

# ENVIRONMENT, NATURAL RESOURCES AND REGIONAL DEVELOPMENT COMMITTEE

## Inquiry into the control of invasive animals on Crown land

Melbourne — 10 October 2016

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### Witness

Dr Dave Forsyth (*via teleconference*).

**The CHAIR** — Hello, Dr Forsyth. Thank you for agreeing to talk to us today.

**Dr FORSYTH** — That is fine; a pleasure.

**The CHAIR** — Having done the introductions so that you know who is here, there are a couple of formalities. Are you intending to do a bit of a presentation, or do you want us to go straight into questions?

**Dr FORSYTH** — I was expecting you to go straight into questions, so I have not prepared any presentation.

**The CHAIR** — That is fine, just so that we know. Just before we go on, thank you for agreeing to talk to us at this public hearing via teleconference. Everything is being recorded, and when the transcript is available proofs will be sent to you just to check for accuracy before it becomes public. Also, because it is a public hearing, everything you say is protected by parliamentary privilege, but once the hearing is over what you say may no longer be protected by parliamentary privilege.

On that note, perhaps I could say first of all that we asked you to present because of your fairly detailed work and knowledge of research around invasive animals. But I ask you, perhaps if you would not mind, to just explain to us the role that you had at the Arthur Rylah institute, what it is that you are doing now and what the relationship is.

**Dr FORSYTH** — I was appointed as a wildlife ecologist at the Arthur Rylah institute in July 2002, and I was there until 30 June of this year. During that time I supervised and led research into problems associated with overabundant wildlife, and as part of that I conducted and led research into the ecology and management of large herbivores, so the various deer species in Victoria, feral goats, feral pigs and the like. I do have expertise in other areas of invasive animals ecology and research, and now I have a position with the New South Wales Department of Primary Industries in the vertebrate pest research unit here in Orange. My role here is to work on similar problems that I worked on in Victoria — namely, introduced deer.

**The CHAIR** — Maybe I can start us off. Everywhere we go we are hearing that there is a lack of research and a lack of information in dealing with invasive animals, and in particular deer. What do you say the state of play is at the moment in terms of Victoria and the amount of research? Is there enough to deal with controlling deer as an invasive animal? What do you see is required?

**Dr FORSYTH** — I think Victoria is better placed than the other states and territories in Australia with respect to what we know about the wild deer species in Victoria, so we have a good handle on the distributions of the various deer species in Victoria. In particular I led research in the last two years updating the distributions of the deer species in Victoria. I presume you have had access to those reports. They are freely available.

We do not know so much about the abundances of the various deer species in Victoria, but since at least 2009 the Game Management Authority and its predecessors have been conducting telephone surveys from which we have been able to estimate the numbers of deer that have been harvested and also the number of days that licensed hunters have spent hunting those deer species. From that we can estimate what is called the catch per unit effort index of deer abundance — so, the number of deer harvested per hunter day. Essentially the trend in that since those surveys began has been upwards, and quite significantly upwards, which suggests that the abundances of the deer species of Victoria have been steadily increasing, and my work on the distributions has also shown that distributions are increasing.

So if you take those two pieces of information together, there is little doubt that, in particular, distributions of and abundances of sambar deer are increasing in Victoria and also fallow deer are increasing in Victoria, and where I sit I can see no reason why that trend will not continue, at least in the next one to two decades.

**The CHAIR** — Okay. Just in terms of this inquiry into invasive animals and how to control them, and in particular I guess deer is one we are focusing on, do you think we have enough information? In terms of being a committee one of our jobs is to come up with recommendations based on the evidence we receive. Do you think there is enough research and information already that we can use to come up with certain

recommendations around a plan and what to do, or do you think we should be recommending further research or programs on things such as deer?

**Dr FORSYTH** — There are some large knowledge gaps about the impacts of deer in Victoria, in particular how they impact on native biodiversity. There have been diet studies. There have been some observational studies of deer, or what is attributed to deer, and browse on various plant species. There are observations of trampling in waterways and that type of thing, but in terms of having enough solid information, if you like, to be able to develop target densities for the various deer species, I think most researchers and managers would say we do not have enough information at the moment.

One of the areas where we probably do have enough information is managing deer when they impact on agricultural resources, so pastoralists, orchardists, vineyards, market gardeners and those sorts of people, I think, are looking outside Victoria at what has been done elsewhere, internationally, in New Zealand. I think there is reasonably solid information to base management of deer impacts on agricultural values but much less so on native biodiversity values.

**Mr McCURDY** — My electorate is up in the Ovens Valley, so we see a lot of deer up around Harrierville, Bright and up through that region. How best do we get that information? Obviously, not just anecdotally, people are telling me, and submitters to this inquiry have been telling us, about the increases. How best do we get that information, because I assume you are doing the same sums? If we work on how many deer we think are breeding and then we subtract the amount that we have been told have been culled, we then come up with a pretty rubbery figure. So how best do we get that knowledge, then, so we can firm these figures up once and for all and so we can have a decent strategy for culling or however we propose to deal with it?

**Dr FORSYTH** — One of the key principles of invasive species or problem species management is trying to focus on managing the actual impacts. A particular landholder, for example, may be very strongly impacted by the presence of sambar deer, but it could only be a few sambar deer that are causing those serious impacts — for example, jumping into a newly sown paddock of clover or grass, just nipping the heads off the planted seedlings and trampling the paddock as well — or it could be quite a large number of deer doing that. You can actually spend a lot of time trying to figure out if it is just a few deer or a lot of deer, but what we argue is that it is best to actually focus on managing those impacts. So for that farmer, the best solution might be to conduct some spotlight culling at night. It may actually be more efficient in the longer term to erect deer-proof fencing. Then the problem is solved essentially once and for all.

In terms of getting back to your question about how we settle the problem about numbers, you can actually spend a lot of time, a lot of effort and a lot of money and still not come up with potentially better figures than what we might have now, and then the impacts are still being caused. So what we are trying to focus on as invasive animal researchers and managers is coming up with the tools to enable cost-effective management, whether they are private individuals or whether they are land managers on public estates — tools that they can actually go out and use to manage those impacts.

For deer the typical tools are generally, as I mentioned, fencing, which is useful for small areas and high-value agricultural products — crops et cetera. There is ground-based shooting with spotlights or without spotlights. There is ground-based shooting with hound teams, which in particular for sambar deer is likely to be effective. Then for some species it may be cost effective to use aerial, helicopter-based hunting, which is used widely in New Zealand and is being used in South Australia, New South Wales and Queensland.

**The CHAIR** — Just on the mechanisms for control — sorry, I think I have just jumped in and asked you a question — just quickly, when you are talking about the ways to kill deer or get rid of them, is it just shooting? All the examples you have given there are shooting. Is that the best way to get rid of deer or control them?

**Dr FORSYTH** — One of the examples I gave was fencing. For example, a farmer or landholder could fence their boundary with adjacent property over or backing onto a state forest or national park or reserve,

and that is an extremely effective way of keeping deer out, provided the fence is not broken by a fallen log or a flood does not take out the riverbank. That is probably one of the most effective ways of keeping deer out of an area, but it is also initially quite expensive — initial capital outlay in terms of the fencing — and there is some ongoing patrolling, if you like, and maintenance of the fence when things such as trees fall over it. The otherwise most effective method would be shooting, as I mentioned, either ground-based with spotlights or with hound teams, or aerial-based shooting.

**The CHAIR** — Thanks. Sorry, Daniel.

**Mr YOUNG** — No, that is fine. I did not actually realise I was up.

**The CHAIR** — Yes, I was sort of looking sideways.

**Mr YOUNG** — You talked about a couple of methods. The purpose of this inquiry is focused more so on public land, and obviously fencing would not make a really effective way of keeping deer out, because they are already in public land, so you would be limited to fencing off areas that do not have them, which may be difficult to identify, and because it is such a big area it would be hugely cost prohibitive. We have spoken to Parks Victoria just recently about deer and their status and how we control them. We sort of have to live with the fact that they are here and that we are not going to eradicate them, so we need to move more to a specific targeted approach just to protect certain assets. Given that, would shooting be an appropriate method to control around certain areas that we identify as having a need to move deer away from or to disperse them from those special assets?

**Dr FORSYTH** — I think it would be, but it needs to be recognised that to reduce deer to low density, particularly in typically heavily forested areas that are occupied by sambar deer in Victoria, it is going to be an expensive exercise to actually reduce deer to low densities. Sporting shooters and individuals can have a small effect on deer populations at large scales, but they are not going to have the large knockdown effect that you are probably going to need to alleviate effects on those high-value assets. So to do that, a group of recreational hunters have a go at that, if you want to go down that line. Then you need to engage professional contractors with key skills — and they cost money, of course — to actually further reduce the population to a level which is going to have some benefit for native biodiversity.

**Mr YOUNG** — Yes. We have also heard that professional contract shooters can be a very big role in that, but some of the examples of methods they have used are just not appropriate for Victoria, given our landscape and our dense bush. The professional shooters may not even be able to reach the same number of deer removed by recreational shooters.

**Dr FORSYTH** — A key point there is that recreational shooters are taking their harvest from right over the public land estate, to which they have legal access, whereas with professional contract shooters you would be contracting them to work in a clearly defined area over a clearly defined time frame to further reduce deer in those areas. It might be quite a small area. It might be 2000 hectares or it might be 5000 hectares that you are trying to reduce those deer to low densities. It has got to be recognised that there needs to be an ongoing investment, because deer will recolonise that area from surrounding areas. There would also be some survivors that are going to naturally breed and increase in abundance if you stop the culling.

I accept your point, but to really reduce deer to low densities costs a lot of money. It is only really feasible over fairly small areas, given the types of deer that we have got in Victoria and the habitats that they occupy. The reality is there will not be the money out there to control deer over large areas in Victoria; it is simply going to be too expensive. But we do not really have the information yet on the various control methods, how effective they are in Victoria and how much they cost in Victoria.

For example, the Parks Victoria trial that is being conducted on the Bogong High Plains is a case in point where that information is starting to be collected. In a few more years we will be in a strong position to actually say, ‘This is how much it costs to reduce deer by this amount using recreational hunters’. I think that they are using some contract hunters up there now as well. That type of information can be gathered.

**Mr YOUNG** — Yes. Something we have heard quite a lot is that there is not enough information and we need to do more research. Are there any other specific areas you can think of that we should be putting more research into? Specifically on that, a lot of people have been saying to us, ‘We don’t know how many deer there are’. That seems to be the main question people want to know. But is an actual figure on how many deer we have in Victoria relevant, or can we still do control programs and still do those efforts without actually knowing how many there are?

**Dr FORSYTH** — You are absolutely right in that you can certainly do control work and management without knowing how many deer there are. As I said in response to an earlier question, you can spend a lot of time, a lot of money and a lot of effort trying to get better estimates of how many deer are out there and ultimately probably come up with a not much better figure than maybe we have now, whereas at the same time those impacts are still accruing and you are losing time, if you like, in terms of trying to manage those impacts.

**Mr McCURDY** — Can we do both, David? Can we implement a system in controlling deer at the same time as we still do some counting? I am concerned, if we do not come up with a firmer figure, at some point down the track somebody will say, ‘Well, how do we know?’.

**Ms WARD** — ‘What is your measurement?’.

**Mr McCURDY** — Yes, ‘What is your measurement? Where was the line in the sand that we started from?’. It is probably more time than it is money, but if it is a program that takes three or four years to actually come up with a firm number, can we do it in parallel, I suppose?

**Dr FORSYTH** — Certainly you could do it in parallel. I guess I am just trying to be mindful of the practical implication in terms of budgets and resourcing and those sorts of things, but in principle there is no reason why they cannot be done in parallel. I keep wanting to come back to that point that, as managers of invasive species, we are really trying to manage — unless the populations can be eradicated, and the deer in Victoria cannot be, so that is not an option. We are really trying to manage deer impacts and enable land managers, wherever they are, to be able to manage those impacts. For example, if we are worried about the impacts of sambar deer on alpine bogs or peatlands, what we are trying to do there is monitor those peatlands with and without deer control, whether that is by recreational shooters or by professional contract hunters, and monitor how that resource that has been impacted changes with the different control intensities, if you like.

**The CHAIR** — You might have answered a little bit of this, but there are the trials being conducted by Parks Victoria. We heard from them earlier today. They were saying that the trial seems to be about, and their assessment of success is more about, organisations working together and a program introducing a new method, which is recreational hunters. That is what they are monitoring. Is there other data that they should be collecting? What do you see as the most important information they should be getting, apart from whether a program can work in terms of safety and how different organisations work together?

**Dr FORSYTH** — Sure. I was actually involved, along with Ami Bennett and Naomi Davis, in a series of reports in March 2015 that were recommending what Parks Victoria should be monitoring as part of that trial in terms of, first of all, what the deer’s impacts were — for example, as I alluded to in my previous statement, the impacts of sambar deer on alpine peatlands, so setting up some monitoring to evaluate changes in those impacts over time.

**The CHAIR** — Yes, you did mention some of that.

**Dr FORSYTH** — Also, we advocated methods for monitoring how deer abundance changes over time in the areas that are hunted by the hunters compared to areas that are not hunted by the hunters. As part of that we advocated using remote cameras and faecal pellet counts. The hunters who go out there, track where they move with the GPS and they record how many deer they encounter and how many deer they shoot. If the deer population declines over time, you would expect that a number of deer that they see and encounter per unit effort, per hour of hunting effort or per day — however you want to measure it — will decline as well. I thought that Parks Victoria had implemented most of that, but I have not had any official

feedback to actually say what they have and have not decided to implement, so I cannot actually comment on what they have done up there. All I can say is that what we have advocated or proposed to them is in a series of reports that can be easily made available to this inquiry if you do not have them already.

**The CHAIR** — It would be good if we could get them. I do not think we have all of them. It is probably unfortunate that we did not speak to you before Parks Victoria early today. But anyway, that is what happens.

**Dr FORSYTH** — Just one comment. Cost always seems to be an issue in the implementation of these sorts of things. We proposed a design; they considered the design and came back to us and said, ‘Hey, this looks a bit expensive. Can we change a few things?’. We said, ‘You can probably cut down on this. Don’t cut down on that’. They went away, and I have not heard back since.

**The CHAIR** — Okay. So maybe we can get the secretariat to contact you and get some of those references. Is that all right with you?

**Dr FORSYTH** — Yes, absolutely. I am happy to provide those.

**The CHAIR** — I have one other quick question about non-deer invasive animals. Do you have any views on the best way to monitor the impacts of those? Again, we keep getting told that there is not enough research to really determine how is the best way to control any number of invasive animals. Have you got any views on other invasive animals and some recommendations that we can perhaps consider in terms of pigs, dogs — probably not cats — and whatever else there is?

**Dr FORSYTH** — It is an absolutely huge topic and I am not across all of it, but in terms of control methods there are national and state codes of practice and standard operating procedures for how to control the non-deer invasive animals present in Victoria.

**The CHAIR** — Sorry, more about the research that is needed before really being able to understand and effectively control some of these animals.

**Dr FORSYTH** — Yes, okay.

**The CHAIR** — Again, it is big.

**Dr FORSYTH** — It is a big area. One of my colleagues at the Arthur Rylah Institute, Alan Robley, he is an expert. He is doing a lot of research on feral cats, dingos/wild dogs and foxes in Victoria. He has been working closely with land managers and catchment management authorities and also with Parks Victoria for quite some years, and they are trying to monitor changes in some of the native species that cats and foxes in particular are thought to kill. So, for example, he has been working in the Barwon South West region around Nelson, Portland and through there. I have been involved in some of that research, where they have been conducting fox control on some public land and not fox control on some other public land and comparing changes in native small mammal occupancy and abundance.

I guess what I am saying is that there are people out there who are doing some of this work. It often takes a long time for the responses of those species to emerge, to predator control in particular, and that is partly because the abundance of those small native mammal species are often determined by lots of things, not just predation by introduced foxes and feral cats but also by drought events, flood events and fires. Those events are a big part of the Victorian landscape as well. So there are actually quite a host of things that are affecting these small mammal populations, and it is not always that conducting fox control or feral cat control will have a measurable effect on them.

**The CHAIR** — Okay. Thank you for agreeing to talk to us today. Are you based in New South Wales if you are working for the Department of Primary Industries there?

**Dr FORSYTH** — That is right. Since 30 June I have been working in Orange, New South Wales.

**The CHAIR** — Okay, so you are actually living up there?

**Dr FORSYTH** — That is right.

**The CHAIR** — Hopefully you will be back in Victoria soon so you can help us with our invasive animals.

**Dr FORSYTH** — Happy to help as much as I can.

**The CHAIR** — Okay, great. Thanks again for agreeing to talk to us and taking our questions.

**Witness withdrew.**