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

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Mr Clifford Hayes—Deputy Chair
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Ms Melina Bath
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WITNESS

Professor Brendan Wintle, Professor of Conservation Ecology, University of Melbourne.

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 the broadcast of these proceedings at home. I would also like to welcome any members of the public who may be watching these proceedings via the live broadcast as well.

At this juncture I will take the opportunity to introduce committee members. I am Sonja Terpstra, Chair of the Environment and Planning Committee. Sitting here to my right is Clifford Hayes, who is the Deputy Chair. I am going to introduce Stuart Grimley because I keep forgetting him because he is one of our members who is appearing—

Mr GRIMLEY: You beauty!

The CHAIR: via Zoom. I wanted to make sure I did that properly. Further down the table we have Melina Bath, Dr Matthew Bach, Andy Meddick, Bev McArthur and Dr Sam Ratnam.

To all the witnesses: all evidence taken today 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. You will be provided with a proof version of the transcript following the hearing, and transcripts will ultimately be made public and posted on the committee's website.

With that, I would like to now invite you to make your opening comments, and if you could please keep those comments to a maximum of 10 minutes, which will allow as many committee members to ask questions as possible. If I could just remind Mr Grimley—I think you are 'it' for today—to put yourself on mute so we can minimise any background noise. With that, I would like to invite you to start your contribution.

Prof. WINTLE: Thanks very much, Ms Terpstra. Thank you very much to the Council for allowing me the opportunity to speak at this inquiry. I am Brendan Wintle. I am Professor in Conservation Ecology at the University of Melbourne and also the Director of the National Environmental Science Program, Threatened Species Recovery Research Hub—a bit of a mouthful, but for six years now I have managed to get it out.

I would like to start by acknowledging the traditional owners of the lands on which I work and live and on which we meet today, the Wurundjeri people of the Kulin nation, and pay my respects to elders past, present and emerging.

Apologies to the Council for the touch of frivolity in my slide topic there; it sort of crept forward from a previous talk. I just want to assure the Council that I take this extremely seriously, and this is in fact the dedication of my life's work, so humour should be taken in that context.

Visual presentation.

Prof. WINTLE: Back in 2010 Minister Burke made a promise on behalf of the nation to ourselves, to the rest of the planet and also to future generations that by 2020 the extinction of known threatened species has been prevented and conservation status, particularly those most in decline, has been improved and sustained. That was part of the Convention on Biological Diversity meeting in 2010. That promise has been transcribed almost verbatim to the UN sustainable development goals, where you can see the aim is to halt the loss of biodiversity by 2020 and protect and prevent the extinction of threatened species.

So how did we do? Late in 2019 the intergovernmental platform for biodiversity and ecosystem services—that will be IPBES from now on, if I can use that acronym—released its global assessment of biodiversity and ecosystem services. This was a combined effort of over 1000 scientists across the planet, including me and many colleagues, and the most comprehensive study to date of the state and trend in biodiversity and ecosystem services, so a really key global study. Some key findings that define it: not surprisingly, nature underpins all aspects of life. Over 2 billion people rely on wood as their primary energy source, and 4 billion on natural medicine. Seventy per cent of all drugs are natural or copies of natural drugs. 75 per cent of all crops are animal or insect pollinated.

Natural systems are the only current viable sink, so if we are going to sequester enough carbon to bend the curve on climate change, it is going to have to be through natural systems, through the restoration and growth of biomass and woody vegetation. Natural pollinators are worth over $560 billion a year to the global economy.

But the ability of nature to provide us with these benefits, with these services is in decline everywhere. So here is a key finding from the IPBES global assessment. So the rows there on that table are nature's benefits, or nature's contributions, to people. So you can see on the top row there—that is not going to work on a digital screen—is habitat creation and maintenance. The second row is pollination—dispersal of seeds and propagules. The blue arrow to the right indicates that over a 50-year period we have seen a dramatic decrease in the ability of nature to provide habitat and pollination. The arrow pointing down says that is continuing. The blue indicates that that is a certain and well-established trend, so there is strong scientific evidence to support that. And the grey doughnut on the right-hand side indicates that that is a global process, a global pattern—it is not up and down in some places. And the key indicators there are the extent of suitable habitat, biodiversity intactness, pollinator diversity and biomass.

I will just draw your attention to the bottom two rows there, regulation of hazards and extreme events—think bushfires. Nature's ability to regulate those events is declining everywhere and continues to decline. And the bottom row—regulation of detrimental organisms and diseases. Nature's ability to regulate those, provide that service of regulation has declined everywhere globally. And I do not need to remind you, with all our masks on, what that means for us.

Pollinator loss is a particularly important type of biodiversity loss. Ninety per cent of wild flowering plants and 80 per cent of crops depend on animals and insects for pollination. In Europe there has been a 75 per cent decline in insect pollinator biomass over the last 30 years, and 30 per cent of bees are currently listed as at risk of extinction under the IUCN. So this represents a risk of $560 billion a year in crop production globally, but if we saw the collapse of pollinators, I think that $560 billion would be the last thing on our minds—we would see famine, we would see global mobility and basically the meltdown of our social systems. So this is a major implication of biodiversity loss for us as a species.

We are also seeing extinction of individual species. So this graph here, from the IPBES report, indicates—the X-axis there, that bottom axis is a year. So since 1500 we have seen a cumulative extinction in amphibians—see the frog up on the top—of around 2 per cent. So we have lost 2.5 per cent of our amphibians since 1500, and actually around 2 per cent of that we have lost since the 1900s—the dramatic impacts of habitat loss and modification and diseases that we have spread, chytrid fungus and other things. And you can see that for all those major taxonomic groups—mammals, birds, reptiles, fish—there are similar numbers. That little—

The CHAIR: Worldwide, is that right?

Prof. WINTLE: Worldwide, absolutely. But the graph for mammals in Australia is at about a 10 per cent loss of the mammals. So imagine you could stretch that axis up five times the height. we have lost 10 per cent of our mammal fauna here in Australia. We are responsible for 35 per cent of global mammal extinction since 1700. That little grey wedge is what we would expect to lose over that period given the geological record. So extinctions happen naturally; that little grey wedge is the proportion of those species we would have expected to have lost naturally. So we are in a global extinction crisis. It is 10 to 100 times the background rate from the geological record.

What is driving this? Well, I think you probably know the answers. Approximately, here are some numbers: 75 per cent of land area is significantly altered, 66 per cent of the ocean is experiencing increasing cumulative

impacts; 85 per cent of wetlands have been lost since 1700—85 per cent of wetlands have been lost since 1700. Half of the live coral cover on coral reefs has been lost since 1870. And that list of drivers goes on.

Here in Australia, since European colonisation 110 species have been documented to have been lost. We think probably it is a lot more, because we are not very good at documenting the loss of insects and other small animals and plants. Eighty-one of those species existed in Victoria before whitefellas arrived. 1800 species are now listed nationally as at high risk of extinction, and as I mentioned before, Australia is responsible for 35 per cent of all mammal extinctions since 1700.

Audio recording played.

Prof. WINTLE: That sound there is the last ever recorded call of the Christmas Island pipistrelle. That species is now extinct. That call was recorded by Zoos Victoria when they were doing surveys to try to bring the pipistrelle into captivity and breed it up. They did not catch any—they heard one. That is probably the last call of the pipistrelle. Nobody will ever hear that call again in the wild.

The graph of cumulative extinctions in Australia is linear and upward, so you can see that is the accumulation of extinctions since whitefellas arrived in Australia, and that graph ain't bending. That is a linear increase in the accumulated number of extinctions. We had as many extinctions in the last 20 years as what we had in the first 20 years of European arrival in this country, so the trend is disturbing.

What is driving our losses domestically? Well, the key drivers that are driving global loss of biodiversity are the same drivers that are driving loss here. Habitat loss and modification is a key driver. In Victoria 50 per cent of Victoria's native vegetation has been lost or dramatically altered since European colonisation, including examples like basalt plains grassland that has lost well over 90 per cent of their pre-European extent. Habitat loss is driving the loss of species and biodiversity and ecosystem services in this country, but we are a special case globally in that we have a particularly tragic record of species loss in relation to invasive animals that we have introduced, so cats, foxes, trout, rabbits, goats—you name it, they are all implicated in our extinctions that we have caused in this country. Cats, for example—how many birds do you think cats eat in this country every year?

The CHAIR: I know my cat catches more mice than birds, but you know.

Prof. WINTLE: I do not have the estimate for mammals, feral or otherwise, yet 360 million birds a year are due to cats, and 60 million of those are due to domestic cats. The rest is down to feral cats. So that is a million birds per day.

Mrs McARTHUR: Well, there is a clear recommendation—

Ms BATH: So 360 million birds—

Prof. WINTLE: Per year.

Mrs McARTHUR: The eradication of cats.

Prof. WINTLE: Yes, it sounds like a good idea.

Mrs McARTHUR: Good idea.

Prof. WINTLE: Yes, so not surprisingly, the IPBES report finds that goals for conserving and sustainably using nature cannot be met under current trajectories. That is clear. Only transformative change is going to allow our goals to be met.

All right. These are not just the fanciful imaginings of crazy scientists and wacko greenies—the World Economic Forum places environmental risks to the economy as five of the top 10 risks to the global economy. This graph here represents risks to the global economy. The Y-axis, the vertical axis, tells you how big the impact is that they expect from these particular failings and the bottom axis tells you how likely they are, so if you are in that top right-hand corner, they are the biggest risks. You can see that five of the 10 are environmental risks and biodiversity loss and ecosystem collapse is right up there in the top 10 risks according

to the World Economic Forum, and there are others. They may need to actually update the impact of the spread of infectious diseases; it is not quite as extreme as it was in 2019.

All right, it is time for some good news. The good news is that when we spend money on biodiversity conservation it works. This paper published by Anthony Waldron and colleagues in *Nature* in 2017 looks at the spending of different countries that have high rates of biodiversity loss, and it shows that the countries that are spending more—they are the ones out on the right—are having lower biodiversity loss, so you want to be down in that bottom right-hand corner here, so the more you spend, the more you save. That is a simple message.

From the United States, where the *Endangered Species Act* mandates the spending on recovery of threatened species, on average if you have been listed as a threatened species in the United States, after 20 years you will expect a two or threefold increase in your population size. If you were lucky enough to be listed at the start of the *Endangered Species Act*, you would expect around a 600 per cent increase in your population size. So species that have been listed for a long time under the US *Endangered Species Act* are recovering. What are they doing that we are not doing? The answer is pretty simple. In the United States, in order to recover the 1600 species that they have on their list, they spend around $2 billion a year on targeted threatened species recovery. They have 1600 species on their list. In Australia we have 1800 species on our list; we have a bigger problem. Targeted spending, combined national commonwealth and state spending, we have estimated in 2017 was $140 million. In 2018 it had decreased to $120 million. So that is the combined state and commonwealth spending on targeted threatened species recovery. That is a tenth of the US spending on targeting threatened species—less than a tenth, sorry about that.

Mrs McARTHUR: What is the population difference?

Prof. WINTLE: Oh, it is significant, absolutely. It is a bit unclear what has been happening over the last couple of years, but fortunately I think some normality might be restored now, so we might be looking at a different story.

We have sat down and worked out, based on the average estimates of what it costs to conserve a plant species, an invertebrate, a fish, an amphibian species, that in Australia we would need to spend around $1.7 billion a year on targeted threatened species recovery. I am in the process of converting those numbers down to the state level based on the number of species that we have listed in this state, but I think we are looking at around 300 million bucks a year at a state level to stop our currently listed threatened species going extinct.

It sounds like a lot of money. Let us think about it in context. In Australia every year on our pets we spend $12.2 billion. As a public we spend $12.2 billion a year on our pets. We spend $580 million a year on pet grooming, $1.1 billion a year on just toys for our pets. Our total cat care budget—

Mrs McARTHUR: Guilty as charged.

Prof. WINTLE: Yes, that is right.

Ms BATH: Recommendation?

Prof. WINTLE: Right. A little excise maybe. $2.5 billion a year we spend just on cats—our biggest bird killers. Unfortunately Victorians are the biggest spenders. We spend on average twice as much as anybody else on our pet care, including cat care. So we are great pet lovers; we are not very good at spending on threatened species.

Obviously fuel tax concessions for coalmining companies, about a billion dollars a year; defence, $40 billion. I am not saying these are the wrong amounts to spend on those things, but we have the money to solve this problem. We are a wealthy enough nation to be able to allocate $1.6 billion a year to conserve the entirety of our threatened species list, and Victorian is wealthy enough to spend $300 million a year.

So, recommendations. I strongly believe that we need a much more targeted and much more focused Saving our Species style program in Victoria. I think something in the order of $300 million a year on a targeted Saving our Species program would make an immense difference in this state. Not only would it actually allow us to create the direct and targeted action that threatened species most urgently need, we could have joint conservation programs on ag lands—50 per cent of Victoria's land area is managed for agriculture. If we are

not winning the biodiversity problem on ag lands, we are going to lose. We need systematic monitoring of state and trends of threatened species, one, so we know what needs the most urgent attention and when and, two, so we can demonstrate what we are actually getting for our money when we spend it on biodiversity conservation, and, three, so we can actually learn about what works best. At the moment our monitoring is pitiful. We could be losing species and we do not even know because we do not actually bother to count.

There is a whole bunch of other initiatives that I think are really great opportunities: biodiversity; sensitive urban design; iconic and cultural species in schools to help educate children about their local threatened species and what they can do—tangible benefits they can bring; and co-investment in private and Indigenous-managed lands for conservation. As I was writing this talk last night, my partner got an email from an investor in New South Wales, saying:

> I saw your article about the Western Plains grasslands. I'm an investor. We've got big properties. Can we spend money to actually restore habitat on our lands?

If there was a group in the biodiversity division of DELWP actually allocated to making sure that we capture all those private land conservation opportunities, then we could make a huge difference in this country and it would cost the state not a cent. The benefits of all of this would be the erasure of the public profile of threatened species. The SOS program is much better understood by New South Wales people than the biodiversity strategies by Victorians.

Mrs McArthur interjected.

Prof. WINTLE: It is a good program. Unfortunately they are spending about a tenth of what they need to spend to solve the problem, but the program is a good design. We can connect people to their local threatened species, we can leverage effort so that the state money gets leveraged up by private and business money. There is a demonstrable benefit of showing what we can achieve.

Of course there is a big major change that is happening. After the Samuel review of the EPBC Act there are going to be major changes in terms of who has to do what for conserving threatened species in this country. It is probably coming to the states—your government wants it to come to the state—and so there is going to be a lot of work to be done because that emphasis on funding and actually making sure that we are not losing these species means we are going to be signing up to standards to say that we are not going to lose them. And we will be beholden to the commonwealth, which may sound a bit like being hit with wet spaghetti at the moment, but this is a commitment that we are probably going to make sometime in the next 12 to 24 months around threatened species conservation. We have to get that right.

So I would encourage this group to recommend strong embracing of the Samuel review and all the recommendations in it, not just cherrypicking the easy bits. We need a really strong evidence base, which means we have got to spend the money on monitoring to understand what is going on. We need a reduced emphasis on offsets. It should be a last resort only. Offsets do not work. They are at present locking in declines, and we have seen that over the last 20 years in this state. And we need decisions around land use planning and biodiversity that are underpinned by decent regional planning processes based on good data and information. Otherwise we are going to continue to stuff it up.

I have got a few stories that I can perhaps go to during questions about some of these ideas, including biodiversity friendly farming practices. There is another example at Tiverton—I am not sure if you got a submission from Nigel Sharp about biodiversity on farms, but there are some great opportunities there. There is Iconic Species in Schools and Indigenous land management, which has got to be a huge opportunity in this country given that Indigenous people currently own and manage half of our national reserve system, which is about 8 per cent of Australia. There is an immense amount of opportunity to bring prosperity and conservation outcomes through joint investments through Indigenous people land management. And there is biodiversity sensitive urban design. Thanks very much for your time. That is perhaps over 10 minutes.

Ms BATH: I feel like we should give a round of applause.

The CHAIR: Yes, it was a fantastic presentation. All right, questions. I might go to Andy Meddick first, if that is okay.

Mr MEDDICK: Thank you, Chair. And boy, where do I start? Can I thank you, Professor Wintle, for such a great presentation. First of all, can I just ask, Chair, that copies of the presentation be put into hard copies and shared around? This is just amazing stuff. We have heard some pretty horrible stories right throughout the course of the day, as you can well imagine, about the dire straits that things are in, but just to hear all of that encapsulated and some really practical outcomes that you are talking about here is really fantastic. But I am conscious of everyone else—I am like a kid in a lolly shop at the moment; there are so many questions I could ask.

I want to focus on a couple of things that you covered off, particularly the enormous percentages of native vegetation and grasslands that have been sacrificed in Victoria. I was going to ask the primary reason, and then you brought it up yourself, which was agriculture. Okay. I think that needs to be driven home that it is the primary reason for deforestation and the loss of native grasslands in this state. With one of the previous presenters, we talked about the kangaroo commercial industry now that exists and that industries always have that commercial drive; they are always looking to increase market share. Does this reliance on habitat loss that comes with the agriculture sector looking to increase represent a problem? Do we need to sort of suddenly go, given that we are living on a finite landmass, 'Okay, guys, this is it. No more'?

Prof. WINTLE: Yes, absolutely. Look, I think—and I raised this concerning offsets as well—we have not been saying no for about two decades. Before that we were encouraging land conversion, but even since we have recognised the dire role that habitat loss and land use change has in terms of biodiversity and threatened species we have still been failing to actually solve the problem. Now, we need food to eat. I think it is quite reasonable and sensible and plausible that we can actually grow food for about five times our current population with our current agricultural footprint. I do not think we need to lose more habitats. Do we send everything back to blue gums to solve the climate crisis, or habitat to have more bandicoots? I do not think that is realistic either. I think there is a lot we can do in agricultural lands that is better for biodiversity that still allows us to produce food and feed a population. In sustainable land management practices, a top priority for the UN Convention on Biological Diversity now is biodiversity-friendly farming. If we had decent investment in threatened species management here in Victoria, I reckon we would be spending half of that on getting better biodiversity outcomes on farms, so I think there is an immense opportunity, but you are right—we cannot keep giving up more and more. I will add urban expansion and urban development to that list now. It was not a big deal in the late 1800s, but it sure as hell is now because a lot of the most threatened ecosystems, including basalt plains and grasslands, are in places that are subject to urban expansion.

Mr MEDDICK: I was just going to mention that just by way of passing, not as a question, but one of my staff will be absolutely ecstatic and jumping up and down pumping their fist in the air that you mentioned those, because she is very keen on the western volcanic plains grasslands.

Just a question: you mentioned before about exploitation of wildlife being one of the reasons for extinction and those sorts of things. What we have seen, and you mentioned the fact that we are all sat around the table wearing masks as a result of that sort of thing, are we going down a path here where increasing that exploitation of wildlife increases obviously our risk of zoonotics, first of all? Then currently if we continue down the path you are talking about there, and I am looking at all the graphs that you are mentioning, are we facing a scenario first of all where we are going to increase those numbers of zoonotics and secondly, their ability to transfer species to species—so Mammalia in themselves and animals in particular, but then to make an anthropogenic transfer from animal to human? Are we increasing those risks exponentially the more we continue to ignore this crisis?

Prof. WINTLE: Yes, we are, and look, it is a risk that comes with agriculture intensification—which we have to do in order to feed more people from the same land base, so we are stuck in a challenging situation that has to be managed incredibly carefully and incredibly well. Yes, if you intensify the wrong agricultural industry next to a rainforest in South-East Asia you probably are dramatically increasing the risk of zoonotic disease transfer. That is not my area of expertise; that is just sort of the general understanding that we have. We have to figure out how we intensify growing food and simultaneously keep these risks of disease transfer low and look out for animal welfare issues and the issue of biodiversity conservation. It is a tricky balance but we are smart monkeys; we should be able to do this, I think, and at the moment I feel like we are just travelling along without really investing the right amount of effort and money into making sure that we do it right.

Mr MEDDICK: Great, thank you so much.

The CHAIR: Mr Hayes, I thought you would like that—the planning comment there, so a nice segue.

Mr HAYES: Thanks, Chair, it is a nice segue. Thanks very much, Professor. I am very concerned about what you are saying. I think we have really got to conserve the land that we have got. I do not think we can increase farmland, as you said. I completely agree with that. We are putting enormous stress on water resources in that farmland, and then I worry about what you are saying, that really, if we intensified farming we could support five times the population. Now, I really think we are in the pickle we are in because population has grown exponentially. That graph you showed of the species extinction exponentially growing, the population numbers have grown alongside that graph in the same curve—up, and rising steadily.

We talk about sustainable, and I am from Sustainable Australia, and we are looking at trying to keep our environment in a sustainable form. I am thinking that population growth is one of those problems. We could have a very good lifestyle if we stopped expanding for economic purposes and we tried to make a sustainable economy run without further damaging the environment. One of the stories that I have been told is that in 20 years time, if we keep going the way we are going, if we do not learn something about managing waste and things like that, there will be more plastic in the ocean than there is fish in 20 years time. Going back in time, 10 000 years ago, of vertebrate mammals, man was 1 per cent and 99 per cent were wild animals. Nowadays it is 1 per cent wild animals, something like 32 per cent of vertebrate mammals are man and the other 67 per cent are animals that have been coopted to serve man, either as pets or farm animals for food. So we are sitting on a very sort of—

It is very anthropomorphic, the whole thing. The whole system has been run to benefit man, and if man is saying, 'Well, we've doubled the population in the last 50 years', are we going to redouble it again, as Australia plans to, over the next 20 years—

The CHAIR: Is there a question there, Mr Hayes?

Mr HAYES: Yes. Do you see this population growth, your five times on the bases, as being a desirable outcome?

Prof. WINTLE: Absolutely. It reminds me of a great report prepared by the WWF, the World Wildlife Fund, called the *Great Acceleration*, and it shows basically the congruence of population growth, carbon emissions, nitrogen emissions and plastic accumulation in the oceans—these exponential growths that are disturbing, to say the least. When I say we could feed a lot more people, I am not expressing a preference for having lots more people. I think human population growth is key—managing that is key—to conserving, and thinking carefully about sustainable economies that do not just focus on growth as the index of performance is also key. So, yes, I agree that human population growth needs to be very carefully managed. It is the number one or proximal driver behind all of this.

The CHAIR: Okay. Great. I might just have a question, if I may. It is interesting just off the back of that discussion, and we have sort of looked at this in our recycling inquiry as well around food waste—there is a lot of food waste—and looking at how we can do other things with that, but I am particularly interested in bees. I was looking at your slide on bees and how our bees are being threatened, because obviously without those pollinators food production is threatened. Could you just expand a bit on what is happening to our bee populations and why they are being particularly threatened? Was it a slow or a quick progression into bees being threatened, and what is going on there?

Prof. WINTLE: I am not a bee expert, so I should declare. As far as I am aware there are a number of pressures on bees. There is a varroa mite. That is a disease, basically an animal, that is causing population changes in bees that is spread around by people doing bee husbandry basically and shoving their dirty bees around the country and spreading the mite. We have biosecurity controls in this country to try and deal with that—that, as I understand it, being one of the big drivers of decline in the United States. So it is not the thing that humans have been going out and killing bees. We have just been altering the ecosystem so significantly that the ability of the ecosystem to regulate detrimental things like varroa mite has been diminished, and that is exactly what the IPBES report is about. Bees are one of the casualties of our major impact on ecosystems and one of the things we have to manage very carefully, absolutely, because of the very crucial role that they play in agriculture and food.

The CHAIR: And just one supplementary question, if I can. This is a more broader question. The Victorian government rolled out its *Biodiversity 2037* plan. How do you see that plan in addressing some of the issues that you are raising today?

Prof. WINTLE: I think the plan has very laudable aspirations. I think there are some great things in it about trying to engage the community around these issues and around threatened species conservation. I think that is crucial. The funding for the plan, as I have just said, is about one-tenth of what we really actually need to fund, maybe a twentieth, because the plan deals very broadly with biodiversity and I am talking about what it takes to keep our threatened species in the game, the ones that have been identified as at high risk. That plan is dealing more broadly with biodiversity. I like the approach. I just do not think that we can do without a very strong and public focus on threatened species in keeping our imperilled species in the game. We are talking about hundreds and hundreds of species, so it is not like, you know, just dealing with that is a sideshow. It is a very significant thing, but it would do a lot to raise public awareness about biodiversity conservation issues in general, and so I believe that there is a very strong sort of PR motivation for having a dedicated species program as well as the requirement for governments to lead responsively about managing the rest of biodiversity.

The CHAIR: And just one other thing you mentioned—I think it has been a bit of a theme with some of our witnesses today as well—around data collection. It seems that it is a common theme that we could do more to gather data and more targeted, particular data so we can get a really good—is that your experience?

Prof. WINTLE: Absolutely. We have a significant gap. This is national; this is definitely not just a problem in Victoria. We have got a significant gap in our data that means that it is very hard for us to (a) say what is going on and (b) prioritise where we need to spend our money for the most urgent cases and to get the biggest bang for our buck. Also, we are unable to say which kinds of actions work best where because we are not measuring. And it is a very common thing. There is a monitoring program under the biodiversity strategy, but it is a very common thing for that to be grossly underfunded, because governments like to announce spending on action, not spending on measurement. So we have got a kind of psychological barrier that we have to overcome, that measuring the outcomes of your actions is crucial for any future actions and so we have to invest in it. If I was recommending 300 million bucks a year for targeted biodiversity conservation, I would be recommending nearly 10 per cent of that, maybe a bit less, for a big program—

The CHAIR: On data?

Prof. WINTLE: On monitoring, learning, data, reporting and demonstrating what you got for your money.

The CHAIR: Okay, great. Thanks very much. Mr Grimley.

Mr GRIMLEY: Thank you, Chair, and thank you, Professor Wintle, for a fantastic presentation. I do agree that data is the key driver for change, absolutely. I just have a question around—a previous stakeholder also raised the issue in their submission, speaking about landscape-scale programs versus threatened species recovery programs and the move somewhat of Victoria in particular towards landscape-scale programs against save our species themes. If we were to make recommendations to encourage save our species, or threatened species, themes, in your opinion who would be the best organisation to oversee such a program—a government department or an independent, non-government organisation?

Prof. WINTLE: It is a good question. Frankly, I think the networks and infrastructure—to me, I still would want this to be led by government. I think it is important that the government has a big stake in the threatened species conservation space and that they are not just handing over money for a service. That said, I have already highlighted I think the importance of trusts and conservancies and private entities and businesses and normal people, including and especially farmers' role, in making a program like that work on the ground. So for me it is not, 'Do you give it to government or do you try and disperse it across?'. I think government has to be playing a central leadership role, but there has to be recognition of the importance of that connection with the rest of the parts of the community that are going to do the implementing. I would have to think about that. I would be interested in discussing that further, but at the moment I think a government-run program that utilises the skills of the conservancies and the trusts and the conservation organisations and the knowledge of Indigenous people and private landholders is probably my default approach for a program of that nature. But good question.

Mr GRIMLEY: Thanks, Professor.

The CHAIR: Dr Bach.

Dr BACH: Thanks, Chair, and thanks, Professor Wintle, for your fascinating presentation. I am going to pick up where you left off with the Chair just before in response to her questions, or at least I think I am. I was struck by, in your presentation, the fact that you said when talking about threatened species and the need to do better there, especially here in Victoria, that our monitoring is 'pitiful'. That is the remark you made and then we have just been having a discussion about data. So if you would not mind going into a little bit more detail about that—whose monitoring is pitiful, what does this pitiful monitoring look like and perhaps what might a less pitiful regime for monitoring look like? It seems like we are all in agreement about the importance of having really good data, which you tell us we do not right now.

Prof. WINTLE: Yes, great question. I am going to regret, I can see already, using the word 'pitiful'. Look, it is simply that we just do not spend enough money on sophisticated programs to track changes in species abundance across the landscapes. We know more or less how to do it. It is not an easy task because animals and plants are not always where you think they might be. This is a big country. Even Victoria is a big state. It is not easy to understand exactly what is happening with species and ecosystems across the state. By 'pitiful', I guess I am often giving this type of presentation with more of a national lens and I can say that nearly half of our listed threatened species do not have recovery plans and more than half of them have what we have evaluated using objective sort of scientific measures as really, really bad monitoring—that is, we cannot say which direction they are heading, up or down, and we would not be able to tell you if we spent a lot of money on them, whether they had recovered in response to that expenditure.

It is basically about accountability. A business does not invest a great big chunk of money and then not bother to see what that is doing for its business prospects, whether it is getting more consumers—you know, it is monitored. So I think we have to think of the business of biodiversity in the same way. We have to be responsible for our assets. We have to know what is happening to them. That means we have got to have people out there on the ground counting the possums, counting the threatened plants, counting the bees. That effort needs to be designed very carefully in a scientific and robust way. We need to invest also in technology that makes that monitoring more efficient, because it is not always me counting possums that is going to be the best. Maybe there are remote sensing methods, maybe there are drone technologies or some audio sensor equipment that can do that sort of work better. All in all we need a full renovation of our ecological monitoring programs, and that is going to require a significant extra investment in the on-ground stuff as well as the sort of sophisticated design processes.

Dr BACH: Thank you very much.

The CHAIR: Just a quick follow-on if I can be indulged by everyone. Do you think in Victoria we have the capabilities and capacity to do the sorts of things that you are talking about? I know you are saying it is about spending, but do we have the capabilities to roll it out as you are suggesting?

Prof. WINTLE: If you dropped $300 million on a Saving our Species program tomorrow, we would have to train new people, because we have been living off the smell of an oily rag now for 25 or 30 years. We have leadership. We have got really good-quality institutions—there is the Arthur Rylah Institute out there in Heidelberg, it is part of the department. There is great sophistication and expertise in these types of questions. There is just not enough of them to do that big job tomorrow. But of course we can adapt and grow. We have graduates coming through all wanting to do environment programs. If they can see that the government is serious about investing in the environment and actually spending what it takes to save species, then they will be looking at careers in that field. So yes, we could do that quickly. Australia is a world leader in biodiversity conservation science. Unfortunately we are also a world leader in biodiversity extinctions.

The CHAIR: Ms Bath.

Ms BATH: Thank you. Hasn't this been a fascinating topic? Thank you very much for being here with us today. I think there needs to be some follow-up questions too maybe if you do not mind. Just picking up on that, I guess I am wanting to hold all land tenures to the same level of scrutiny. There are certain land tenures that are highly scrutinised, and then if I said, 'What's your opinion on parks—for example, our national

parks?', they are not getting that same level of scrutiny. Am I right in interpreting you in that way across all land tenures?

Prof. WINTLE: It depends on what the question is. I think in terms of management for biodiversity outcomes, Parks are not very well funded. They are not getting the funding attention that you would need to solve the big problems like overabundant deer, overabundant goats, horses—you name it—and the plethora of invasive species. In terms of monitoring how well they are doing at managing these problems, I would say we probably do a better job of monitoring biodiversity on public land than we do on private land. We do not really know often what our biodiversity assets are on private land, and it is just because it is harder to send people out to people's private land to check it out and there are privacy issues and all sorts of things.

I probably need you to clarify your question a little bit, but I think Victoria does seem to be very focused on investment in public lands rather than linking up with private landholders to do a good job of conservation on private land. That means that we have got to share the responsibility as well, and we have to have systems of accountability when we do that so that we do not just give someone 50 grand to manage their patch for a bit of regrowth of red box woodland and then forget about it or do not have a plan for what is going to happen after the five-year contract ends. There is a lot we need to do to do a better job of that connection between government and private land in conservation.

Ms BATH: I guess a quick observation is that Landcare was very much once upon a time at the forefront of this and have been a tremendous advocate for the environment, and often they are landholders as well. You mentioned biofriendly farming. When you are enhancing the biodiversity of your farm, that does not mean that you are necessarily diminishing the productivity. In fact it can be quite the reverse—you can enhance biodiversity and productivity and carbon capture.

Prof. WINTLE: Absolutely. Yes, that is dead right. And we need more demonstrations, stimulated probably by government support initially, of how that works well and where that works well and what kinds of activities both augment biodiversity outcomes on farms as well as both the lifestyle and the livelihoods of the people who own those farms. Landcare is an immensely important institution in this country. It remains, to me, one of the most important public institutions that has been developed in the last 40 years. It just does not do it all. Landcare does not tend to do a very good job of focused threatened species conservation. For those species that are close to the edge, you need more specialised support and care. That can be in collaboration with Landcare and private land owners of course, but we cannot leave that job up to Landcare.

The CHAIR: Now, we could listen to this all afternoon, I am sure, but we have two more people who have to ask questions. Dr Ratnam.

Dr RATNAM: Thank you, Professor Wintle. That was a really useful presentation. You have made a very, very strong case in your presentation for a save our species type program, which we have heard a little bit about today in terms of landscape versus individual species recovery. I understand that you might have had a role in reviewing the New South Wales program as well. Say, for example, that Victoria was to adopt a save our species type program. Would you recommend that we adopt the model that is running in New South Wales wholeheartedly? Would there be any tweaks or changes that you would say for a Victorian context we should think about?

Prof. WINTLE: Yes. Good question. The Saving our Species program is a good program in the way that it prioritises the actions that it is going to do and in the way that it is starting to collect the data to demonstrate both what is happening to their priority species and what benefit they are getting from the management. It only manages about a fifth of New South Wales' listed threatened species, so it would need a dramatic scaling up to do what I think we need to do in this state. To that extent it needs a revamp, but by and large the best attribute is its focus and the way it can connect to the public and connect the public to the plight of threatened species. And they are expanding now into programs like the Iconic Species in Schools program and other things in New South Wales because they do have that focus and also culturally relevant support for local traditional owners who want to bring that confluence of species conservation and cultural awareness and cultural understanding. So I think there is a lot about it to like, you are right, having just reviewed it, but it is too small.

Dr RATNAM: It is too small—and that is resource constraints, or is that the scale of it?

Prof. WINTLE: That is right, and perhaps it can link better with some of the more landscape-scale initiatives as well. Even our *Biodiversity 2037* is still about a fifth or a tenth of the size of the investment that we would need to see in Victoria as far as I can tell to actually conserve our threatened species, so we are talking about a dramatic upscale. It is transformational change, so we have all got a lot of work to do.

Dr RATNAM: I have one quick follow-up question to that point. I am curious to know: why have we gone down this path, do you think, in Victoria? What has happened that we have kind of favoured the landscape-based approach versus the individual species recovery approach? Not being an expert in the area, I am just really curious to know why we have favoured one over the other when it sounds like from today's evidence that you kind of need both if we are going to really tackle this.

Prof. WINTLE: You definitely need both, and I want to make clear that I am not saying we stop landscape-scale management. You need that landscape-scale coordination and the oversight. A lot of the activities we do have to happen at a landscape scale, but the focus on what that means for this species and that species is what allows us to connect this to the public interest. So why have we gone that way? We probably listened to too many ecologists like me and others who for a long time were saying, 'We have to manage the whole landscape, and if you just focus on species you'll keep losing them; you've got to change practices at a landscape scale'. That is true, but I think we need to do it more specifically cognisant of the outcomes that we are seeking for threatened species. We want to report those, and we want to make that story more appealing for everyone.

Dr RATNAM: Thank you.

The CHAIR: Mrs McArthur.

Mrs McARTHUR: Thank you. I am interested in bees, among other things. It ties into sustainable agriculture, and we are wondering why the bee population is under threat. Well, it has a lot to do with the fact that we have changed our dietary habits over to almonds, and there are many around that think that we ought not to be having any meat and fibre from animals but we should have a plant-based system. In America they have now got 1 million acres of almonds in California, which is double what it was 20 years ago. Their almond milk sales are up 250 per cent over five years. The almond industry use 16 million kilos of pesticides each year to manage all this, so they manage to kill 50 billion bees in California in a year due to the almond crops. Now, we could possibly suggest we all stop drinking almond juice. I do not consider it milk, it is juice.

The CHAIR: Is there a question in there, Mrs McArthur?

Mrs McARTHUR: Yes, there is a question: would that be a good recommendation, along with the eradication of cats as pets? And the philanthropic groups that you touched on, a question: in the last fires I would think way more than $300 million was raised by philanthropic groups supposedly to help in the restoration of animals in the bushfire protected areas. Where has all that money gone? And a word of warning: do not encourage governments to be involved in managing something like you are suggesting. Parks Victoria cannot manage the lavatory block at the Twelve Apostles, so can we have another suggestion?

Prof. WINTLE: That is a very wide ranging question. I just cannot see me getting my kids off Nutella, to start with, so I am not sure if we can totally give up—

Mrs McARTHUR: Right, we can just lose a few more bees.

Prof. WINTLE: Oh, no, they are hazelnuts, aren't they? That does not count.

Mrs McARTHUR: They are hazelnuts, not almonds.

Prof. WINTLE: I am just going to pick up on one point. Mass industry agriculture that creates massive monocultures are a big problem. They are a big problem for ecosystems. They are probably partly responsible for the extinction of a lot of species just because we are doing all the same thing across large areas, so to that extent I agree with you. I think there are probably a lot of other things that we should chat about down the track so that we can reconcile our views about Parks Vic and other things.

The CHAIR: Sorry, we are running short of time, because it is 4.15. What I was going to suggest, because I know we have got lots of other questions, is: would you be prepared to come back at another time? We are

interested in looking at the New South Wales program. All of us, I am sure, have found today fascinating, and we would really enjoy having more time in speaking to you and also analysing other things. So would it be possible for you to come back and appear again?

Prof. WINTLE: Yes, sure. Thank you, and thanks for having me. I might be able to better answer Mrs McArthur's question next time.

Mrs McARTHUR: Look up the almond milk—I will give you some links.

The CHAIR: Anyway, thank you very much, Professor, for coming and speaking to us today. We really appreciate it, and we will make some arrangements for you to come back at another time.

Committee adjourned.