can kill the young stuff coming up pretty easily. We've used it out our way all right but it hasn't taken over as another way of doing it.

**Mr MITCHELL:** It's not as successful as you'd like it to be, but it's one way?

**Mr TOWNSEND:** Yes.

**Mr BAILEY:** So you've given up on mechanical ...

**Mr TOWNSEND:** No, not entirely. But it just never took over with the rest of the community.

**Dr LIM:** Do bulldozer-driven chains and rollers do the same thing?

**Mr TOWNSEND:** Yes. Any way you can get rid of the mass of foliage so that your poison can get down to ground level is a big help, of course.

**Mr BAILEY:** If your subsidy was not defined by what it could be used for, just straight dollar-for-dollar, which is more effective - mechanical or spraying? At the moment, you can't claim for any mechanical methods. There is no subsidy for that, so in a way you are ...

**Mr TOWNSEND:** I don't think one's much good without the other, is the only way I can answer that. Ploughing it up or chopping it up or pulling it down is not going to stop it one bit.

**Mr BAILEY:** But if you're on a property that's flying close to the wind and you haven't got a lot of extra cash, you can get a subsidy for chemicals. So you look at your budget and say, 'Whatever money I put in for chemicals I'll get a subsidy for', whereas you know that if you try to do it mechanically, you won't. Should the subsidy be applicable to all control measures, and not just chemical? Should you be able to decide more wide-rangingly where the subsidy goes? Could you reach a stage where spraying isn't the best way to go, or the cost for spray becomes ...

**Mr TOWNSEND:** Naturally, it would be good. But I don't know how you'd police it.

**Mr BAILEY:** If you were just given money, would you split it between mechanical and spray? Would you possibly spend less on spray and more on something else?

**Mr TOWNSEND:** No, I don't think I would. It would depend on the country. If you've got big, open plains country, yes, I think I would spend a lot of time pulling it with a chain and chopping it. But a lot of our country has trees so dense that you can hardly get around through there with a tractor and chain.

**Mr BAILEY:** Is your mimosa infestation a solid monoculture with nothing else in there, or is it interspersed with trees and everything else?

**Mr TOWNSEND:** There's trees and everything else, grass. We don't have any huge area that's just covered in mimosa. Ours is more [inaudible]. And that's one of the problems, too, when they ask you how many hectares you've got. Who in the world can tell? I way underestimated mine last year.

**Mr BAILEY:** Does that make aerial spraying more difficult? He's got to go looking for ...

**Mr TOWNSEND:** Yes, turning here and skipping a plot there and hitting again. It makes it much more difficult.

**Mr BAILEY:** But it's also difficult for ground work.

**Mr TOWNSEND:** Yes.

**Dr LIM:** If you had a magic wand and you were the dictator, apart from providing the subsidy a bit earlier, what else would you like to do that would make it easier for you to control mimosa?

**Mr TOWNSEND:** All it would take would be lots of money and lots of helicopters and lots of poison. It can be whipped, but once a year is not enough. You've just got to keep going back and going back and going back.

**Mr BAILEY:** I know it is almost impossible to quantify, but given the value of the land and its productivity, do you believe there's a point where it is irrational to spend more? If you come to the point where you're spending \$100 000 a hectare to control something, you would reach a stage where you are spending more than there's any way you could rationally ... I mean, do you reach a point where you accept that there's a level that's going to be there?

**Mr TOWNSEND:** That's a hard one to answer. I've been there 35 years and I kind of like the place, you know. I don't like to see mimosa taking over. So I will spend as long as I'm living and I will spend every penny I can get to try to whip it.

**Mr BAILEY:** Are there any things happening, apart from questions of funding, that are making control and management on your property more difficult? Are other people spreading it by not maintaining their properties? Do other things make it difficult for you to contain it, such as environmental controls that say you can't use certain things or do certain things?

**Mr TOWNSEND:** Graham and I had a long argument about using Glyphosate from the air. It's not been approved for use from the air because it kills grass. My argument is that if you've got mimosa you don't have any grass. And it doesn't kill grass for any length of time. Within 3 or 4 months it's coming back again. And until BrushOff came down so drastically in price this past year, it was the cheapest and, in my opinion, the best you could get. It did a better job of killing it, with less regrowth. That's just one of the differences of opinion there.

**Mr BAILEY:** Have you used it from the air?

[Laughter.]

**A voice:** Don't answer that!

**Mr TOWNSEND:** Can we go back to that confidential thing you were talking about?

From the ground, we've used it. You kill the grass around the plant and if you get a wind drift, you kill the grass out there a ways, but you've killed the mimosa. That's what we're after.

**Mr BAILEY:** If an infestation is so bad, what sort of risks do you take? Do you use the best, most effective way? Is it still Primary Industry's position that it is not to be used from the air?

**Mr SCHULTZ:** It's not a Primary Industry decision. The national registration of Glyphosate, or Roundup - and there are others - is for limited use by aircraft. It is used in broad-acre cropping where they want to kill grass because they plant wheat, oats, barley - that type of situation. To my knowledge it's not registered for brush control from the air, but is from the ground. Bob knows a lot about how to control mimosa, and I respect him for it, but it's a registration thing. It would have to go back to the chemical companies to do the research to change the registration to allow aircraft.

**Mr BAILEY:** Bob, would you at this point in time, even with changes in prices of other things, suggest that it should be allowed to be used from the air?

**Mr TOWNSEND:** I think so, yes - especially when you have a lot of water lying around, like now. It never hits the grass, it just kills the mimosa that's sticking up above the water.

The other thing that we haven't talked about is the resistance to poison that plants develop. There's a lot of indication that it's worse than they thought originally. They're just beginning to find out that plants do become resistant to certain poisons, just like ticks and everything else do. That's a great concern. We've been using Starane out there for a good many years and we didn't get very good results last year. I think we're beginning to have some plants resistant to Starane in particular.

**Mr BAILEY:** Is that the first time you've noticed a less effective kill?

**Mr TOWNSEND:** Yes, but a lot of things can affect it. Maybe the weather conditions and all that might not have been as good. So I don't know that we have it. It's just that it is a concern.



**Mr MITCHELL:** Basically on rural lots, people have just been drawing lines on their properties - starting at the source of the problem, drawing a line, doing the best they could to clear to that and then slowly eating away into the mass. It seems very difficult.

**Mr TOWNSEND:** That's about the only way you can do it unless you have unlimited funds. It's necessary to start upstream, I think. And you have to realise that when you're hitting this block and not that one, that one's going to get worse. So you've got to hurry up and get to that one, if you can, and move on because it's getting worse all the time.

**Mr MITCHELL:** It's almost sacrificing some of the land. Keep some of it and keep on moving.

**Dr LIM:** Thank you very much for coming to talk to us about this and giving us the benefit of your experience. If there are questions that we want to ask you in the future, would you allow us to ring you or to write to you for further information?

**Mr TOWNSEND:** Yes, sir!

**Dr LIM:** Thank you very much.

[Witnesses withdrew.]

**Dr LIM:** We will recommence the public hearing of the Sessional Committee on the Environment and welcome representatives from Aplex Pty Ltd. Other than in exceptional circumstances, witnesses appearing before this committee are not required to take an oath or make an affirmation. However, I remind you that information you give to this committee must be truthful.

Witnesses have the right to request that their evidence be taken in camera and/or remain confidential. Should this be the case, the committee would need to be apprised of the reasons before it could make any decision accordingly. Please indicate now if that will be the case for part or all of your submission. I understand that in the written submission you did write that it was commercial-in-confidence. Please express how you feel about the information that you are going to give us today.

**Ms TURNER:** The written submission that was presented to you is fine. For any financial details relating to the project, we would like a confidentiality agreement.

**Dr LIM:** We will go with the public part of your presentation first. You might then look at clearing the room if need be. For the *Hansard* record, please state your full name and the capacity in which you appear today.

**Ms TURNER:** My name is Corine Turner. I am a director of Aplex Pty Ltd.

**Dr FIELKE:** My name is John Milton Fielke. I am here in the capacity of a director of Aplex Pty Ltd and also in the capacity of a researcher in the development of agricultural machinery through my employment at the University of South Australia.

**Dr LIM:** I propose to open the floor for you to do your presentation, from which members might like to ask you some questions.

**Ms TURNER:** I'd like to first of all thank you for the opportunity to introduce the Aplex company to you. This committee has been set up to deal with an environmental disaster. It also is dealing with the world's largest single source of vegetable tannin. In a nutshell, we are able to turn an environmental disaster into a profit-making venture.

Aplex Pty Ltd was formed as a result of a South Australian enterprise workshop in 1996. Tony Metcalf heads our group. He has held senior accounting positions for the past 30 years. He has experience in accounting, financial management and financial systems ranging from senior administration to hands-on, detailed roles. He has experience in the financial policy-making area, corporate reporting and corporate budgeting. John Fielke who is with us this afternoon has a postgraduate degree in mechanical engineering. He has over 12 years experience in the development of machinery for agriculture and related industries. His work has won national and state awards for design, energy efficiency and engineering excellence. Yuri Obst is a chemical engineer with over 5 years experience in process engineering. For his work in re-engineering leather tanning and water treatment technologies, he was the recipient of the Young Australian award in 1995. Barry Wright, the fourth member of our company, has many years' experience working in the bush and brings to the company his outback knowledge and hands-on experience. I have a science degree in botany and biochemistry but 10 years ago I changed course and started a company called Bridgehead, involved in presentation graphics, digital imaging and multimedia. Bridgehead is now a leading company in this field. My skills also include sales and marketing. As a team, we are multiskilled. We have the expertise and the management skills required for success.

As further proof of our credibility, we have a prepared business plan which won the AusIndustry enterprise workshop award last year, 1996. We are aligned with the University of South Australia for ongoing research and development programs. We have links with the CSIRO and with the Central Leather Research Institute in Madras, which has well-known experts in tannin research and in manufacture. We also have the ability to develop other by-products.

The business opportunity that we are talking about this afternoon is the replacement of \$9m-worth of imported vegetable tannin on the domestic market, and competitive entry into the

international market with a very-high-quality and low-cost product. We plan to harvest the mimosa that is growing wild, process it on-site, and transport the dried tannin direct to market. We are very much aware of control strategies required for weed management and have planned to set up harvest areas which will maintain quarantine control measures. Quarantine control will cover such issues as how vehicles access the harvest areas, the transport of raw materials, the harvesting of mimosa and the type of harvester used, and seed recovery. There will be close contact with the public and government agencies for continual reporting and monitoring of control procedures.

Our market research has found a number of things. Firstly, there is no commercial production of vegetable tannin in Australia. We have the opportunity to develop the world's most cost-effective tannin production facility, right here in the Northern Territory. Tannin production has traditionally been set up in developing countries where they are now not replanting their plantations. I say again, we have the world's largest single source of vegetable tannin that is self-regenerating. Our product is environmentally friendly, replacing the heavy metals used in the tanning process and replacing the volatile carcinogens in wood glues. I myself am very interested in future by-product developments, such as the use of the fibrous wood residues in paper and chipboard, the pharmaceutical benefits of the leaves, and oil extraction from the seed.

We have financial plans within our business plan, including production and sales, financial stability and financial benefits. We can outline these but would prefer not to disclose any details until we receive clear legal and financial commitment from any relevant authority to proceed with our business strategy.

I will outline some key benefits. First of all, a new, world-class export industry and manufacturing industry for the Northern Territory. I see that as being the first and most important benefit, within this organisation. Secondly, relief to landowners - in particular, financial relief. Thirdly, revenue streams that can be spent on other weed management programs. In all, I believe the total benefits of this industry to the Northern Territory are quite considerable.

And what does Apex want? A number of things, obviously. We want to increase the awareness of the commercial uses of this resource. It isn't just a weed. It is a resource that is available. We would want exclusive access to the commercial exploitation of mimosa. We require support from local landowners and government agencies for access, for finance and for the creation of required infrastructure.

John and I are happy to answer any questions that you may want to put to us. I will take a couple of seconds, if I may, to hand around some samples that you might be interested in. This is a tannin extract. John, do you want to talk about them now or later on?

**Dr FIELKE:** That is a tannin extract that we have taken from the bark of the mimosa. That is a commodity in itself. The commodity is generally sold as a dried extract, as in that phial there. That is a raw product that can also be refined to different grades. The refining takes out the colour that's in there.

**Dr LIM:** You've mentioned the tannin content of the mimosa plant. How much you can extract from, say, a tonne of mimosa?

**Dr FIELKE:** It is very similar to other plants that are used for tannin production elsewhere in the world. *Acacia mearnsii*, I think they call it. We have found assays of *Mimosa pigra* to be very similar to their reported results. The samples we've had of timber showed that 30% of the weight of the wood was bark and 30% of the bark was tannin extract. So we're looking at 10% of the weight of wood that's sitting out there.

**Dr LIM:** Have you compared the seeds and all that?

**Dr FIELKE:** We haven't done any assays on the seeds or the leaves. We have concentrated on the bark at this stage, and shown that it is a viable project purely on the bark. The other bits are icing on the cake.

**Dr LIM:** Have you looked at any other plants apart from mimosa that might be useful in this regard?

**Dr FIELKE:** At the University of South Australia, we've been involved in leather research particularly with Mr Yuri Obst[?], who is one of the directors of Aplex. He was at a leather conference in America and met up with some other engineers from tannin-producing companies. They questioned him about this resource. They knew about the mimosa here in Australia and asked: 'Why aren't you guys using it? We go to all the trouble of planting and tending trees and keeping out the bugs'. It's not *Mimosa pigra* that they have. They have all the problems of growing their plants and they said: 'Hey, you guys have got this'. They'd done their research. They said: 'You've got 80 000 ha there - why aren't you using it?' Yuri came back and we did our work and found that what they were telling us was correct. At the beginning of last year we got some samples and did the business plan on it. In terms of the scale, I don't think there would be much else that is growing, particularly in a monoculture, that is ready for harvest in Australia.

**Dr LIM:** You are aware that the 80 000 ha are not all in a single monoculture? It is in patches, some in inaccessible country.

**Dr FIELKE:** Yes. We are interested in the large monocultures such as out on the Adelaide River floodplains. We've been led to believe there are 30 000 ha there, purely on a floodplain as a monoculture, with no trees.

**Dr LIM:** Have you thought of access to the floodplains? How are you going to get your machinery in there, or people in there, for harvesting?

**Dr FIELKE:** I personally don't see there being an engineering problem in that. I see that that can be solved. Tying up the logistics of it - working with the local landholders and the government authorities up here - to us is more of a hurdle than the engineering aspect. I'm not saying there is a barrier there, but ...

**Mr BAILEY:** Is coming to this committee your first major airing of what you are trying to do, or have you been to the Territory government? Where are you at with getting support, or are you just starting here after thinking about it?

**Dr FIELKE:** This is, I guess, the start of it. We worked through the business plan last year. October was the state finals and the end of November was the national finals and then we were just winding down after winning the national award for the best business plan. That created publicity. We didn't actually seek the publicity but - particularly in the Northern Territory - radio people picked up the press releases and then we had some interviews. Most people we've spoken to who are involved with mimosa said they had heard about our group and were wondering what Aplex was. People started contacting us from the Northern Territory. We were getting phone calls and then it was brought to our attention, just after Christmas in a letter from Wayne Mollah, that this committee was meeting. We thought this was probably an opportune time, when you're considering the future strategy for handling mimosa. We can see, if there is some joint venture with a body up here, that revenue from harvesting in the areas that are very largely covered in mimosa can be partly used to stop the spread of it.

**Mr BAILEY:** That explains why you haven't been through the whole process with Primary Industry and Fisheries up here, or with industry, looking for support.

**Dr FIELKE:** No, we haven't. We did have a meeting yesterday with the Minister for Primary Industry and Fisheries, Mick Palmer. At the end of that meeting he suggested that we put a proposal to him, so that will probably be our next step.

**Dr LIM:** In my reading about mimosa, dealing with the wood pulp, people in Thailand have tried to set up a commercial operation making chipboard. They find it very difficult because of the

high water content in the fibres and need quite a lot of glue or whatever to hold the fibres together. Now, if it could not work in Thailand, where labour costs are minimal, how do you think it will work in Australia?

**Dr FIELKE:** There are 2 issues there. One is the actual value of the fibres themselves. The fibres will be of value, depending on whether ... We haven't looked at the economics of that at all at this stage. We are just flagging that as an issue. There's 30 000 ha and several tonnes per hectare of wood pulp. That's a lot of material. I have also read about the Thailand experience. I think it was in that book in front of you. People tried it, but I don't know that they took it a long way. There hasn't been a lot written about that experience. It may have been only a small bit of dabbling in what may have been a large process. Whether there has been a lot of science has been very hard to gather.

The people who have been dealing with the mimosa problem - I'm not being disrespectful - have been purely plant and insect people. I don't know that there's been a lot of input from the engineering and chemistry side in the actual use of the product. It has been very much from the destruction side.

**Mr ADAMSON:** Let's look at mimosa as a cash crop for a moment. You're talking about 30 000 ha, used on an ongoing basis. Is that the best economic use of that land?

**Dr FIELKE:** DPI staff gave us a figure of \$2.50 per hectare as the worth of the land down on the floodplain, on income. I haven't had that verified at all. Other people I was speaking to this morning said it was too low. That might be \$2.50 with the mimosa on there. I'm not sure what the value of the floodplain land is. We do have some figures for other land but that is something we would like to keep confidential at this stage. If you would like to address that later we can say what the value is.

**Mr MITCHELL:** As you would be well aware, the landowners' main point would be to try to get rid of the mimosa by whatever means they can. Commercialising it is to me exciting - it's great, it sounds fantastic - but once you wade through your clearing and other processes I imagine that the land would be revegetated with grasses or whatever, and you would eat your way into the existing stock of mimosa. Do you see, down the track at some stage, setting aside land to cultivate yourselves? Have you any idea how long it would take you to get to that point and what the long-term aim would be?

**Dr FIELKE:** In a similar industry, the tannin production industry in South America, they have 40 000 ha of forests that they grow.

**Mr MITCHELL:** Is that mimosa?

**Dr FIELKE:** No, that's acacia. But it's 40 000 ha, so it's similar. That's a 10-year rotation crop, so they're harvesting about 4000 ha per year. Looking at a similar scale of 4000 ha per year, 30 000 ha here gives about 7 years' supply. Our venture looks at being very viable in the early years, so even if we can go through and do it just once, to us it will be a profitable venture and a worthwhile venture. If one strategy is to harvest it and then bring in control, there's no guarantee at this stage that there is even a control once you remove it from the floodplains. We could leave it to regenerate in certain areas and treat it and control it and control the seed bank within that area, but at this stage we're not looking for that. We'd be looking to make just a single pass over the area. That would make it totally viable, just on its own. Any double passes or working on it, while we're not looking for that at this stage, would be of benefit to the Apex's operations.

**Mr MITCHELL:** As you say, you would probably get 7 to 10 years out of the existing stocks because there are major blocks of it all around the place, not only the Adelaide River. The Wagait is another place that needs a lot of work done on it, and there are quite a few others.

**Dr LIM:** I'm trying to picture the equipment that will treat the harvested mimosa. The plant will be located in one position. There's not going to be a floating plant that will follow the patches of mimosa. Am I right in saying that?

**Dr FIELKE:** We would see it as a mobile harvester with a semi-fixed processing plant. It's not the whole processing plant, but just a mobile harvester which brings it back to a base station.

**Dr LIM:** Have you addressed the issue of prevention of spread by your vehicle tyres and your harvesting process? You are going to throw a lot of seed into the water systems and your trucks carting the harvested mimosa to your plant will be transporting a lot of seeds as well.

**Dr FIELKE:** We would see the processing plant being located at the actual harvest site, not being in a mobile situation, so all vehicle access would be purely on-site where the mimosa exists. In the harvesting stage, we could develop it so that seed recovery took place there. As with most other seeds, a lot of oils can be extracted. If we are looking at recovering the seeds, we would not treat them just as a product to be disposed of, but as another valuable commodity.

**Mr BAILEY:** You're saying there's a lot of the stuff and there must be some way to make some money out of it. The South American industry that you said covers 40 000 ha - is that where most of the world's vegetable tannins currently come from?

**Dr FIELKE:** There are 2 sources, South America and South Africa, that are exporters, but not the largest producers. The largest producer would be India, but it's still a net importer.

**Mr BAILEY:** I guess for you to get anywhere you have to be able to get into the market and take a reasonable share. Is it a market that is growing and can take more and more material, or do you have to put someone else out of business to do it?

**Dr FIELKE:** It is a growing market. We've gone into a fair bit of detail in market research. It's growing particularly with the push for environmentally-friendly materials getting into leather and chipboard.

**Mr BAILEY:** It's not being superseded by inorganic tannins?

**Dr FIELKE:** No, actually there's a push back the other way, away from the metal salts used in tanning. Also, we are on the verge of commercialisation of a whole new tanning process as well, which would also open up the use of vegetable tannins. Essentially, vegetable tannins are not used as much as the metal salts because of the time in tanning. But we are working on a new process at the university, and the commercialisation of that.

**Mr ADAMSON:** What is the process of refining or extracting the tannin?

**Dr FIELKE:** It's a leaching process, leaching and then a concentration.

**Dr LIM:** Like making tea and then evaporating it.

**Dr FIELKE:** Yes, similar to that, except on a very large scale. You're talking hundreds of thousands of tonnes of material.

**Mr BAILEY:** You're saying you want to go into major infestation areas because otherwise there's not enough around in an area. There's no use you going into isolated pockets to get a few trees here and there. So the issue of seeds being spread around in those areas is probably fairly irrelevant considering the millions that are already there. Are you looking at a large production plant? Is it something that you need significant amounts of power to run? In those areas there may not be major power lines. It is something that you'd need infrastructure to support? Or is it just an oversized machine rather than something like a smelting factory?

**Dr FIELKE:** It will be power for an oversized machine, not a smelter, that is required. You could either have generators on-site or a medium-capacity powerline going out there.

**Mr BAILEY:** Is it your expectation that that plant would remain in one position fairly indefinitely, or it would do an area and then relocate?

**Dr FIELKE:** Our idea at this stage is that it would be a mobile type of site. We'd be levelling the area and selecting the right site, above the floodwaters, and setting up there, but the plant would be quite easily moved. It's not a large factory type of thing that's immovable. It will be developed as a mobile type of operation.

**Mr ADAMSON:** That is what I was trying to ask before. What exactly is involved in the process? What machinery are you talking about?

**Dr FIELKE:** Maybe we could leave that until the end. We can show you some features of what we envisage.

**Mr BAILEY:** I gather that in the first instance you are not planning any sort of cropping of mimosa. You believe that in the foreseeable future you'll have a reasonably infinite supply unless someone comes up with a really good way of getting rid of it, which no one seems to have done yet. So you're not looking at cultivating mimosa in the short term.

**Dr FIELKE:** No.

**Mr BAILEY:** Mimosa is currently seen as a weed, and landowners and the government fund programs to get rid of it. Is that something that you have contemplated or are interested in - that your work be treated to a degree as eradication, qualifying you for a bounty or a back-subsidy or whatever to help get your process running or keep it running?

**Dr FIELKE:** Personally, we would like to see the project stand on its own 2 feet without subsidies, because you can never guarantee that subsidies are going to continue. If we put in the effort of setting this up, we want to make sure it is going to carry on and not be at the mercy of government or committee decisions on subsidy levels. Our immediate plan deals purely with tannin. Maybe, if things like seed recovery become an issue and other things are tacked on because they'd be nice to have but they're not adding to the commercial side of it, then I guess a subsidy or a bounty could help. We haven't worked in any subsidies because we can't guarantee that part. We're trying to look after our own destiny.

**Mr BAILEY:** Most of the land that has mimosa is pastoral property. You view mimosa as an asset, whereas most people see it as a pest. Are you contemplating paying landowners to take their mimosa, or them paying you to take it as part of the deal? Or is that also for later on?

**Dr LIM:** I think we are talking about it very superficially now because we just don't have the detail. Perhaps it is appropriate now to go into camera so that you can give us a bit more detail and we can have a more meaningful dialogue. Right now the dialogue is hitting a brick wall. Every time we come to something a bit sensitive, the whole discussion tapers off to a non-answer. Now, you are quite certain that the information you are going to give us is commercially very, very sensitive and you would not want to share it publicly. That being the case, I now call the committee into camera.

[Transcript CAMWEEDS.PT1 follows]

**Dr LIM:** All right. Thank you very much for that. If we have questions to pursue, I will take up your offer to come and talk to us some more. It's very, very exciting information that you have provided. It's really good.

[Witnesses withdrew.]

**Dr LIM:** I welcome representatives from the CSIRO, Dr Garry Cook and Dr Wendy Forno, who are appearing to give evidence. Other than in exceptional circumstances, witnesses appearing before this committee are not required to take an oath or make an affirmation. However, I remind you that information you give to this committee must be truthful. Witnesses do have the right to request that their evidence be taken in camera and/or remain confidential. Should this be the case, the committee would need to be apprised of the reasons. Please indicate now if that will be the case for all or part of your presentation today.

[Response inaudible.]

**Dr LIM:** For the record, please state your full name and the capacity in which you appear today.

**Dr FORNO:** Dr Iris Wendy Forno. I appear here for the CSIRO Division of Entomology to speak to this submission, which I understand everybody has received.

**Dr COOK:** I am Dr Garry David Cook from CSIRO Wildlife and Ecology. I will be speaking with Wendy to our CSIRO submission.

**Dr LIM:** Thank you very much for your detailed submission. I find it very interesting reading. You have the floor. Present your evidence as you see fit, after which the members will interact with you and ask questions.

[Overhead projector in operation]

**Dr FORNO:** Garry and I this afternoon will speak to these 6 areas [listed on the first overhead]. All of those are covered, initially quite briefly, in our submission. We hope to be able to answer any other questions that may not be covered in my presentation or Garry's.

[Overhead showing map of Australia]

As a general reminder that I guess we all need, the yellow indicates the potential distribution that mimosa could take on in Australia. I should add that although we think of it as a wetland weed, we have very good evidence that it can grow in very dry terrestrial conditions 1000 ft above sea level when sand from rivers is taken to construct roads. So really, we are quite lucky in the Northern Territory at this stage that we don't take sand from areas where mimosa is a problem and use it to construct roads around Alice Springs or worse still, perhaps, in Queensland. Quite specifically, [this slide] is a reminder that it is still on the move.

[Overhead showing map of the N. T.]

Since the 1960s, when there were relatively few infestations, we're now in the 80's and 1990s and see mimosa on the move, particularly to the East and in the Adelaide, Finniss and Daly River Systems. We need to be aware of this in our management strategy that we will speak to in this presentation.

One of the difficulties we have at the moment is in addressing the various types of infestations of mimosa in the Top End. To simplify it, we have these huge stands which are a constant worry and continually absorb large amounts of money trying to make them anything else but a large stand, and they persist. In addition, we have an increasing number of satellite outbreaks. The strategy that we want to put to you is that funds can be well utilised in treating satellite outbreaks and eradicating them. That is possible. Back in the large stands, we are going to need a really clever management strategy, incorporating every control option available to us, to reduce these stands to a tolerable level. And I will now speak to that term 'tolerable level'.

This is something that we really have to work towards, to know what is the tolerance of mimosa in various land uses and catchment areas - what are we using the land for. The tolerance level of mimosa will vary from zero tolerance to quite a large tolerance. Our proposal for the future is to find out and develop a strategy that addresses the tolerance level and the best management process to put in place to achieve this level. That will result, we believe, in the best use of funds for controlling mimosa.



We're not suggesting here that we are indicating the responsibilities of government or, in my next overhead, of land managers. But, in very general terms, we suggest that government does have a responsibility for research and the development of control options. Something that we actually don't have in place, but we do have a responsibility for, is the development of a strategy to integrate all these different control options. We are not at a point where we have a recipe which says: 'This is how you do it'. We have the control options in place. Now we need to develop how to integrate those to get overall management. And I think government also has the responsibility to prevent the spread. Preventing the spread comes back to those isolated satellite infestations, many of which can be eradicated. We have a nationally responsibility here because, as the first overhead showed, of where the weed could spread.

To control mimosa in the very large, dense stands, we see as the responsibility of land managers - I use the term quite loosely, in that and managers could be government, could be pastoralists, could be traditional owners - but they do not have the responsibility to control mimosa on their own. They will need expertise and advice from the appropriate government agencies. Land managers will also be responsible for controlling satellite outbreaks, but we believe they will need assistance from government to get rid of them.

I will speak briefly on one specific control option that is partially in place at this stage. This is the cheapest long-term option, biological control. With a suite of appropriate agents safe to release in Australia, we believe we can reduce mimosa from being a progressive weed to something less than that. At this stage we believe we are very close to being able to incorporate biological control into a greater management strategy, combining it with the other control options available. At this point in time, we have 10 of probably 16 potential agents that could be released into Australia. [Overhead showing time-scale of agent introductions] It has taken us something like 15 years - perhaps that's wrong, perhaps it's 10 years to identify the potential agents, but 15 to start to get them all processed. We have 10 in place. Another insect should be released in the next few weeks, and we have 6 or 7 others that we need to study. So there is an end point. I think that is important. Introducing biological control agents is not something that goes on for ever. We do have an end point when we will have processed everything that can be used safely in this country.

It's significant to realise that the output from this program bears a direct relationship to funding, and particularly the funding since 1991 when the [Federal] government, through the environment statements, gave additional money to biological control. The rate of putting agents out into the field has increased since that point in time. It was an appropriate time to put funds to biological control as we had most of the exploratory research in place.

The question is, of course, what's happening? In the last 12 months, we have had the first indications that we are getting a reduction in seed output. That, of course, is going to help us control our satellite infestations. We hope that in the future we will get fewer satellite outbreaks. And we do have a reduction in plant vigour in some areas. The significance of the 'some areas' would feed in to an overall management strategy, so that where biological control is going to achieve perhaps less than the desired level of control, we will combine it with another control option. But the long-term sustainability, I think, will be dependent on the success of the biological control.

**Dr COOK:** Talking about the issue of regional catchment differences, currently mimosa is mainly on the river floodplains across the top of the Top End and down to the south-west towards Western Australia. Here it's either in open situations, where it is replacing floodplain grasses and sedges, or it's invading as an understorey of swamp woodlands. It tends to be more in the river systems around Darwin where we see it in open situations. As we get down on the Daly River and further south and in the Arafura Swamp, we see it under a range of woodland situations that are not seen on the Adelaide or Mary or East Alligator Rivers. It's occurring on different soil types there. The point of that is that the control lessons we learn on one area aren't necessarily applicable to others.

It's interesting seeing it invade into the drier floodplains as we get towards Western Australia. It's occurring in situations where, based on our experience up here, we wouldn't expect to

see it. I think it's showing the potential of mimosa to invade much drier habitats than our few decades' experience might suggest. This ties into the next point, the potential spread. This is based on experience overseas, particularly in Thailand where it is a major problem on construction sites, as Wendy mentioned, where people are quarrying riverside sand and using it for road construction. There are some patches around Darwin where mimosa is behaving as a weed like that, but we really haven't seen much of it in the Territory. It is something that could become a problem here and could become a major problem if the weed got into more disturbed environments in coastal Queensland or perhaps into the Ord irrigation area. It is a major problem in Thailand around irrigation dams and ditches. Again, that could be a big problem in coastal Queensland, in the Ord area and perhaps, down the track, as the Daly area gets developed agriculturally. We need to keep in mind that the sort of control measures we are adopting on the large, open floodplains will not be appropriate to construction sites or irrigated cropping.

I want to speak to the lessons from the Oenpelli control program. As I'm sure you are aware, there has been a federally-funded program over the last half-decade to control the large stand that was at Oenpelli. These green bars on my overhead indicate the growth of the stand. It doubled in area every 1½ years through the 1980s. This was a period of very, very high buffalo numbers. The large amount of control kicked in at about the same time as the buffalo were eradicated by BTEC. I suspect that had the control program not kicked in there, we would have seen the rate of spread slow because it was spreading in response to heavy grazing pressure. I think that has been a real key to mimosa spread up here: the heavy grazing pressure that these floodplains were under for a long period under feral buffalo. In that way, it's just a local manifestation of the shrub-increase problems that are seen on sheep country in western New South Wales, with *Acacia nilotica* in Queensland and various other shrub and weed problems that are occurring in drier rangelands elsewhere in Australia.

**Dr LIM:** It's not the buffalo carrying the seed but the buffalo grazing, allowing no natural retardation of mimosa spread?

**Dr COOK:** Yes, the buffalo were suppressing the native vegetation by grazing it. For a long period, it was not possible to have fires on the floodplain because they were grazed very heavily. This is the typical pattern we see in drier rangelands in Queensland and New South Wales where the grasses are eaten out by stock. We don't get fires and that pushes the system towards woody vegetation which is less palatable. It is fire-sensitive when young but less fire-sensitive when older. I think mimosa is just one manifestation of that, that we are seeing up here.

Now that feral buffalo have gone, I think we have seen a slowing of the spread through the 1990s. It's still appearing farther out into the Arafura Swamp, down on the Fitzmaurice. But I don't think we're getting the rapid expansion of large stands that we saw through the 1970s and 1980s. That's not to say that we couldn't get into a similar phase again with increasing grazing of the floodplains, albeit by cattle with the live-export trade, or a re-establishment of disease-free buffalo herds. I believe there are still disease-free buffalo herds in eastern Arnhem Land, which could be an issue. I will come back to that question a bit later.

The point of the very rapid growth of the Oenpelli stand is the importance of getting in early when plants are found. If it had been controlled in the late 1970s, when there were just a few plants, it would have saved a lot of time and a lot of cost in herbicide application. It stresses the importance, as Wendy was saying, of controlling satellite outbreaks - 1 or 2 plants in a room-sized stand, way out on a new floodplain. It's very important to find them and control them. I think the first priority should go to those areas that have most to lose, and that is where there is one plant on a clean floodplain.

With the Oenpelli control program, up till 1996 there had been 7 or 8 years of a lot of herbicide going in there. There is a high requirement for ongoing control because the seed bank is just so large. That means a very great cost, and long term follow up even for small outbreaks of 1 or 2 plants. The experience from Kakadu National Park is that people are going back to the same sites for up to 10 years and still finding seedlings coming up from just a few plants that have seeded. There's an ongoing commitment. If you multiply that up to a large stand of several thousand hectares, it

makes for a very high cost. This emphasises the importance of prevention of spread, finding these new outbreaks and controlling them before they become large.

That brings me to my next point, the economics of control. This is very much a stylised diagram of it. We have here the benefit-to-cost ratio of mimosa control. A high value here is good, getting a lot of benefit for a low cost. Along the bottom axis we have the degree of infestation. Up here you'll have one plant in a 1000 ha paddock, whereas here it will be 1000 ha of mimosa in a 1000 ha paddock. There will be some sort of response curve where, when we're getting down to very large infestations, we're getting into uneconomic control. In Kakadu, a program of finding every plant in the park and controlling it before it establishes into a larger stand has cost somewhere between \$1.15 and \$2.50 per hectare per year through the 1980s and 1990s, whereas at Oenpelli, where we had a very large stand, the cost through the 1990s has been about \$140 per hectare per year. It was more in the first year and less thereafter, but it averaged to about \$140 per hectare per year. So there's about a hundredfold difference between the cost per hectare per year of controlling satellite outbreaks and the cost of controlling the large stands. It's very beneficial to find the small satellite outbreaks and control them. There is no question of the importance and benefit of that.

It is getting into the large stands where we start to run into economic problems. One solution to that has been transferring the burden from the landowner to the taxpayer through subsidies for control, bringing it up above this economic threshold. But such a scheme doesn't alter the fundamental economics on a society-wide scale. We are still operating a very costly control regime. That is what I believe we need to get away from. We need to totally alter the shape of this response curve, to get it up above this economic threshold. The ways to do that will be through pushing integrated control, such as Wendy talked about. It's not something we have in place as yet.

I feel that in some ways the situation is analogous to cotton production on the Ord River in the early days, when they had to spray for bugs 50 times a crop. It just wasn't economical, and cotton production failed. Then in the ensuing period they've developed much smarter ways to control insects. They can get away with just spraying twice and produce a very economical cotton crop. Similarly, we need to get much smarter about our mimosa control and reduce that cost, reduce the amount of chemical spraying we need.

Our recommendation is that the first priority needs to be the prevention of spread. We need an appropriate choice of control methods, and that will vary depending on the circumstances. In some places, biological control may be sufficient to get you below your tolerance level. In other places, chemicals may be the appropriate method. In other situations, we may be able to develop a synergism where one method may help another method work - for example, just chaining an area may reduce the mimosa stands from large, dense stands to young, succulent stands that may be much more attractive to the insects that are going to eat them because of their high nutrient status. Thereby we may have a cheap, long-term control. These methods are still to be worked out, but we need to get much smarter to have economical control of these large stands. The benefit will be the development of a low input to sustained control of mimosa.

The last issue I want to talk about is developing appropriate land management. As I said earlier, weeds generally are a symptom of high levels of disturbance, directly by people disturbing the land with vehicles or bulldozers, by heavy grazing or even by fire. We need to be aware of that and manage our land to minimise the risk of invasion by mimosa. If we can develop grazing strategies and burning strategies that reduce the susceptibility of country to mimosa invasion, it will go a long way towards sustainable land management of these floodplain areas. Into the future, we need to keep very much aware of the potential of it to be a very major weed in cropping areas and areas where soil has been moved around. At the slightest sign of it getting into those situations, it needs to be hit on the head very, very quickly.

**Dr LIM:** Earlier today, we heard a commercial proposition that landowners could invite a company to harvest mimosa - under controlled methods so that they didn't promote any spread of seeds - and by allowing the harvesting they can help also control effectively the dense stands of mimosa. Have you ever thought of that?

**Dr COOK:** This was harvesting for extraction of tannin? Harvesting alone won't control mimosa. By the next year the seedlings would have regrown. Probably when they harvested it they wouldn't be taking out the root stocks. It could resprout from roots. You could well have a sustainable harvesting industry, but it won't be controlling mimosa - and I don't think it would be in the company's interests to do it. I've heard about the proposal but I am uncertain of the ability to have a viable tannin-extracting industry. My understanding is that there are many other plants in the world with the common name of mimosa from which tannin is extracted, but that doesn't mean you could have a viable industry out of our mimosa. And in many other situations that I'm aware of, to be commercial such a plant really has to be planted and managed as a crop, rather than harvested from wild populations. I find it hard to imagine it being ...

**Dr LIM:** They're not proposing that the harvesting should be done in isolation. Mostly, the control measures that are currently in place would continue. They would go in and harvest what's there while eradication processes are still in place.

**Dr COOK:** If they could go through an area with a big harvester and cut it off at ground level, and we knew then that once the old woody stems had gone the insects could then hammer the regrowth, maybe it would be a viable option. It would require a bit of research to confirm that.

**Mr MITCHELL:** You put the buffalo down as one of the major causes of further infestation. Is there any scientific data?

**Dr COOK:** To the best of my knowledge there is no hard scientific evidence that it was buffalo, but we have a lot of anecdotal evidence. I certainly don't subscribe to the belief that buffalo helped suppress mimosa. We have some good arguments that that certainly wasn't the case, if that's where you're coming from.

**Mr MITCHELL:** Given that in the Oenpelli area the really heavy control measures didn't come in until the mid to late 1980s, which is when the buffalo were hunted out anyway, I would have thought that the control measures were the major factor in getting rid of the mimosa.

**Dr COOK:** I certainly agree with that. What I was saying is that had the control measures not come into place but buffalo had been removed, I think the rate of spread would have decreased because the native vegetation would have grown up much thicker. You could well have had more fires on the floodplain which could have killed mimosa seedlings, at least.

**Mr MITCHELL:** It's funny, you get 2 sides to the argument. A lot of older people around reckon the buffalo kept it down rather than spread it.

**Dr COOK:** One anecdotal story: I was doing a pot trial where I had a whole range of native grasses, and mimosa, growing in pots. A horse got in and ate all the grasses but didn't touch the mimosa. I think buffalo will eat mimosa if there's nothing else, but they would prefer grasses.

**Mr MITCHELL:** Particularly the young shoots as they're coming up.

**Dr LIM:** Before the thorns start to appear.

**Mr MITCHELL:** And before they get to seeding.

**Dr COOK:** These sorts of discussions come up on arid lands in New South Wales as well. I think the picture is fairly clear that the woody weed problems generally in Australia are in response to long periods of heavy grazing suppressing the grass growth, suppressing fires and favouring a less palatable, woody species. Stock may browse on it occasionally, but on the whole they're selecting for a less palatable species.

**Dr LIM:** In the map there, showing all the dense stands of mimosa, which area do you think now is most important to deal with - apart from satellites which are important. Do you say: 'We have

to deal with this particular patch because it's the one that's causing a lot of dissemination of satellites'?

**Dr FORNO:** Obviously, if you work back from where the satellites are, there's bound to be a main stand. So you could say: 'If that's contributing to the satellites, that's part of the program to prevent spread'. But more seriously, it comes back to a need to have people thinking about what is their tolerance of mimosa, not about how we are going to get rid of every plant. It cannot be eradicated. We really do need that message to go out strongly so that people - and I say 'people' in terms of all land managers - ask themselves: 'Is it just a nuisance plant? If I could get it back to where I have access to lagoons or whatever, could I tolerate it? Or do I need every square metre of that land for a particular crop or for grazing?' Once that decision is made, it is going to be possible to prioritise which areas to control first and by what methods.

In the meantime, in the case of biological control, the insects are going to be spread over the whole infestation. That is the aim of that program, without priority. There are practicalities, but there's no priority. The biological control agents will do their thing and we will come behind, making an assessment of their impact. From that, we will know where they are most effective. If you can couple that with some decision-making - and I don't think that's something that has been seriously done in the Territory - to look at something less than eradication, at tolerance ...

**Mr BAILEY:** Isn't there a problem in defining tolerance? You seem to be saying that it is a reverse tolerance - that above, say, 50% you have to tolerate it, below 10% you have to get rid of it, and that's the dilemma you have. Once it gets above a certain level, you're almost indicating that other than trying to get biological control and maybe throwing a match in occasionally, it's probably not worth trying to do a lot more.

**Dr COOK:** I guess the hope in the future is that, with a combination of biological control agents being released and smarter practices, we will have the mechanisms to make it more economical to control those large stands, so that it isn't a walk-off situation. If the biological control agents do what we hope, it will bring it back to the situation on its home range in Central and South America, where mimosa is a short plant in small clumps here and there. If the agents can get it back to that, everyone will be very happy.

**Mr ADAMSON:** Where are we with those biological agents as far as the research is concerned? We saw some evidence last year of what is being done.

**Dr FORNO:** We believe it will be 4 years before we have every agent through quarantine that can be released. That does not mean that it is 4 years to when they will be most effective. Effectiveness of agents takes, in round figures, 5 to 10 years. That sounds an enormous length of time, but that is the fact of the matter. Some take off very quickly, others are much slower. In 4 years, we believe, we will have processed everything available. Then we are looking at anywhere up to 5 years after that to conservatively see their full effect. Although the program has been going quite a long time, that graph I showed indicated that it's really only the last 5 years that a lot of the agents have been out. Some are only out for months. So they have still got 5 to 10 years ahead of them to show what they can do. The encouraging sign is this boost of activity and damaging impact that we had last year. We do have a visible reduction in seed set in some areas and a loss of plant vigour. It's not sufficient, but it's the first sign. That is encouraging, given that some of the agents have been released for only 12 months or 2 years.

Adding to what Garry was saying, if we can get something down to smaller clumps we would encourage in some cases the eradication of those smaller clumps by another control measure - but only where you know it is not going to come back. So it's a long-term strategy.

**Mr BAILEY:** If you look at it in clumps, whether they're 10 ha or 100 ha, do you have a view of percentage mimosa infestation where a method other than biological controls is not worth while? Above 50%? 20%?

**Dr COOK:** If I had a 100 ha paddock with 20 ha of mimosa on it, maybe I could earn enough money off the remaining 80 ha to keep me happy. But if that 20 ha was going to expand, doubling in area every 1½ years into the remainder of the paddock, I would want to control it. If it was going to sit there by itself and never move, I might live with it. There is a dynamic question there.

**Mr BAILEY:** So there are 2 aspects of control. As you were saying, in Kakadu because they do not have much it is relatively cheap to go in and rip out the few plants that they find. At Oenpelli there were large, dense infestations, and a lot more effort had to be put in. In the scenario you gave, of a 100 ha paddock with 20 ha of infestation, is there is a cost-effective non-growth strategy? In other words, can you keep it within bounds reasonably cost-effectively?

**Dr COOK:** I think you could. In this mythical 100 ha paddock, if you were spending \$2 a hectare in your clean 80 ha, maybe you'd be able to keep it from spreading in there for the indefinite future and just write off the remaining 20 ha. It would be a somewhat simple economic process to work out where it becomes effective to spend the \$200 a hectare for so many years to wipe out that remaining 20 ha. Given the hundredfold difference, you could be controlling satellite outbreaks in your 80 ha for 100 years.

**Mr BAILEY:** Is there a significant difference in the nature of the plants? When you go into some the mimosa infestations, you almost go 'boomph!' when you come up against them. How hard is it to control it at the edges? It is it a lot cheaper to control the edges to stop it spreading than it is to get rid of the dense infestation?

**Dr COOK:** I think it would be. The difficulty is that mimosa can spread in a few ways. One is the hen-and-chickens way, where you get a single plant and then you will see seedlings around it and it will gradually spread out. Or you can get large areas of it where a lot of seeds have come down and they'll all germinate at once. That situation would be much more difficult to control than the hen-and-chickens situation. For example, where you go over the Adelaide River causeway, on the left there was a boundary where the mimosa had been sprayed and kept away for a long period of time. Then there were a couple of years when there was very heavy buffalo grazing on this side of that boundary. Within a year, there was a lot of mimosa coming up. There were huge stands through there that needed control. I think it could be very difficult to keep it under control, because you're starting to control large strands there.

**Mr BAILEY:** In your submission, you talk about the herbicide control often followed by burning, ripping, rolling, chaining and chopping, and indications that mechanical and fire alone can give similar levels of control to that provided by herbicides but at a lower cost. One of the things that we raised with one of the pastoralists, earlier on, was that at the moment you can only get subsidies for herbicides. You don't get paid on acreage. You don't get paid on a result, you just get paid on how much chemical you buy. You don't get any other subsidies for ground clearance. He seemed to think that that was a reasonable way to go. You seem to be saying here that mechanical, fire and other procedures may cost a similar amount for the results you get. Have you any thoughts on whether the government is putting the money in the right way by subsidising herbicides but nothing else?

**Dr FORNO:** It's difficult for us to answer that. But if the subsidy was a true subsidy for getting rid of mimosa, regardless of the control option used, then there is room for consideration.

**Mr BAILEY:** Do you have any thoughts as to whether it would be possible to subsidise on results, and/or the cost of doing things? One of the dilemmas is that, if you said people could get paid for on-ground stuff, they would say, 'We went out there and spent 20 hours so we want the money' although they didn't do anything, whereas if it's for buying herbicide and you have the receipts from the big companies, then obviously you're going to use it for something.

**Dr COOK:** Theoretically, if you decide it is good to subsidise, I would say it would be better subsidising control, however that control is put in place - be it chaining the lot, buying a box of matches, or buying herbicide.

**Dr LIM:** Trying to quantify it, that's the hard part. As the pastoralist said: 'How do you police it?'

You commented on biological control and the effectiveness that appears to be occurring in the last 12 months. You have a finite number of biological controls that you can use. Do you see a time when biological control will take over from every other means in a Northern Territory context?

**Dr FORNO:** No, I can't give you a time. The most likely outcome is that in some areas biological control will work such that people will say: 'I can tolerate that'. In other areas we may find that we can get a better action from the biological control by using another control measure first, such as shifting the aged stands back to the younger growth. This is the situation where we've seen the first indication, last year that biological control agents can reduce seedling growth. They should have flowered and set seed, but they were held in check.

**Dr LIM:** So you'd use physical and chemical controls and supplement that with biological controls?

**Dr FORNO:** Yes. I would be the last person to suggest to the committee that we stop the other forms of control. That would be incorrect procedure.

**Dr COOK:** And it will always be important to prevent the spread interstate and into new situations.

**Dr LIM:** Looking at the virulence of this pest weed, I would have expected it to go off like wildfire. It doesn't appear to have spread as fast as I thought it could. Is that because of the control measures that are in place now, or the biological controls? What has stopped it from going into all rivers by now?

**Dr COOK:** I think a lot of it has been spread by human activity, and the human pathways just aren't there on the floodplains. Now that the buffalo-catching days are over, we don't have lots of vehicles going all over the floodplains. We don't have a road going through inward from the infestations.

**Dr FORNO:** Nor a river.

**Dr COOK:** If we were in a situation as in Asia, with large communities and rice paddies and movement of people through all these areas, then it might well have spread much more rapidly.

**Dr LIM:** So the suggestion that it could extend from Broome to northern New South Wales is more hypothetical than practical?

**Dr FORNO:** I think if it made the first jump into eastern seaboard Queensland, then because of the greater movement of people and movement of products ...

**Dr COOK:** And agricultural machinery.

**Dr FORNO:** ... there would be contamination. We're lucky, if you like - I've just put my Queensland hat on - that to some extent we have land barriers between the current mimosa infestation and other river systems. But I don't really think it's too hypothetical. We only need one contaminant to come across.

**Dr LIM:** Earlier you suggested that it might go down to Alice Springs. Are you suggesting that this would live in habitats such as central Australia?

**Dr FORNO:** It wouldn't do as well. But I suggest it would survive quite cold winters, provided that at some stage the plant gets adequate rainfall. Survival in very low rainfall areas, I would question. But certainly it doesn't need wet feet, put it that way.

**Mr BAILEY:** Have you had any involvement with looking at the ecological effects, other than the control aspects, of the pesticides that have been used? Are they having any impact on other plants or animals?

**Dr COOK:** I think the direct impact of the herbicides on animals is fairly negligible. The major impact is habitat change - whether you've got mimosa or whether you haven't. That's the major impact on animals. Some of the herbicides are having impacts on native plant species - non-target plants. Where you have mimosa in open grasslands, that's fine. But where you have it growing under trees, be they melaleucas or gutta percha or Leichhardt trees, you can get problems where the herbicides aren't sufficiently selective. And some of the native grasses and sedges appear to be sensitive to some of the herbicides. The Oenpelli experience is that the native herbaceous vegetation, the grasses and sedges, can come back quite well after herbicide treatment of mimosa. But I wouldn't extrapolate that to all areas and all herbicides at all times. It's something that we need to constantly keep a watch for, the selectivity of our herbicides. And that will vary with the situation.

**Mr BAILEY:** Oenpelli is one of the areas that has had the heaviest inundation with herbicides etc. Are you aware of any studies with regard to build-ups of any types of herbicides over time? Are they all being flushed out, or do they largely have a short life-cycle?

**Dr COOK:** Largely a short life-cycle. In some places at Oenpelli that for various reasons received very high doses of Graslan and the active ingredient Tebuthiuron has remained at high levels in the soil for long periods. And we haven't seen much revegetation of anything - it's bare earth. Such areas tend to be on the margins of the floodplains, where you are coming off the clay soils on to the sands and loams of the uplands. I think the lesson from that is, if we start to shift mimosa control to other situations, where the floodplains are of lighter-textured, sandier soils, we could get problems with residues and toxic levels that we don't see on the clay soils.

**Mr BAILEY:** You mention in your submission that mimosa is one of a number of weed problems, another of which is para grass. You say that could be just as big a problem, if not bigger in some ways, if it continues. Do you have any thoughts on whether mimosa is being seen as a bigger problem than it really is, taking peoples' eyes off the general weeds problem so that all of the resources are going into solving mimosa while other things are getting out of hand?

**Dr COOK:** I don't see that that's saying that mimosa is overstated. The principle we should be aiming for is sustainable land management to prevent weed invasion. The thing with mimosa is that everyone considers it a weed. Para grass is an environmental weed that affects natural ecosystems and the use of country by water birds, for example. But pastoralists may be quite happy with it. So we have a conflict-resolution issue there. By some it is viewed as a weed. Some view it as a good pasture. It will vary with the situation. But often it is seen as a weed, and it is a major problem.

**Dr LIM:** Apart from tannin, is there any other use you can make out of mimosa?

**Dr COOK:** If you could make use out of it, the Thais would have done it, or the Vietnamese.

**Mr BAILEY:** Do they have the dense stands that we have, like in the Adelaide River area?

**Dr FORNO:** I am currently involved with mimosa projects in 4 countries in South-East Asia. The enormity of the problem of mimosa in Thailand continues, basically. And we are now becoming really aware - as are the Vietnamese - of the problem they have in their country, particularly up towards Cambodia. We understand that the infestations in Cambodia and Laos probably rival or are greater than those seen in Thailand.

**Mr BAILEY:** So, huge monocultures of mimosa, not just around the borders of rice paddies?



**Dr FORNO:** I guess if they mechanised the production of rice in Vietnam, we'd see a lot more mimosa. At the moment, with a huge labour force, each plant gets pulled out. The fact that they actually plant it to keep out pigs is another issue. It is the labour force that keeps it out. Otherwise it would be just like this. I should say that at the moment it is believed that the potential infestation of mimosa in Wasur National Park in Irian Jaya would make our infestation look tiny. There are huge floodplains there being invaded by *Mimosa pigra* and there is nothing to stop it. It's becoming a national issue.

**Mr MITCHELL:** I have a bit of a bone to pick about this particular statement in your submission. You say: 'The increase of live cattle exports from Darwin may increase grazing pressure on the floodplains from agistment and breeding operations, while the possible development of a disease-free buffalo industry could increase the rate of expansion of mimosa'. Given that the buffalo industry people in particular are very responsible people who are very strictly aware of the management of the industry, and also given that the feral herds are in areas of non-infestation by mimosa, it worries me that you come out with a statement like that.

**Dr COOK:** I wasn't casting aspersions on pastoralists' management of their herds. All I was saying is that weeds generally thrive on disturbance. We need to be aware of the weed problems that occur generally throughout Australia in response to grazing pressure, and constantly keep up the issue that pastoralists need to manage their herds and their grazing pressure in such a way that the land isn't susceptible to mimosa or any other weed invasion. That is all I am saying there - that it's a possibility in the future.

**Mr MITCHELL:** I don't mean to be antagonistic. It just seems to me to be a bit of a throwaway line without any real evidence to back it up. I think people in the buffalo industry, particularly, probably will be a bit concerned about a statement like that coming from someone like yourself. Have you spoken to people within the buffalo industry about it?

**Dr COOK:** No, I haven't. I'm not criticising the buffalo industry. I'm sure they are aware of the problem. It just needs to be continually flagged that we need to be careful of management of grazing animals - that includes feral pigs, which are a big issue - and manage them in such a way as to make the land less susceptible to mimosa invasion..

**Dr LIM:** Thank you once again. I hope that you can make yourselves available if we have to put other questions to you at a later time.

**Dr COOK:** Certainly.

[Witnesses withdrew.]

**Dr LIM:** I don't know you, sir - not personally, that is. Welcome to the sessional committee's hearing. Other than in exceptional circumstances, witnesses appearing before this committee ...

**Mr WESLEY-SMITH:** I heard all that.

**Dr LIM:** You heard it earlier and are happy with all that? There is nothing you wish to have in camera or kept confidential? For the record, then, please state your full name and the capacity in which you are appearing before the committee.

**Mr WESLEY-SMITH:** Robert Nuttall Wesley-Smith, private citizen unfortunately, from my point of view. I was for nearly 30 years a Department of Primary Industry animal production scientist or agronomist or whatever it may have been called.

**Dr LIM:** Present what you wish to tell us, after which we will interact with you.

**Mr WESLEY-SMITH:** I'm sorry I didn't prepare a proper submission. I've been meaning to. I was in the field in the area where mimosa was first established. I got to know about it through observation and also from colleagues in the department, particularly Lofty Pickering and Donny Edwards, who used to control it between Tortilla Flats, which was where I lived, the research station that your government closed down, and the Adelaide River where the Daly River road crosses. Young Ian Miller came and stayed with me after I'd been there for a couple of years and I guess he learned about it there too.

The main area of education and sharing of information was the Animal Production Society at that stage. We used to have public meetings. We had one at Noonamah on mimosa. I was the secretary and did the minutes. I just wanted to record the fact that it was known, in 1969, and I recorded it there, certainly as my opinion, that it had a potential ... I will just read that bit: 'We know that it is a very prolific seeder. If eradication is delayed much longer eradication may become virtually impossible'. I criticised the procrastination and said it should have been possible to eradicate it by then. I believe it was only on the Adelaide River, with perhaps a couple of little stands on the Finnis, from sand that had been taken there, and there were a few plants in the Botanic Gardens or around that area in Darwin. Ian has researched this now for a long time, so he would know. But in general terms that's correct.

People living out in remote areas often are the people who observe things first but they are not taken notice of. Certainly in the public service environment then, and I imagine today, public servants are not encouraged to speak out. There were people who knew about it, like Donny Edwards and Lofty Pickering and also their boss, Ernie Friend. It will probably be on the file somewhere that I wrote to him about using a helicopter and one thing and another. Ernie would never go public on these things and perhaps that didn't encourage the decision-makers to put more resources in.

I believe the program which the department ... Two guys got to know every stand - every plant, really - down the river. That was privatised. It wasn't done by the person who got the job. The plants then seeded and it was sort of thought: 'Well, we'll give up'. There may be variations of that as a general statement by the department people. Nobody worried much about it because it was a kind of quiet thing. It went around and it seeded, and then we had a ginormous flood in the early 1970s. I think Ian's recorded it in his paper. (This year reminds me of it a little bit. Floods like this year's are almost certainly going to spread seed around. That's just a warning.) And that's when it sprang up everywhere and the battle was lost, really.

I maintain an interest in it. I've had articles in *Rural News* magazine and so on, right to the end, and even looked at trials and things, but obviously it is a massive job at this point.

A couple of quick points from the previous discussion. It could probably be harvested for methanol, but whether you had enough in a given place for that would be a theoretical thing. And feral pig control - one of my interests was fencing for feral animal control. Nobody does it, really. Pigs are just put in the too-hard basket like mimosa. There was an opportunity with the BTEC

program, I think, to do a lot of fencing which would have helped control feral pigs, but it wasn't taken up.

I was getting out to the Daly River region and out to Peppimenarti and out to the Fitzmaurice region at one stage in the 1980s, trying to encourage Aboriginal people to be aware of mimosa and report it. They reported a stand on the river out there at Peppimenarti and then I found out that they'd known about it for about 3 years. By that stage it was quite a big infestation. Lofty Pickering sprayed it. I imagine it probably spread from there down the Moyle. I don't know the subsequent events.

Local people need education to know what to look out for and they need to be motivated somehow to try to control things at the satellite stage. Of course, just about everything under the sun has the potential to become a weed. Now there are any number of weeds in the region, in the rural area and so on, which is where I'm now living. That's about it, I suppose.

**Dr LIM:** You heard the previous speakers say why they thought the weed had not spread interstate. Have you any other thoughts on why it hasn't spread farther than it has?

**Mr WESLEY-SMITH:** It's probably meeting the cane toads coming up from Queensland! The seed is carried by water and heads north with the rivers. But it could be carried by cars. That would be a very dangerous thing, I think, seeds catching in vehicles. I'm not sure if it's spread by birds. I have my doubts. If it got into the Roper it would start to head down that way. And if it got along the highways ... I know part of the strategy was to try to spray away from the highways.

I'm sure there's a lot in the idea that undisturbed vegetation will restrict its establishment. Para grass played that role, I think, to a large extent. If you're going to get rid of mimosa you've got to put something else in its place. If the native things can grow up thick, that's fair enough. But para grass might be a less worse option than mimosa. At least the para grass we've got doesn't seed. It spreads by runners, not by seed. It's a fair bit different to mimosa.

It would have been very interesting to hear more from Wendy Forno about infestations in our near north. If it's going to take over New Guinea, West Papua, probably Indonesia, South-East Asia, there's even more onus on us to do more about it, I think, with education programs and control programs and getting the biological agents over there. The people over there need to be educated. Perhaps there can be alternative things promoted to control pigs in rice fields, instead of mimosa. We sort of came up with the problem, we should really do more to help control it, I think.

**Dr LIM:** In the Northern Territory at present, now that it has got out, as you've said, are we doing enough? Are the land managers doing enough to control the satellite infestations that are coming through?

**Mr WESLEY-SMITH:** It's hard for me to say. I think you have to prevent that first plant from seeding. I think you'd have to map very accurately. Maybe that has been done. I'm not up with all that stuff. If it's out of Kakadu, through that expensive effort that has gone into it, then that shows the way, really. There are lots of areas and pastoral properties which are just neglected. And you see plants in Darwin city. I don't suppose it matters so much, but you see them there. I think that once it is in the country, the only way is by management. If someone on the land wants to look after it and get some productivity out of it, it is in their interests to control mimosa.

But certainly, I agree that if you have a dense infestation and you can manage that, you don't try to get rid of it. You look after the satellite side of it to start with, and hope for the biological agents to be really effective. It will be interesting to know what level of production of mimosa will stay around and whether it will go through cycles. The ideal thing would be for them to eat the last mimosa plant so that they all die out, but I don't suppose that will come.

**Dr LIM:** In Mexico, where it's native, it's obviously living very well in balance with the biological controls.

**Mr WESLEY-SMITH:** The worry is that this implies that the whole of North Australia will have a low-level infestation of mimosa. That's really an economist's and biologist's scenario, it's not a social ... I guess I'm trying to present, in a way, more of a social history. I was very interested in the biological side of it but, as I say, I'm out of it and a bit distant from it now.

**Dr LIM:** Thank you very much for coming in today to speak to us. If we have anything to address to you at a later stage, I hope you will allow us to do that.

**Mr WESLEY-SMITH:** Sure.

[Witness withdrew, public session closed.]