T R A N S C R I P T

LEGISLATIVE COUNCIL ENVIRONMENT AND PLANNING COMMITTEE

Inquiry into Ecosystem Decline in Victoria

Melbourne—Tuesday, 23 February 2021

MEMBERS

Ms Sonja Terpstra—Chair
Mr Clifford Hayes—Deputy Chair
Dr Matthew Bach
Ms Melina Bath
Dr Catherine Cumming
Mr Stuart Grimley
Mr Andy Meddick
Mr Cesar Melhem
Dr Samantha Ratnam
Ms Nina Taylor

PARTICIPATING MEMBERS

Ms Georgie Crozier
Mr David Davis
Dr Tien Kieu
Mrs Beverley McArthur
Mr Tim Quilty

WITNESS

Dr Kylie Cairns, Centre for Ecosystem Science, School of Biological, Earth and Environmental Sciences, University of New South Wales *(via videoconference)*.

The CHAIR: I declare open the Environment and Planning Committee public hearing for the Inquiry into Ecosystem Decline in Victoria. Please ensure that mobile phones have been switched to silent and that background noise is minimised.

I would like to begin this hearing by respectfully acknowledging the traditional custodians of the various lands which each of us are gathered on today and pay my respects to their ancestors, elders and families. I particularly welcome any elders or community members who are here today to impart their knowledge of this issue to the committee or who are watching this broadcast of these proceedings.

I would also like to welcome any members of the public that might be watching via the live broadcast of these proceedings today as well.

Just before I go on, I will take this opportunity now to quickly introduce my fellow committee members that are sitting here and also that are joining us via livestream. I have Cliff Hayes, here to my right, I have Melina Bath and Matthew Bach and my name is Sonja Terpstra, and I am the Chair of the committee. Also joining us via Zoom we have Stuart Grimley.

Also to the witnesses that are appearing today: all evidence taken is protected by parliamentary privilege, as provided by the *Constitution Act 1975* and further subject to the provisions of the Legislative Council standing orders. Therefore the information you provide during the hearing is protected by law. You are protected against any action for what you say during this hearing, but if you go elsewhere and repeat the same things, those comments may not be protected by this privilege. Any deliberately false evidence or misleading of the committee may be considered a contempt of Parliament.

All evidence is being recorded, and you will be provided with a proof version of the transcript following the hearing. Transcripts will ultimately be made public and posted on the committee's website.

Also just joining us is Andy Meddick as well, who has just come into the room.

As you are appearing remotely, if you could just please state your name and organisation one at a time so that we can verify your identity on screen.

Dr CAIRNS: Dr Kylie Cairns from the University of New South Wales.

The CHAIR: Thank you, Dr Cairns. We welcome your opening comments for your evidence today, but if I can ask that you please keep your opening statement to a maximum of 10 minutes to ensure we have plenty of time for discussion. Could I please remind members and witnesses to mute their respective microphones when not speaking in order to minimise any interference. Dr Cairns, if you have any technical difficulties at any stage, please disconnect and dial back in via the teleconference. Over to you, Dr Cairns. Thank you.

Visual presentation.

Dr CAIRNS: I would like to thank the committee for inviting me to participate in this important inquiry into ecosystem and biodiversity decline in Victoria. I will be limiting my opening statement to the value of predators in ecosystem resilience and dingoes as a threatened species. The main message I would like to impart is that efforts to protect and restore ecosystems in Australia must include the conservation and recovery of top predators, which in Australia is the dingo. Additionally, I wish to touch on how current legislative protections afforded to dingoes in Victoria as a threatened species are in practice ineffective.

The loss of top predators across the world is suggested as a key factor in trophic downgrading, which is essentially ecosystem decline. The re-establishment of top predators like wolves and dingoes and lions and tigers can assist in ecosystem restoration and build resilience against climate change and biological invasions. Dingoes are Australia's top land predator. They play an essential role in regulating large herbivores like kangaroos and wallabies but also invasive pests such as feral goats, and they also play a role in suppressing and

mediating the impact of invasive predators such as foxes and feral cats in some cases. The presence of dingoes can be beneficial to many small marsupials as well as reptiles and birds, because of their impact on foxes and cats. Dingoes are also incredibly important to traditional owners, or First Nations people, many of whom consider dingoes to be a totem animal.

Dingoes were listed as a threatened species in Victoria in 2008. Genetic evidence collected in 2016 as part of some of my research has highlighted the importance of Victorian dingoes, because they are an example of the south-eastern ecotype. They are restricted to south-eastern Australia—New South Wales and Victoria mostly. This ecotype is particularly at risk because of the use of lethal control across its natural range and the increased prevalence of dingo-dog hybridisation in the wild. As you can see on this map, the south-eastern dingo type is quite restricted in its range.

The 2010 dingo action statement identified that the major threats to dingoes in Victoria are habitat loss and fragmentation, lethal control as part of pest animal management, as well as interbreeding with domestic dogs. For example, there has been concern for some time that less than 1 per cent of the wild canids in Victoria are pure dingoes and that most of the wild canids have very little dingo ancestry. The main objective of the dingo action statement from 2010 was to increase the number of dingo populations in the wild, secure populations or habitat from incompatible land use and increase community awareness about dingoes and their value to the ecosystem.

In Victoria a wild dog is defined as 'any dingo carrying dog ancestry'—i.e. a dingo hybrid—'or feral dog'. Genetic study of wild dogs in Victoria indicates that a majority of the animals carried significant dingo ancestry—greater than 75 per cent—and approximately 17 per cent of the wild dogs killed in Victoria were pure dingoes. More than 40 per cent were more than three-quarters dingo. These animals are not wild dogs, their ancestry is majority dingo. Less than 1.0 or 1.5 per cent of all DNA-tested wild canids in Victoria were feral dogs. This indicates that feral dogs are not an established pest in Victoria and do not warrant widespread lethal control. Instead, management should focus on responsible pet ownership. In other parts of Australia the term 'wild dog' is used to describe lethal control of our native predator, the dingo. However, there is no scientific evidence that the presence of dog ancestry in dingoes significantly alters the ecological role of dingoes—in other words, if it looks like a dingo and acts like a dingo, it is a dingo.

In the 2019 Royal Zoological Society symposium about dingoes it was the majority opinion that that is exactly right—that if it is looking like a dingo and acting like a dingo and genetically being mostly a dingo, it is a dingo. Dingoes, including those with dog ancestry, are important to conserve in their own right as a native species but also for their valuable role in Victorian ecosystems. Furthermore, unpublished genetic research that I have been carrying out has identified that previous methods used to estimate dingo ancestry are biased. The method that I use looks at over 100 000 genetic markers, compared to previous work that looked at 23 markers. I have observed that previous work overestimated the prevalence and extent of dingo-dog hybridisation in Victoria, and that should be of significant interest to this committee, given the importance of dingoes to the ecosystem. Additionally, we have uncovered that there are several new ecotypes of dingo in Victoria that are of high conservation value because they are not observed anywhere else. There have been recently four reports of pure dingoes rescued from the wild, and that highlights the urgency of an updated genetic survey of dingoes across the state to inform conservation actions and update our knowledge about Victorian dingoes.

In general, there is very little difficulty distinguishing dogs from pure dingoes in the wild. The difficulty lies in distinguishing dingoes with and without dog ancestry, particularly where the amount of dog ancestry is quite small, as in most Victorian dingoes. New research published last week highlighted that dingoes can have a range of coat colours and that colour should not be used to assume that animals are dingo-dog hybrids. Genetic information should be used instead to identify where pure dingo populations are, assess how management practices might be driving dingo-dog hybridisation and assess the frequency and extent of dingo-dog hybridisation in the wild in Victoria. This information is needed before an evidence-based conservation plan for dingoes can be developed.

Despite dingoes being listed as a threatened species in Victoria, they are essentially unprotected across most of the state. In 2018 an order in council declared dingoes unprotected across all private land in Victoria and all public land within 3 kilometres of a private land boundary. There is also an active wild dog bounty in Victoria paying $120 a scalp. Ongoing aerial and ground 1080 baiting of dingoes under the nomer—or name—'wild dog' continues inside national parks and on private land within that buffer area. Additionally, ground baiting

programs targeting foxes inside of national parks may be a risk to dingo conservation, because dingoes will consume and be poisoned from 1080 fox baits. Essentially the legislative protections for dingoes as a threatened species in Victoria are voided by the term 'wild dog', and lethal control continues to target them across their range. Aerial baiting particularly increases the risk of dingo-dog hybridisation by fracturing pack structures as well as altering the amount of dingoes in the wild. Lethal control of dingoes, as well, has implications for ecosystem decline because mesopredator release of feral cats has been demonstrated following aerial baiting of dingoes. Essentially the Arthur Rylah Institute found that after aerial baiting dingo abundance dropped by 27 per cent, as well as fox abundance dropping by 23 per cent, but feral cat abundance and density increased by 21 per cent.

So essentially I have made three main points. Efforts to restore ecosystem health and function in Victoria must properly balance the need to protect the function and identity of dingoes in the ecosystem. Aerial baiting and wild dog bounties are incompatible with the conservation of dingoes in Victoria. Continued lethal control of dingoes under the name 'wild dog' harms ecosystem resilience and the recovery of dingoes as a threatened species in Victoria. And current legislative protections of dingoes are ineffective. There has been little progress on the key objectives outlined in the 2010 dingo action statement—for example, identifying conservation hotspots and protecting them. I would recommend that in future we cease the use of the term 'wild dog' because it is not transparent and it is not scientifically accurate. We need to undertake an urgent genetic survey of dingoes in Victoria. We should consider protecting dingoes and their ecological role by listing dingoes with greater than 75 per cent dingo ancestry under the threatened species Act as well as including all dingoes as wildlife under the *Wildlife Act*, essentially treating them as they are—a native species. We also should be exploring the reintroduction or the recovery of dingo populations in areas where they have become locally extinct. We also need to basically have increased consultation with traditional owners about land management and conservation.

The CHAIR: Okay. Thank you very much for that presentation, Dr Cairns. At this stage we will move to questions from the committee, and I might throw to Ms Bath in the first instance.

Ms BATH: Thank you, Dr Cairns. I feel like to some degree you have just baffled me with science, and I mean that with the greatest respect. I am interested in the whole 75 per cent dingo ancestry versus feral dogs, and I can honestly say I still do not have a clear picture. So I am interested to understand if an animal has greater than 75 per cent dingo genetics what their natural diet is. I am sure this intuitive, but I would like to understand that. The feral dogs, and we will label them 'feral dogs' are those with less than 50 per cent—is that correct?

Dr CAIRNS: Yes.

Ms BATH: What does their diet tend to be? I guess the reason for my question, Dr Cairns, is there is a problem with dogs on farming land. Now, this is about ecosystems et cetera, but there still is unfortunately a problem there. How does science solve it?

Dr CAIRNS: Yes, so that is an interesting question. I guess one of the issues that I would have in answering it is that most of the research has focused on dingoes without knowing what their true ancestry is, so there is absolutely no way for us to scientifically know if dingoes with or without dog ancestry eat different things. There is also no science to say that they do not eat the same things as their peers.

About the feral dogs, there are very, very few feral dogs in the wild. I think out of all of the DNA testing that has been done in Australia—that is looking at over 5000 samples—less than 1 per cent were actually feral dogs. So feral dogs are essentially not an established pest. Most of the issues are probably to do with roaming pet dogs from farmland or from urban areas as opposed to actual feral dog populations living in the wild. They just do not live in the wild. In terms of what they eat, again, we do not know because they are only 1 per cent of the population.

Ms BATH: Chair, could I have a follow-up?

The CHAIR: Yes.

Ms BATH: Thank you. Thanks, Dr Cairns. If you go into East Gippsland and you go to Swifts Creek and you talk to the farmer, which I have done, who has given up farming sheep—and some might say, 'Yay!', but

the reality is that was his chosen field and it was performing a service for food and fibre—because he was gutted by having to go around in the middle of the night and try and save animals with their entrails sticking out that had been attacked, I would like to understand your perspective on how we solve that with your overlay of protecting dingoes.

Dr CAIRNS: I think that there are two things going on there. First, there are a range of things that farmers can do to protect their stock that do not require lethal control of dingoes. Those include electric fencing, using livestock guardian dogs and changing the way that they manage their stock in their paddocks. Really the other thing that they can do is targeted lethal control. So if they have a known dingo that is causing a lot of issues for their stock, they can target that particular one with trapping or shooting. However, that does not mean that we should be aerial baiting inside national parks to kill all of our native predators.

I guess the other thing that I would say to that is that in Victoria there are only about 1500 sheep lost per year in reported stock loss due to dingoes. So whilst it is definitely a problem for small producers, it is not a giant issue. You know, out of 14 million sheep in Victoria, 1500 is not a million-dollar problem.

The CHAIR: Thank you. I might jump in just with a question as well. In preparing for this evidence that you are giving today, I stumbled across a scientific study. You may not be aware of it, so the question I ask, if you cannot answer it, it is fine if you need to take it on notice. And this is quite an old study. There was a study done of the stomach contents of dingoes between I think it was 1977 and 1984. There were almost 2000 records of hunting and feeding activities, and they examined the stomach contents of these dingoes and found predominantly—and it sort of aligns with what you are saying—that the stomach contents were things like kangaroos first and then going down from larger mammals to smaller mammals. And they did note that, as you said, sheep were a small, if at all, component and that where dingoes were in the wild, they preferred to feed on those sorts of animals rather than sheep. So does that sort of accord with what you were saying earlier about how there seems to be a lack of data or there is a need for a bigger investigation into these things? Certainly, as this study was done some time ago now—it was 1984; it was a long time ago—there is a difference in the dingo population. It has reduced and that sort of thing. So, I mean, can we benefit from having more studies of this type to actually clarify what is going on there for our dingoes?

Dr CAIRNS: Yes, I think that is certainly warranted. I would preface that by saying that I am not an ecologist and I do not study the diet of dingoes; however, I think that certainly what the data is showing is that dingoes predominantly do not eat sheep, they eat native animals. They perform the function of the top predator. They regulate large herbivores like kangaroos. They also can prey on things like feral goats and rabbits and pigs. So they do provide a range of ecosystem benefits that we need to be taking advantage of, and cattle farmers particularly can benefit from dingoes because they remove large populations of native herbivores and therefore allow more pasture for cattle. They do not remove kangaroos of course from the environment entirely, but they keep them at a low, balanced level.

The CHAIR: Okay. Thank you.

Mr MEDDICK: Thank you, Chair, and thank you, Dr Cairns, for your submission and your presentation today. Look, I just want to know a couple of things, and they largely centre around the role of apex predators per se in the environment, first of all. For instance, where dingoes would not be present in the environment as the apex predator in that particular area, what would be the typical result that we would see? And I guess I am leading the question a little bit: would we see a number of introduced species then take up that mantle, so foxes, cats et cetera? Because we know that they are opportunistic, if you like—they look for places in the environment that they can move into. Is that what we would see?

Dr CAIRNS: Essentially. Again, I am not an ecologist, but that is what the science is saying—that when we remove dingoes from the environment, we do change the ecosystem. We make it less biodiverse. We allow the invasive predators to proliferate, so we may have more foxes and more feral cats than we would if we had dingoes in the population. The impacts of removing dingoes from the environment have been observed to be extremely far reaching and include things that you would not initially think dingoes would have an impact on. For example, looking at the ecosystem on either side of the dingo fence, they have observed that the removal of dingoes has caused changes in the vegetation type. It has much denser vegetation, but it is different types of vegetation. It is less variable, so there are less types of vegetation basically. And that has impacted the size and shape of sand dunes in the area, and it also has had an impact on the health of the soil biodiversity. So, really,

removing top predators from the environment can have really complex and diverse impacts on ecosystems. Research around the world is showing that the removal of top predators has been detrimental to the environment and detrimental to ecosystems and biodiversity across the world, and that is why top predators are being reintroduced or allowed to recover in many places around the world, including North America and Europe.

Mr MEDDICK: Thank you, Dr Cairns. I guess that leads me into my next question. It is a great segue. Thanks for that. With that reintroduction of wolves particularly in Yellowstone it has been observed—and scientifically, because it has been a scientific study—that biodiversity in general recovers in that situation, and we have seen that on a controlled scale at Mt Rothwell here in Victoria.

I am leading into the fact that there has been a little bit of press lately about a trial that has been floated by the Eastern Maar peoples of Victoria to reintroduce dingoes into Gariwerd national park as a way and means of studying what effect that will have on the environment, how much they will reduce the prevalence of introduced species, and indeed how much recovery then happens of native species, not just vertebrates but plant species as well, in a natural environment, because there is a lot of rhetoric, I think, that floats around in media in various circles about dingoes and the demonisation of them and the consequent killing of them with 1080.

I mean, I am putting up a little proposal here I guess, but I want your opinion on whether this would work: would such a trial as what is being proposed by the Eastern Maar people need to include research on the ground level in tandem with those First Nations people on those populations of dingoes, the subsequent effects on all of that biodiversity, and would it also need to by nature, then, of course completely exclude the use of 1080 poison in that particular area, otherwise we might be at risk of killing off the very animals we are supposed to be studying?

Dr CAIRNS: Yes. So I think that a good way of proceeding, if we are concerned about the recovery of dingoes in the natural environment, is to do trials such as that one. Several examples of reintroduction experiments have already been proposed by ecologists across Australia. None of them have gotten up yet, because there is, you know, that balance between the impact that dingoes cause on sheep and their importance as the top predator. So I think that that is a very valuable thing to do in Victoria, and I guess definitely you would need to have a whole bunch of research projects running at the same time to monitor the impact of allowing dingoes to come back in the wild there.

Mr MEDDICK: Thank you. I guess I float that up because my concern is that a lot of what goes around at the moment is really being talked about from historical perspectives rather than anything recent.

Dr CAIRNS: Yes, and I think that is something that is really important to note: that around the world predators have been targeted and removed from the environment because of their impact on livestock. And it is sort of an interesting question to think about: how would we react if we proposed removing lions from the wild because of their impact on farmers? We would not think that that was acceptable. Instead we would be thinking: how do we coexist with those lions, allow farming to continue and minimise the impact of predators on those cattle but also make sure we do have lions in the environment? Like, they are really important.

I guess one thing is that you can gain knowledge by looking at how other countries have dealt with this situation. For example, in North America, when they are dealing with coyotes and wolves that impact on livestock, they will reimburse farmers for the cost of lost stock. They will also provide subsidies to assist with the protection of livestock—for example, putting up electric fences or using livestock guardian animals, which are all really effective tools that farmers can use to minimise the impact of predators on their livestock.

Mr MEDDICK: Great. Thank you, Dr Cairns, and thank you, Chair.

The CHAIR: Thank you. Mr Grimley.

Mr GRIMLEY: Thank you, Chair, and thank you, Dr Cairns, for your submission. What you do not know about dingoes is probably not worth knowing. I really appreciate that.

Just reflecting on the terms of reference for this inquiry, it speaks about opportunities to restore the environment while upholding First Peoples' connection to country. And you did mention, briefly, consultation with First

Peoples. Are you aware of or can you elaborate to the committee on any current consultations or past consultations that have occurred with Indigenous communities in relation to maintaining the dingo population?

Dr CAIRNS: I think there has been very little consultation in practice with First Nations people about restoring dingoes in Victoria and elsewhere. I am aware of some projects in north-western Victoria, I believe, that have done some consultation work with the traditional owners about restoring dingoes, and the traditional owners highlighted how important dingoes are to them and how important it is to them to reinstate dingoes in the environment.

Mr GRIMLEY: Wonderful. No further questions. Thanks, Chair.

The CHAIR: Thanks, Mr Grimley. Dr Bach.

Dr BACH: Thanks, Chair, and thanks also from me, Dr Cairns, for your presentation today. It has been fascinating. Just like Mr Grimley, I have certainly learned a lot.

For your own information—you might have heard this if you were listening in this morning—we heard a different take on 1080 aerial baiting from Patrick Medway from the Australian wildlife association. His view, if I can simply summarise it, was that due to a lack of alternatives we probably needed to keep the option of 1080 aerial baiting. Now, you talked earlier in response to a question from another member of the committee about what you felt some of the other options were in order to secure, to the best of our ability, livestock. I wonder if you might expand a little further on that, given that we have received some conflicting evidence as a committee.

Dr CAIRNS: Yes. So I think that, first, 1080 is widely used across Australia, but its impact on dingoes is rather poorly studied. We know, for example, that if you do 1080 baiting it will kill between 70 and 90 per cent of the dingoes in an area, which is quite high. However, there is not very good data to show that that reduction in dingo population actually results in less stock loss for farmers. So there is a disconnect there in the data that we have available.

I guess the other thing that I would say is that dingoes and other wild canids are badly impacted by 1080, because it fractures apart their social structures and because it also reduces the population so much that it increases the likelihood of hybridisation. It is just not a compatible management tool for using to control dingoes or limit the impact of dingoes on livestock if we are wanting to maintain dingoes in the landscape. Now, that is focused particularly on aerial baiting. If we were looking instead at using targeted 1080 ground baiting, specifically in a farm setting where you are wanting to put it around the perimeter of your paddocks, that may be more targeted to deal with the situation. But certainly it would not be justified to do aerial baiting across national parks to cope with the issue. And I guess the other thing is that if you look at the current wild dog management plans, they do aerial baiting across large parts of national parks as well as other Crown lands and private land. But a lot of the actual attacks on stock are quite localised, so it would be better to spend that money to focus on where the livestock loss is actually happening and better protect that stock rather than doing it across the whole landscape.

Dr BACH: Sure. Thank you, Dr Cairns.

The CHAIR: Thank you, Dr Cairns. Mr Hayes.

Mr HAYES: Thanks, Dr Cairns, for your interesting presentation. I have learned a lot about dingoes today. I was going to ask you about the role of top predators in conserving wildlife, but I think that has been pretty well covered. What I would like to ask you about is how we could get dingoes and animal farming to coexist. You have mentioned a few ways, but would the approach to farming sheep be different to the approach taken with farming cattle? And what do you think would be probably the lowest cost, most effective measures you could put into place in both agricultural enterprises?

Dr CAIRNS: I think there are going to be different management practices that are better for different types of farming, definitely. Certainly in a lot of large cattle properties—not necessarily in Victoria, because I do not necessarily have specific knowledge about Victorian cattle graziers—they have found that having dingoes is actually really beneficial to their bottom line. They get a better return on their cattle because there is more pasture available to them if they have a stable dingo population. They also have actually fewer total dingoes in

the landscape because they have a stable pack. That one pack sort of maintains the territory and keeps the other dingoes out of the area, so certainly dingoes can be really beneficial to cattle farmers.

In terms of sheep farming, it is sort of undeniable that dingoes can have an impact on sheep farmers, so really there needs to be more effort and research into how best to manage the impacts of dingoes on sheep and what sort of tools are most effective. There has been some really excellent research showing and demonstrating how useful livestock guardians can be in Victoria at protecting sheep from predation. In fact there are some properties that use livestock guardian dogs and they essentially have no stock loss. I think we also need to have a discussion about acceptable levels of stock loss. At the moment some government legislation—not specifically in Victoria, but elsewhere—will say things like, 'We aim to do lethal control on dingoes to reduce stock loss to zero'. Now, zero is not really a sustainable amount of stock loss, particularly if you are coexisting and living in an area where there is a predator. You know, it is just not going to happen. And there are other types of predators that prey on sheep as well, like foxes and feral pigs, so you really need to better think how you are going to manage the sheep problem. But it does not mean that we have to eradicate dingoes. There are a range of tools that we can use that have been effective.

Mr HAYES: Just a really quick one on that: could you describe how the livestock guardian animal situation works? What does such an animal do in practice?

Dr CAIRNS: Again, I am not an expert on this—there are others who have more expertise on this—but essentially the animals can range from dogs, particularly maremma dogs, to donkeys, llamas and alpacas. But the animal is basically placed in the paddock with the sheep and bonds to the sheep. There is obviously a bunch of training that has to go on to make sure that the livestock guardian animal is bonded to the sheep, and then they essentially protect the sheep and drive off any dingoes that come in the area.

Mr HAYES: Okay. Thank you.

The CHAIR: Dr Ratnam.

Dr RATNAM: Thank you, Chair. Thank you, Dr Cairns, for your excellent presentation and your responses so far. It has been so comprehensive. You have covered off most of our questions. Just one last question picking up on what you were discussing with Mr Meddick in terms of research and trials that are needed—and you started discussing it—have you got any suggestions as to a location that would be good for one of those trials in Victoria?

Dr CAIRNS: Well, I think it would need to be an area where there is currently not aerial baiting going on, because that would be counterproductive to it. I think it needs to be an area where there are not dingoes currently so that you can measure the impacts of their return, similar to what was done in Yellowstone National Park, and I guess it needs to be an area where there is a range of livestock grazing enterprise going on so that you can study the impact on the livestock directly as well.

Dr RATNAM: Great. Thank you.

The CHAIR: I might just have a follow-up question to Dr Ratnam's question as well. If there was such a trial, would you envisage that as part of that trial you would want farmers who are running cattle or sheep to be part of that trial, consultation with First Peoples around that and then the scientific community studying, examining and gathering data around that? Would that be the best basis to run a trial—and the use of the guardian animals as well?

Dr CAIRNS: Yes, I think that all of those things are what you would want to do. You would want to also ensure that before it starts you have talked to the farming community and done some workshops about the things that they can do to limit the impact of dingoes on their livestock and perhaps even consider some funding schemes to assist them with putting in place things like electric fencing or livestock guardian animals or coming up with plans about how to manage their livestock better. For example, it would be prudent to put ewes that are about to birth in internal paddocks to protect them from livestock predation risk. Yes, so I think all of those things would be useful to do.

The CHAIR: We have a couple of minutes for one other question. Does anyone else have another question? Mr Meddick? No.

Dr RATNAM: It was very comprehensive.

The CHAIR: Yes. Look, thank you so much for your presentation, Dr Cairns. It has been very comprehensive and any questions that we have had I think have been answered comprehensively, so I just want to say thank you very much for your evidence today.

Dr CAIRNS: Thank you very much. I was a little nervous, but I think I got through it.

The CHAIR: You did well. All right. Thank you very much.

Dr CAIRNS: Thank you.

Witness withdrew.